



MANAGEMENT OF PRIMARY BRAIN AND PRIMARY SPINAL TUMOURS: GUIDELINES FOR ACUTE TRUSTS

Introduction

The NICE Improving Outcomes Guidance for Brain and CNS tumours was published in June 2006. The peer review measures relating to this document were released in late July 2011.

These measures pertain to primary brain tumours (including primary CNS lymphoma), primary spinal tumours, pituitary tumours, base of skull tumours and that small subgroup of patients with brain metastases who should be considered for neuro-surgical intervention or stereotactic radiosurgery. This group encompasses a huge variety of pathology and prognoses, from benign pituitary adenomas to the most aggressive types of primary brain cancer. It does *not* cover metastatic spinal cord compression, or all brain metastases patients.

Due to the rare and complex nature of this tumour group, management is concentrated in the tertiary referral centres at Salford Royal Foundation NHS Trust (SRFT) and The Christie NHS FT.

SRFT is the network neurosciences centre and all neuro-surgical intervention, elective and emergency, is undertaken there. SRFT hosts the 3 sub-specialised MDTs (Neuro-oncology, base of skull and pituitary, referred to in the measures as NSMDTs) and the multidisciplinary clinics.

All radiotherapy and chemotherapy is delivered at The Christie NHS FT, or at its satellite radiotherapy unit at SRFT. The Christie hosts the Network MDT (CNMDT), which oversees the non-surgical and supportive care aspects for brain and CNS tumour patients.

The role of the acute Trusts in the management of patients with Brain and CNS tumours is to provide initial assessment and arrange diagnostic brain imaging, to ensure that the patient pathways into the tertiary services are clear and timely and to provide additional acute medical or supportive care needs at other points in the patient journey, in conjunction with the tertiary services treating teams.

The responsibilities and functions of the Locality / Trust Group (acute trusts) are set out in topic 11-1D-1k of the Brain and CNS Measures. The purpose of this document is to describe the presentation, diagnosis, treatment and follow-up pathways for brain tumour patients in the GMCCN to assist Acute Trusts with their peer review submission and ensure clarity.

Each local cancer services team will need to personalise this document to ensure full relevance to their locality. Dr Catherine McBain, Chair of the Brain and CNS Network CSG would be happy to be contacted directly to discuss or clarify any of the areas covered.

Trust Lead Clinician 11-1D-101k

The GMCCN Brain and CNS clinical sub-group, referred to in the measures as the NDSG, was established in 2008 and has met regularly since then. Membership, including the MDT leads and the Acute Trust Lead Clinicians is listed below:

	Name of Organisation
Name of Chair	
Dr Catherine McBain	The Christie NHS Foundation Trust
Name of Vice Chair	
Ms Sara Robson	The Christie NHS Foundation Trust / Salford Royal FT
Neuroscience Centre Representative	
Miss Tina Karabatsou	Salford Royal Foundation Trust
Neuroscience Brain & CNS MDT & Specialist Primary Spinal Cord MDT Representative	
Miss Tina Karabatsou	Consultant Neurosurgeon, MDT Lead Clinician, SRFT
Specialist Pituitary MDT Representative	
Dr Tara Kearney	Consultant Endocrinologist, MDT Lead Clinician, SRFT
Specialist Skull Base MDT	
Mr Scott Rutherford	Consultant Neurosurgeon, MDT Lead Clinician, SRFT
Neuro-Oncology Supportive Care (Cancer Network) MDT Representative	
Mrs Julie Emerson	The Christie NHS Foundation Trust
Patient and User Representatives	
Mrs Sheila Martin	Patient Representative
Brain & CNS Lead Clinicians	
Dr Arun Kallat	Royal Bolton NHS Foundation Trust
Prof Peter Selby	Central Manchester NHS Foundation Trust with Trafford NHS Trust
Dr Moe Sein	East Cheshire NHS Trust
NA – refer to North Staffs	Mid Cheshire NHS Trust
Dr Jo Vassallo	Pennine Acute Hospitals NHS Trust
Miss Tina Karabatsou	Salford Royal Hospitals NHS Trust
Dr Kamiran Dizayee	Stockport NHS Foundation Trust
Mr Yogdutt Sharma	Tameside Acute NHS Trust
Drs Sophie Harrison & Samantha Kay	University Hospitals South Manchester NHS Trust
Dr Ahmed Ismail	Wrightington, Wigan and Leigh NHS Trust
Cancer Centre Representative	
Dr Catherine McBain	The Christie NHS Foundation Trust
Dr Rao Gattamaneni	The Christie NHS Foundation Trust
Core Nurse Members	
Miss Elizabeth Molloy	The Christie NHS FT, Cancer Network MDT
Mrs Sarah Benson	Salford Royal Hospitals NHS Foundation Trust, NSMDT & SPSCMDT
Ms Shashana Shalet	Salford Royal Hospitals NHS Foundation Trust, Pituitary MDT
Sr Andrea Wadeson	Salford Royal Hospitals NHS Foundation Trust, Skull Base MDT

Area lead for neurorehabilitation	
Mrs Julie Emerson	The Christie NHS Foundation Trust
CSG member responsible for user issues and patients / carers information	
Miss Elizabeth Molloy	The Christie NHS Foundation Trust
CSG member responsible for ensuring recruitment into clinical trials is integrated into the functions of the CSG	
Dr Catherine McBain	The Christie NHS Foundation Trust
Clinical Audit Lead	
Mrs Julie Emerson	The Christie NHS Foundation Trust
Education Lead	
Miss K Karabatsou	Salford Royal NHS Foundation Trust
Named administrative support	
Mrs Elaine Parkin	Strategic Clinical Network and Senate

MDT membership of CNS Specialist Nurses (11-1D-102k)

CNS specialist nurses are employed by SRFT or Christie and provide support and fulfil the key-worker role for patients in this group as described below. They are core members of the relevant MDTs.

Primary brain and spinal tumours:

Three neuro-oncology specialist nurses support patients with primary brain tumours (mainly low and high grade gliomas) from across the GMCCN; they divide the Network between them as follows:

Alison Gilston-Hope (based at SRFT): N West (Wigan, Bolton, SRFT)

Sarah Benson (based at SRFT): N East (PANTS) and Tameside

Elizabeth Molloy (based at Christie): Central and South: (SMUHT, Stepping Hill, Trafford, Central Manchester, Macclesfield)

Base of skull:

Andrea Wadeson (based at SRFT) covers skull base patients from all Trusts.

Pituitary:

Endocrinology specialist nurses who support patients with pituitary tumours are employed at SRFT, The Christie and Pennine Acute. (This list may not include endocrinology specialist nurses employed by local trusts – please clarify with local endocrinologists)

Shashana Shalet (SRFT)

Bev McAllister (SRFT)

C Gibson (Christie)

Lorraine Watts (PANTS)

Contact telephone / fax numbers:

Alison Gilston-Hope Tel: 0161 206 2073 Fax: 0161 206 6899

Sarah Benson Tel: 0161 206 0613 Fax: 0161 206 6899

Elizabeth Molloy Tel: 0161 446 8441

Andrea Wadeson Tel: 0161 206 2302 Fax: 0161 206 6899

Shashana Shalet Tel: 0161 206 7038

Bev McAllister Tel: 0161 206 7036

Sec to S Shalet and B McAllister: Diane McNulty tel: 0161 206 5146

Location of Multidisciplinary Specialist Clinics (11-1D-103k)

Neuro-oncology multi-disciplinary clinics are held weekly at Salford Royal NHS Foundation Trust on Thursday mornings.

Base of skull joint neuro-surgical and ENT clinics are held twice monthly at Salford Royal NHS Foundation Trust, on Tuesday mornings and Thursday afternoons.

There are no multidisciplinary clinics elsewhere in the Network.

Patient Pathways

The Presentation Pathway (11-1D-104k)

Brain tumours are comparatively uncommon, but a brain tumour features in the list of differential diagnoses of patients presenting with a wide range of symptoms. While there are many other causes for symptoms, brain imaging is the pivotal investigation and there should be a low threshold for arranging imaging in all cases of unexplained neurological symptoms.

Any clinician who sees any patient in whom a brain tumour is a possibility, or who is in receipt of a “2week wait” referral for a suspected brain tumour patient, must arrange imaging to confirm or refute the diagnosis before onward referral to tertiary services. MR imaging is the gold standard, not CT (see Diagnostic Pathway 11-1D-105k below)

Urgency of imaging and subsequent onward referral will depend on the clinical scenario, but broadly falls into 3 groups:

1) Acute: New onset and / or rapidly progressive neurological symptoms including, but not exclusively:

- Motor weakness
- Speech disturbance
- New-onset seizures
- Personality change
- Confusion
- Headaches, especially if progressive and / or associated with vomiting or visual disturbance
- Visual deterioration
- Deteriorating level of consciousness

These patients require urgent assessment. They may present either to their GP who should refer to the medical on-call team or by direct presentation to A&E. They require urgent brain imaging (MR if possible, CT initially if acutely unwell) and if a new primary tumour is demonstrated, urgent referral to SRFT, usually via the neuro-surgical on-call service. (See section 11-1D-106k). Examples include malignant gliomas, obstructing cerebellar tumours causing hydrocephalus or any tumour causing raised intracranial pressure or mass effect.

2) Symptomatic but medically stable. Examples include:

- Hearing loss
- Visual disturbance
- Cranial nerve palsies
- Endocrine disturbance
- Other subtle neurological symptoms

These patients present to their GP who may arrange outpatient imaging themselves or refer to outpatient services at the local Trust eg ENT, ophthalmology, neurology, general medicine, endocrinology for assessment and imaging investigations.

Following imaging confirmation, these patients can be referred directly to the relevant sub-specialised SRFT MDT lead clinician or to the MDT itself, or to subspecialist services locally eg skull-base specialised ENT surgeons. Examples include non-malignant tumours including vestibular schwannomas, pituitary adenomas, low grade gliomas or meningiomas

3) Tumours diagnosed as incidental findings on brain imaging performed for a different indication.

It is comparatively common to identify small, asymptomatic tumours, especially meningiomas, on imaging performed for other reasons eg to investigations for TIA or CVA. Not all of these cases require onward referral, but in cases where there is any doubt whatsoever, they can be referred to neurology or neurosurgery for advice. *Incidentally identified gliomas should be referred in line with acute pathways.*

Brain metastases

Presenting symptoms of patients with brain metastases may fall into any of the 3 above groups. Most brain mets patients should be re-referred to their treating oncologist in the first instance who will assess whether involvement of neuro-surgical services is warranted. The exceptions are patients with no previous cancer diagnosis, or patients with a brain solitary lesion, where referral to the neuro-surgical on-call is indicated to confirm the diagnosis.

Onward referral pathways for each of the 4 tumour groups (primary brain or spine, base of skull, pituitary, cerebral metastases) are detailed below.

The Diagnostic Pathway (11-1D-105k)

Diagnosis and onward referral of all brain tumours is made on the basis of brain imaging. SRFT is a tertiary referral centre which does not accept referrals without an imaging diagnosis *and* access to the scans. No other laboratory tests are necessary for initial diagnosis (although blood tests may support the need for MR imaging in suspected pituitary tumours). The need for any other laboratory tests eg CSF sampling, serum gonadotrophins, will be advised following MDT discussion.

MR imaging is required to enable the specialist MDTs to adequately assess all cases. Unless the patient is medically unstable and requires emergency transfer to SRFT, the patient is extremely frail and unlikely to be a candidate for active treatment, or MR imaging is contra-indicated or against the patient's wishes, an MR brain scan should be acquired in all patients either as the primary investigation or if a new primary tumour is identified on CT scan.

Waiting for MDT discussion to confirm that an MR brain scan is required introduces unnecessary delays.

MR scans should be performed pre and post intravenous contrast. For gliomas, MR imaging should be performed in line with the Network Imaging Guidelines, see below, agreed with the GMCCN radiology cross-cutting group.

The imaging sequences of the whole head in patients with primary brain tumours are as follows:

- Axial T2
- Coronal FLAIR
- Axial T1
- Diffusion-weighted imaging
- Post-Gadolinium axial & coronal T1

These sequences should be implemented for all hemispheric tumours, both supra- and infratentorially.

Other sequences eg for pituitary tumours or vestibular schwannomas are as per local radiology advice, with reference to the pituitary or base of skull MDT neuro-radiologists at SRFT if necessary.

Routine staging CT scan of thorax / abdomen / pelvis is *not indicated* in patients with primary brain tumours, which do not metastasise. However, a CT body is required in patients with brain lesions thought to be metastases, particularly if they have no previous cancer diagnosis (a primary or other mets will be demonstrated in > 50% of cases). This should be arranged urgently, without waiting for MDT advice to do so.

Histopathological / histochemical investigations are undertaken at the specialist centre (SRFT) if the MDT recommends, and the patient agrees to, neuro-surgical intervention. Biopsies / histology are reported in line with best practice in this field by sub-specialised neuro-pathologists at SRFT.

There is no requirement for any other clinician or clinical team to undertake histological investigations in this patient group (the only exception being cases of brain metastases from cancer of unknown primary site, which are managed in line with the CUP IOG, when biopsy of accessible extra-cranial sites may be recommended).

Histological diagnosis is not mandatory in brain tumour patients for diagnosis. While a histological diagnosis is sought if possible in the majority of patients, the risks and benefits of attempted neurosurgical intervention to obtain histology are weighed up during MDT discussion; in many cases the risks are not felt to be justified. Imaging diagnoses in this patient group are accurate and are an accepted substitute for histological diagnosis.

**Red-flagging of diagnostic imaging suggestive of new primary CNS tumours:
Referral of patients to the relevant NSMDT within 2 working days within receipt of imaging report:
(11-1C-109k)**

It has been agreed with the Network Crosscutting radiology group and with the Network cancer managers group that all brain scans showing a new diagnosis of a suspected malignant brain tumour will flag the case to the Cancer Services Team in their acute trust, in line with the “red-flag” policy for management of unsuspected cancers at other sites in the body. This covers new diagnoses of primary potentially malignant tumours only eg primary gliomas, ependymomas, primary CNS lymphomas, meningiomas causing significant oedema or mass effect, solitary metastases or metastases in patients with no known cancer diagnosis. It does not include benign disease eg pituitary tumours, vestibular schwannomas (acoustic neuromas) or incidentally detected meningiomas. Further clarification can be sought from the local trust Imaging Group representative.

Cancer services should refer onwards to the MDT co-ordinator at SRFT (form attached). However, the purpose of this is to provide a safety-net so that patients cannot “get lost” if abnormal imaging results are not picked up; **it will not result in anyone contacting the patient and does not replace the clinical referral pathways described below.**

Management of patients with suspected recurrence

All patients with primary brain and spinal tumours, pituitary and skull base tumours remain under long-term follow-up by members of the relevant MDT. Any cases of suspected recurrence should therefore be discussed with treating clinician in the first instance to advise on appropriate investigation and management. Patients with known tumours who are admitted with tumour-related symptoms eg seizures do not necessarily need to go through the diagnostic and acute referral pathways again.

If the patient is medically unstable eg deteriorating level of consciousness or signs of raised intracranial pressure, advice can be sought from the neuro-surgical on-call team **BUT** consideration needs to be given to the stage of the patient’s illness eg the terminal phases of malignant gliomas.

The patient's treating clinician or their team, or if the on-call clinical oncology registrar at The Christie, should be contacted if in any doubt.

Onward referral to site specialised MDTs following imaging diagnosis.

Following imaging diagnosis, patients should be referred on as follows:

1) Primary Brain / Primary spinal cord tumours

- i) Acute: New onset and / or rapidly progressive neurological symptoms.

Diagnostic examples include (but are not exclusively): malignant gliomas, obstructing cerebellar tumours causing hydrocephalus, any tumour causing oedema or mass effect, multiple brain lesions consistent with metastatic disease in a patient with no previous cancer diagnosis.

Telephone the neuro-surgical on call registrar at SRFT via SRFT switchboard, providing details of patient demographics, clinical history and location of scans. This service is available 24/7. The on-call team will review the images and if immediate transfer for urgent neuro-surgical intervention is indicated, will arrange this. (Emergency transfer is indicated in only a minority of patients). Advice may also be given regarding additional investigations and immediate management eg commencement of dexamethasone. This referral also acts as referral to the neuro-oncology MDT (the on-call service automatically flag it to the MDT) which takes place every Tuesday morning. Deadline for accepting acute referrals is 9am Tuesday morning and there is no cap on the MDT agenda size so all cases will be discussed. MDT co-ordinator is Diane Jones Tel: 0161 206 1378, Fax: 0161 206 6899.

- ii) Symptomatic but medically stable

Examples include tumours diagnosed via out-patient presentation and imaging eg low grade gliomas, symptomatic meningiomas, ependymomas.

These patients should be referred by faxed letter to Miss Konstantina Karabatsou, neuro-oncology lead neurosurgeon at SRFT under the 62 or 31 day cancer pathway. She will triage the referral and arrange MDT discussion and clinic review as appropriate. Her secretary, Angela can be contacted on: Tel 0161 206 8338, Fax: 0161 206 4606.

- iii) Tumours diagnosed as incidental findings

Examples include meningiomas, benign lesions eg pineal cysts, other lesions of uncertain significance, many of which do not require intervention.

These patients should be referred by faxed letter to one of the 5 neuro-oncology neuro-surgeons (Miss K Karabatsou, Mr John Leach, Mr James Leggate, Mr Ajit Sofat, Mr Kanna Gnanalingham) at SRFT. They will triage the referral and arrange MDT discussion, clinic review or provide reassurance as appropriate. Referrals should be faxed to: Fax: 0161 206 4606.

2) Brain metastases

A selected subgroup of patients with brain metastases may benefit from neuro-surgical intervention or stereotactic radiosurgery. This is defined as patients with:

- Solitary or < 4 cerebral metastases, all < 4cm
- AND who are of good performance status (KP > 70, ie independent and self-caring)
- AND who have systemically controlled / radically treatable disease.

Routine referral of all patients with brain mets to neuro-oncology services is therefore NOT indicated. For most patients, the decision about whether to refer on to the neuro-surgical MDT is best made by the patient's treating oncologist following discussion with the patient and assessment of the above factors.

However, referral to the neuro-surgical service is indicated for:

- Patients of previously good performance status presenting with a posterior fossa lesion causing hydrocephalus or deteriorating consciousness
- Patients with any number of lesions but no known cancer diagnosis (to exclude other diagnoses eg abscesses)
- Patients with a solitary lesion *confirmed on MR imaging* (with or without mass effect) where other differentials eg second primary tumours may be possible

These referrals should be made via the SRFT neuro-surgical on-call via SRFT switchboard. If in doubt, it is better to seek advice from the neuro-surgical on-call team.

3) Base of skull tumours

The majority of skull base tumours are slow-growing and benign or low grade, most commonly meningiomas or vestibular schwannomas; even rare malignant tumours at this site generally behave indolently. Most patients present via OP clinics, emergency neuro-surgical intervention is very rarely required.

i) Medically unstable patients (rapidly progressive neurological symptoms esp signs of hydrocephalus and / or falling Glasgow Coma Score): Referral via SRFT neuro-surgical on-call.

ii) Symptomatic but medically stable patients eg hearing loss, dizziness, cranial nerve palsies, diplopia. Referral pathway will depend upon diagnosing clinician eg

- Local ENT surgeons will initially refer on to one of the 2 base-of-skull specialist ENT surgeons (Mr Simon Lloyd and Mr Simon Freeman at SRFT / CMHC) who form part of the core skull base MDT
- Local ophthalmologists will refer to specialist oculoplastic ophthalmic surgeons (Mr Brian Leatherbarrow at The Royal Eye Hospital) who is part of the skull base MDT extended membership.
- General physicians / neurologists should refer directly in writing to Prof Andrew King or Mr Scott Rutherford, base of skull neuro-surgeons at SRFT, who will arrange MDT discussion.

iii) Asymptomatic: Tumours identified as an incidental finding during brain imaging performed for another reason eg small meningiomas, asymptomatic acoustic neuromas (vestibular schwannomas). The diagnosing clinician should write directly to Mr King or Mr Rutherford at SRFT (letters addressed to the general neuro-surgical pool will be triaged to them). They will arrange for the case to be reviewed at the MDT as appropriate.

The Base of Skull MDT meets on alternate Friday mornings; co-ordinator is Stuart Whitehead on mobile 07891 066161 or pager 07623 617445

Pituitary tumours

Patients with suspected pituitary tumours are initially referred to an endocrinologist at their local acute trust who will arrange blood tests and MR imaging. The SRFT specialist pituitary endocrinology team (Dr Tara Kearney / Dr Anise Mukerjee) also accept GP direct referrals, which is particularly appropriate if the patient has clinically obvious pituitary disease eg acromegaly and the GP has already arranged MR imaging.

If a pituitary tumour is diagnosed, the endocrinologist will arrange for the case to be discussed at the specialist pituitary MDT. Many acute trust endocrinologists attend this meeting in person. If they do not, they refer the case on to SRFT or to one of the larger local units whose clinicians do attend the MDT (eg CMHC or PANTS).

It is extremely uncommon for patients with pituitary tumours to require emergency neurosurgical intervention (there is approximately 1 case of pituitary apoplexy per year in Greater Manchester). If

there is concern about acute deterioration (particularly rapidly progressive visual disturbance, radiological diagnosis of pituitary apoplexy or symptoms of raised intracranial pressure) the on-call neuro-surgical team at SRFT should be contacted.

The pituitary MDT meets on the second Thursday of the month. Co-ordinator is Diane Horrocks Tel 0161 206 0080, Fax: 0161 206 6899.

Treatment Pathways (11-1C-106k)

Treatment pathway depends on the outcome of the discussion at the neuroscience, skull base or pituitary MDT. All patients are discussed both pre and post-operatively, unless surgery had to be performed as an emergency before MDT discussion was possible.

All surgery is performed at SRFT; radiotherapy is delivered at The Christie or The [Christie@Salford](#) satellite unit; all chemotherapy is dispensed from (if tablets) or delivered at (if intravenous) The Christie.

Primary brain or spinal tumours patients

Following discussion at the neuro-oncology MDT, patients may be managed with neuro-surgery, radiotherapy, chemotherapy, best supportive care or active surveillance. In the majority of cases, the treating clinician is present in the neuro-oncology MDT and prompt arrangements for clinic review are made. In other cases, onward referral to other teams is arranged as detailed below.

Patients may be seen by:

- Neuro-oncology neuro-surgeon
 - if surgery is being offered or active surveillance suggested.
 - Neuro-surgical policy is that patients who are being offered surgery should be seen in clinic within 1 week of MDT discussion and operated on within 2 weeks.
- Neuro-oncologist
 - if the patient has already undergone surgery and further treatment with radiotherapy and / or chemotherapy is being recommended, or where patients are not felt to be surgical candidates but there are oncological management options eg palliative radiotherapy.
 - Patients are seen within 1 week of MDT discussion.
- Local PCST
 - if patient is not well enough to come to clinic or is not a candidate for active treatment, it is recommended that best supportive care is delivered via the local teams.
 - Referral to local PCST is made by telephone by one of the MDT clinical nurse specialists or a member of the palliative care team who was present at the MDT discussion. The formal neuro-oncology MDT minutes are also forwarded, and the neuro-oncology team remain available for ongoing telephone advice.
- TYA MDT / TYA clinic
 - patients \leq 24 years of age.
 - Patients are seen within a week of the neuroscience MDT by Dr Rao Gattamaneni who is a core member of both MDTs and will arrange for the case to be discussed at the TYA MDT. Cross-cover in this aspect is provided by Dr Martin McCabe.
- Lymphoma MDT – if diagnosis of CNS lymphoma has been histologically confirmed and patient is potentially suitable for intensive chemotherapy or clinical trial entry, this will be delivered at The Christie by Prof Radford / Dr Linton who lead the lymphoma team. Patients not well enough for chemotherapy will be seen in the neuro-oncology clinic by the neuro-oncology team to discuss radiotherapy or palliative care. Patients are managed in line with the national CNS Lymphoma Management Guidelines.

All new primary brain and spinal tumours patients are nominated for discussion at the Network MDT by core members of that MDT who attend both meetings eg the CNSs or AHPs.

Cases are re-discussed in the neuro-science MDT and Network MDT at key points in their patient journey eg at relapse or if symptoms change. They are nominated for re-discussion by their treating clinician, keyworker or AHP.

Follow up Pathway (11-1D-107k)

Patients with primary brain and spinal cord tumours remain under long-term follow-up by the site-specialist MDT teams. Patients with primary malignant primary brain and spinal cord tumours who have received radiotherapy or chemotherapy are never discharged. Almost all follow-up occurs in specialist clinics at The Christie or SRFT; some pituitary patients may be followed up by endocrinologists at local acute Trusts working in conjunction with the specialist pituitary MDT.

Frequency of visits and imaging follow-up is diagnosis-dependent; this is detailed in the GMCCN CNS Management policy documents.

At the time of recurrence, cases may be referred back to the appropriate site-specialised MDT by their treating clinician. Criteria for re-discussion at specialist MDT includes the potential for further active treatment with neuro-surgery, radiotherapy or alternatives, or for clarification / sub-specialist review of imaging findings. Patients are not routinely required to be re-referred to the MDT for a change in medical management eg endocrinological therapy or chemotherapy regime.

Patients whose recurrence is accompanied by a change in their symptoms are referred back to the Network MDT by their treating clinician or key-worker. If referral to a local Specialist Palliative Care MDT is appropriate, it will be made via the Network MDT (which includes SPC members) unless the patient is profoundly unwell and requires end of life care in which case the direct referral to the local SPC MDT can be made by members of the treating team, keyworker or other involved health professionals following discussion of the case with the patient's treating clinician or their cross-cover. Late effects of treatment will be considered within the Cancer Network MDT; there is no specific late effects MDT for this patient group.

Communication Framework (11-1D-108k)

The communication framework is as laid out in the IOG document. Detailed descriptions of the enactment of these policies are detailed in the operational policies of the 3 site-specific MDTs but in summary, MDT minutes are typed and faxed or posted to referring clinicians and GP within 1 working day of MDT discussion. In cases where information needs to be conveyed more urgently, the relevant clinical nurse specialist will telephone the treating acute trust team to convey the MDT opinion.

To ensure that minutes reach the case-notes of in-patients at referring hospitals whose treating clinician may have changed since the referral was made (eg patients moved from MAU to a ward), and to ensure that referring hospitals' cancer services teams are aware of brain tumour cases diagnosed, MDT minutes are sent by secure email to cancer services teams in each hospital within 24 hours of MDT. FOLLOWING A SUCCESSFUL PILOT PROJECT, IT HAS BEEN AGREED THAT CANCER SERVICES TEAMS WILL PRINT OFF THE MINUTES AND CONVEY THE OUTCOME TO THE TREATING CLINICIAN / TAKE THE MINUTES TO THE PATIENTS' WARD WITHIN 1 WORKING DAY OF RECEIPT.

It is vital that all acute trusts confirm that this pathway is robust within their hospital.

Protocol for Emergency Surgical Interventions (11-1D-109k)

The area-wide protocol for emergency surgical interventions in patients with a CNS tumour, for intra-cranial problems caused by the tumour or its treatment is described below:

All emergency intervention is at SRFT. Cases referred to the neuro-surgical on-call service who are felt to require emergency neurosurgical intervention due to critically raised intracranial pressure, rapidly progressive neurological symptoms and / or deteriorating level of consciousness will be transferred to SRFT as an emergency and managed at the discretion of the neuro-surgical on-call team. In these circumstances it is accepted that brain tumour patients may be operated upon by surgeons other than core MDT members. The aim of surgery is to stabilize the patient. The case is always discussed at the next MDT to determine next steps in management.

In the absence of critically raised intracranial pressure, rapidly progressive neurological symptoms and / or deteriorating level of consciousness, any issues with patients already receiving treatment or follow-up for a known brain tumour should be directed back to treating team at Christie. The on-call team at Christie can be contacted 24/7.

Electronic Imaging Transfer (11-1D-110k)

The MDTs at SRFT can access PACS systems across GMCCN, and so in most cases no additional imaging transferred is required. However, all referrals, acute and non-acute MUST indicate the location of the scans.

Scans acquired by other providers eg private sector or ICATS MUST be sent with the referral on CD or other electronic imaging transfer to SRFT PACS arranged. It is not possible for the neuro-surgical MDTs to provide an opinion on any patient without seeing the images (a printed report is NOT adequate). It is the responsibility of referring trusts and clinicians to ensure that the images are available for review.

Neuro-rehabilitation facilities 11-1D-111k

The neuro-rehabilitation policy for brain tumour patients falls within the wider neurosciences network operational policy ie the same pathway and facilities as patients with other neuro-rehabilitation needs eg strokes, MS, MND etc.

Assessment of neuro-rehabilitation needs in brain tumour patients may be a complex area in which their diagnosis and prognosis will play a part. There is a wide spectrum of brain tumour diagnoses. For patients with low grade (grade 1 or 2) tumours, the rehab goal will generally be restoration of maximum function; for patients with malignant tumours (grades 3 and 4) the goals may include rehabilitation to improve level of function or interventions to optimise functioning and compensate for disabilities..

Brain tumour patients should not be excluded from access to rehabilitation based purely on their diagnosis, prognosis or treatment plan; each should be assessed according to their needs.

Due to the complexity of assessing these diagnosis-specific and patient-specific factors, 2 specialised neuro-oncology AHPs have been employed to work throughout GMCCN to provide additional advice and support to local teams. Sara Robson and Julie Emerson work jointly between SRFT and The Christie and are contactable via these hospital switchboards.