The Newcastle upon Tyne Hospitals NHS Foundation Trust

Intrathecal Cytotoxic Chemotherapy (ITC) Policy

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<th>Version No.</th>
<th>3.3</th>
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<td>Ratified By</td>
<td>Medicines Management Committee</td>
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1 Introduction

Intrathecal chemotherapy administration refers to the administration of a cytotoxic drug into the cerebral spinal fluid either via a lumbar puncture or through an intraventricular route.

The administration of intrathecal drugs is potentially dangerous and must only be undertaken by staff that have undergone appropriate training and are certified as competent to participate in the process.

The administration of certain cytotoxic chemotherapy drugs, such as Vincristine, via the intrathecal route is almost always fatal (DoH 2008). Although the most recent National guidance relaxed some of the requirements compared to previous versions (DoH 2003) the Trust intrathecal chemotherapy group made the decision to keep these unchanged.

Vinca alkaloids: - Vincristine, Vinblastine & Vinorelbine and Vindesine are all fatal if administered intrathecally. They MUST only be given INTRAVENOUSLY. This must be compliant with the NPSA Rapid Response Report (NPSA/2008/RRR04) on vinca alkaloid administration. For further details see Appendix 6

This policy should be read in conjunction with other Trust policies, procedures and guidelines including those pertaining to consent, cytotoxic chemotherapy, administration of medicines and sedation.

The key recommendations outlined within this document are as follows:

- ITC can only be administered to adult and paediatric oncology patients at designated times and in designated areas within the Trust.
- Clinical staff who wish to be included on the Trust ITC Register must undertake appropriate training and demonstrate competence in their registered task prior to inclusion on the Trust ITC Register.
- Only competent and designated personnel, whose names are recorded on the Trust ITC Register, are authorised to prescribe, verify, dispense, issue, check or administer ITC.
- A competent Consultant, Specialist Registrar or Speciality Doctor, listed on the Trust ITC Register, using a designated ITC prescription chart, MUST prescribe
ITC and only Methotrexate, Cytarabine, Hydrocortisone and Liposomal
Cytarabine (DepoCyte) may be prescribed on this prescription chart. In
exceptional circumstances other cytotoxic drugs may need to be prescribed
refer to section 6.6.

- ITC drugs can only be issued and received by designated staff, listed on the
  Trust ITC Register, and ITC drugs MUST be kept in a designated, lockable
  refrigerator/container when they cannot be administered immediately.
- Intravenous cytotoxic chemotherapy must be administered BEFORE ITC drugs
  are issued (Section 6.10.1)
- Checks must be made by medical, nursing and pharmacy staff at relevant stages
  throughout the ITC process.

2 Scope

This policy applies only to members of the Newcastle upon Tyne Hospitals NHS
Foundation Trust (NuTH) who have been trained and assessed as competent to be
involved in the Intrathecal Chemotherapy process [or who are in training toward
achieving competency in this procedure].

This policy applies to all patients [adult and children] who require intrathecal
chemotherapy, either as an emergency or planned procedure.

3 Aims

The aim of this policy is to ensure that Intrathecal chemotherapy is carried out safely
and in accordance with National guidance and to minimise the risks associated with the
prescribing, preparation, supply and administration of cytotoxic intrathecal and
intraventricular injections.

4 Duties (Roles and responsibilities)

In order to comply with the revised and Updated National Guidance on the Safe
Administration of Intrathecal Chemotherapy [August 2008] there are key personnel
identified within this policy with specific responsibilities.

They are as follows:

Designated Lead / Lead Adult Trainer [Medical & Nursing Staff]
- Has the overall responsibility for intrathecal practices and adherence to the
  Intrathecal Policy / National Guidance in NuTH.
- Overall responsibility for holding the register and ensuring it is maintained and
  kept up-to-date.
- Lead trainer in Intrathecal policy for Medical and Nursing Staff in Adult
  Haematology. Responsible for induction, training and continuing professional
  development related to intrathecal chemotherapy.
- Responsible for reviewing competencies annually and issuing written
confirmation of competence for designated tasks. Monitors the frequency staff perform the registered tasks. Will delegate these responsibilities appropriately to the Lead Trainers.

- Monitors the number of intrathecal chemotherapy administrations per year across NuTH.
- Responsible for ensuring the Lead Trainers have this role recognised in their job description and appraisal process.
- Responsible for assessing any variances, deviations or incidents from this policy in either service.
- Responsible for monitoring the number of intrathecal administrations per year.
- Responsible for collating all emergency procedures performed outside the designated lists and recording out of hours procedures.
- Responsible for informing the Medical Director and Chief Executive of incidents, unplanned deviations or other issues related to the policy.

**Deputy Designated Lead / Lead Paediatric Trainer [Medical & Nursing Staff]**

- Oversees adherence to the Intrathecal Policy / National Guidance within the Great North Children’s Hospital.
- Responsible for reporting any variances from the Intrathecal Policy to the Designated Lead.
- Lead trainer in Intrathecal policy for Medical and Nursing Staff in the Great North Children’s Hospital.
- Responsible for induction, training and continuing professional development related to intrathecal chemotherapy for medical staff in the Directorate of Children’s Services.
- Responsible for reviewing competencies annually and issuing written confirmation of competence for designated tasks.

**Designated Lead Trainer Pharmacy Staff**

- Acts as Lead Trainer for Pharmacy Staff.
- Responsible for ensuring adherence to the Intrathecal Policy within the pharmacy setting.
- Responsible for induction, training and continuing professional development related to intrathecal chemotherapy within the Pharmacy Department.
- Responsible for reviewing competencies annually and issuing written confirmation of competence for designated tasks.
- Maintains the NuTH Authorised Intrathecal Register and keeps a copy of all competency certificates.
- Responsible for ensuring an up-to-date copy of the register is available on the Trust Intranet and copies circulated to the appropriate clinical areas.

**N.B.** Although the ITC Lead is accountable to the Trust Chief Executive for compliance with the National ITC guidance every member of staff is accountable for their own individual actions and must adhere to the Trust ITC policy.
5 Definitions

<table>
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<tr>
<th>ITC</th>
<th>Intrathecal Chemotherapy</th>
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6 Intrathecal Cytotoxic Chemotherapy (ITC) Policy

6.1 The ITC Division

The Newcastle Hospitals NHS Trust has two divisions for the purposes of the management of intrathecal chemotherapy. These two divisions are Adult Haematology/Oncology and Paediatric Oncology. Administration of intrathecal therapy must be in accordance with the relevant section of this policy:

- Patients who are under the care of Adult Haematology/Oncology
- Patients who are under the care of Paediatric Oncology Services

The routine administration of ITC is only permitted in the following designated areas within the Royal Victoria Infirmary (RVI) and the Freeman Hospital (FRH) during normal working hours, i.e. between 9.00am and 5.30pm, Monday to Friday, excluding Bank Holidays.

**Adult Haematology/Oncology**
Ward 33 FRH (Intrathecal Chemotherapy Room)
Ward 36 FRH (Intrathecal Chemotherapy Room)

**Paediatric Oncology**
Children’s Theatres – New Victoria Wing RVI (20 or 21-25) (irrespective of the need for anaesthetic)

**N.B.** Under routine circumstances ITC can **NOT** be administered in any other area within the Trust.

Dispensing and issuing of ITC for the two divisions will take place from the following pharmacy locations:

- **Dispensing**
  - Pharmacy Production Unit RVI
  - NCCC Cytotoxic Dispensing Unit FRH

- **Issuing**
  - Pharmacy Production Unit RVI
  - Pharmacy New Victoria Wing RVI
  - NCCC Cytotoxic Dispensing Unit FRH
  - NCCC Clinical Trials Pharmacy FRH
  - Children’s Theatres FRH
6.2 Variations and Deviation from the NuTH Intrathecal Policy

Any unauthorised deviation from this policy is not acceptable and therefore must be reported as a patient safety incident in accordance with the Management and Reporting of Accidents and Incidents Policy (2012). Such incidents must be reported on Datix Web and copied to the Designated Lead Clinician. All such incidents will be reported to the Medical Director.

In exceptional circumstances a variation to the policy may be requested. This MUST be discussed with the Lead Clinician for Intrathecal Chemotherapy (or deputy) and documented as such in the patients medical notes prior to the variation. At the discretion of the Lead Clinician for Intrathecal Chemotherapy [or their deputy] the variation should be escalated to the Medical Director.

6.3 Education, Training and competency assessment.

6.3.1 Induction

All nursing, medical and pharmacy staff who are new to wards / departments within the ITC Division and pharmacy are advised that they MUST NOT be involved in any task associated with intravenous cytotoxic chemotherapy or ITC until they have received appropriate training and their competency has been assessed. A copy of Appendix 2 should be given to each new member of staff to read during their induction period.

6.3.2 Training procedure for staff wishing to be included on the Trust ITC register.

Only those members of staff who have been trained and assessed as competent in an ITC task are eligible to be registered for that task. The training and assessment will consist of:

- attendance of an ITC lecture or successful completion of the ITC e-learning package,
- acquisition of clinical competence
- a competency assessment.

All ITC lectures will comprise of the following core syllabus:

- The potential clinical hazards associated with ITC, including the life threatening consequences associated with accidentally administering Vinca Alkaloids via the ITC route. Viewing and discussion of the issues highlighted in the DoH ITC video / DVD).
- The key requirements outlined within the National ITC guidance and implications for local practice i.e. details of the Trust ITC policy.
- The rationale, advantages, disadvantages and potential side effects associated with ITC.
- ITC administration processes to include associated documentation.
- Details pertaining to the process for acquiring / maintaining clinical competence and registration where appropriate.
- The key requirements outlined in NPSA/2008/RRR004 - Using Vinca Alkaloid
6.3.3 Acquiring Clinical Competence

**Competency criteria:**
- Observe practice of the specific ITC task in which the staff member is seeking registration.
- Perform the specific ITC task under the direct supervision of, and in the constant presence when performing it, of personnel who are deemed competent and are included on the Trust ITC Register.

**Competency Assessment**
The Lead Adult, Paediatric and Pharmacy trainer / assessor are responsible for assessing the competence of ALL ITC registered clinical staff, with the assessment of nurse's competencies being performed in collaboration with Lead ITC nurses. Although assessment will invariably reflect the requirements of the registerable ITC task, all staff, irrespective of the proposed registerable task, will be expected to:

- Attend an ITC lecture or complete the ITC e-learning package.
- Demonstrate an underlying knowledge of ITC including rationale, process, potential side effects and potential clinical hazards / dangers.
- Demonstrate theoretical and practical understanding relevant to the specific ITC task.
- Demonstrate clinical competence in performing the expected registerable ITC task.
- Demonstrate awareness of significant local and national policies, procedures and guidelines supporting clinical practice e.g. consent, pharmacy Standard Operating Procedures (SOPs), accident and incident reporting, performing a lumbar puncture etc.
- Have read and critically analysed the National ITC guidance, NPSA/2008/RRR004 and Local ITC policy.
- Demonstrate an awareness of the holistic, individual needs of patients and relatives / guardians.

Only those clinical staff who have been assessed and deemed to be competent will receive a certificate and be included on the Trust ITC Register. In order to maintain their position on the Trust ITC Register, staff MUST:

- Have their competence re-confirmed annually, in writing via a certificate.
- Perform their registered ITC task sufficiently often to maintain their competence. The Trust ITC group has defined the minimum number of procedures that should be performed or checked by each person on the register per annum as being
  - Adults 5
  - Pediatrics 10

N.B. The assessment of the 3 ITC lead trainer / assessors will be undertaken via colleague peer review.
Clinical staff that are not involved in providing an Intrathecal chemotherapy service (i.e. not on one of the ITC registers), but who are likely to work in areas where different aspects of the ITC service are provided should not take part, or be asked to take part, in any part of this process.

It is the responsibility of those individuals on the ITC register to ensure that any colleagues they involve in this process are on the ITC register for the task in question.

6.3.4 Continuing Professional Development

It is the responsibility of each registered practitioner to ensure that as part of their Continuing Professional Development they maintain practical experience within their registered ITC task/s.

Chemotherapy and ITC education and training must also feature annually within the Continuing Professional Development of all clinical staff who wish to remain on the Trust ITC Register. Each member of staff is personally responsible for maintaining an up to date record of their Continuing Professional Development.

6.3.5 Staff transferring to the NuTH NHS Foundation Trust

All clinical staff transferring to the NuTH NHS Foundation Trust who, at the time of transfer, were on the ITC Register of their previous Trust, are eligible for entry onto the NuTH NHS Foundation Trust ITC Register when they have:

- Provided written confirmation of their entry onto the previous Trust’s ITC Register, current at the time of transfer.
- Have been inducted and assessed as competent in line with the Newcastle Trust’s protocol.

6.4 Register of designated personnel

Unique lists of registered ITC personal, whose names appear on the Trust ITC Register, are available within all areas of the ITC Division and on the Trust intranet. The Trust ITC Register identifies which designated personnel have been trained and certified competent in one or more of the following ITC tasks:

<table>
<thead>
<tr>
<th>Task</th>
<th>Staff Group</th>
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<tbody>
<tr>
<td>Prescribing</td>
<td>Consultants, ST3s and above, Speciality Doctors</td>
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<tr>
<td>Writing of prescription</td>
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<tr>
<td>Patient review / consent</td>
<td>Consultants, ST3s and above, Speciality Doctors</td>
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<tr>
<td>Verification of</td>
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<tr>
<td>prescriptions</td>
<td>Pharmacists clinical check</td>
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<tr>
<td>Activity</td>
<td>Responsibility</td>
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<td>----------------------------------------------</td>
<td>---------------------------------</td>
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<tr>
<td>Dispensing and checking drugs in pharmacy</td>
<td>Production pharmacists and</td>
</tr>
<tr>
<td></td>
<td>accredited production checking</td>
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<tr>
<td></td>
<td>technicians</td>
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<tr>
<td>Dispense and in-process checks</td>
<td>production technicians</td>
</tr>
<tr>
<td>Final check</td>
<td>Production pharmacists</td>
</tr>
<tr>
<td>Issuing ITC drugs from the pharmacy</td>
<td>Production pharmacists</td>
</tr>
<tr>
<td></td>
<td>Oncology pharmacists</td>
</tr>
<tr>
<td>Checking ITC drugs prior to administration</td>
<td>Chemotherapy trained nurses</td>
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<tr>
<td>Administering the ITC</td>
<td>Consultants, ST3 and above,</td>
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<td></td>
<td>Speciality Doctors</td>
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For an individual’s name to appear on the Trust’s ITC Register they must have demonstrated, to their designated lead trainer / assessor (Adult, Paediatric or Pharmacy), that they are competent to fulfil their designated role/s and be certified competent. It is the responsibility of their lead trainer / assessor to complete a competency certificate and forward this to the ITC administrator. The ITC administrator logs the certificate in the ITC Master File, identifying additions / amendments, and the Trust ITC Lead authorises inclusion on the part/s of the Trust ITC Register. The ITC administrator is responsible for maintaining the ITC Master File / Register and updating ALL unique lists of registered ITC personnel within the ITC Division. The ITC administrator will update the Trust ITC Register and unique lists during the first week of each month and as required.

The ITC administrator will notify the Adult and Paediatric Head of ITC services and the Lead Adult and paediatric ITC nurses, approximately 4 weeks in advance, of personnel whose competencies are due to expire. Individuals who fail to maintain their annual competence or perform their registered task(s) insufficiently often to maintain competence will be removed from the Trust ITC Register.

**N.B.** Inclusion or deletion of staff from a part of the Trust ITC Register can only be undertaken by the ITC administrator with the authorisation of the ITC lead.

The ITC administrator will forward a copy of the ITC register each time it is updated to the Clinical Governance and Risk Department as well as designated members of staff working in each of the areas named in Appendix 1.
6.5 **Distribution of Trust policy and registers**

Only the latest editions of clinical policies, procedures and guidelines are available for reference by any member of staff involved in handling cytotoxic chemotherapy.

To ensure ease of access for consultation, hard copies of the Trust ITC policy, the National ITC guidance (2008), NPSA/2008/RRR004 Using Vinca Alkaloid Minibags (Adult/Adolescent Units) and up to date hard copies of the unique lists of registered ITC personnel can be found in all areas within the ITC Division and in designated inpatient wards and day case areas where oncology / haematology patients are admitted (Appendix 1). Electronic copies of all of these documents are also available on the Trust intranet.

6.6 **Prescribing ITC using the ITC Prescription Chart**

Only competent Consultants, ST3s or above and Speciality Doctors, whose names appear on the Trust ITC Register, are able to prescribe or administer ITC.

A specific NuTH NHS Foundation Trust ITC Prescription Chart **MUST** be used in **ALL** instances where ITC is prescribed. The ITC Prescription Chart is in a triplicate carbon copy format, thus ensuring that a full audit trail is available for the life cycle of each ITC, as depicted in the ITC Prescription Chart flow diagram (Appendix 4).

Only the following drugs can be prescribed on the Trust ITC Prescription Chart:
- Methotrexate
- Cytarabine
- Hydrocortisone
- Liposomal Cytarabine (DepoCyte)

Methotrexate and both formulations of Cytarabine clearly state on the manufacturer’s vial that they can be administered via the Intrathecal route. Hydrocortisone sodium succinate (Solu-Cortef) is used intrathecally, as it is preservative free.

In exceptional circumstances other cytotoxic drugs not listed above or monoclonal antibodies may need to be prescribed and administered to a patient being treated for a malignancy. Each case needs to be discussed and agreed by the Trust Lead Clinician for Intrathecal Chemotherapy (or deputy) and the Lead and documented as such in the patients’ medical notes prior to the variation.

Documentation must include the rationale for the treatment choice, details of the planned dose, formulation to be used and the names of the individuals involved in the decision.
ITC drugs must be clearly written, in full, on the ITC Prescription Chart and the prescription must clearly and unambiguously, in the space provided, state the intended route of administration as “Intrathecal”. All 3 layers of the ITC Prescription Chart must then be submitted to the pharmacy. Unless there is a clinical emergency all Intrathecal prescriptions must be received in pharmacy by 10:30hrs on the day of treatment.

6.7 Preparation and Dispensing

Cytotoxic chemotherapy (including ITC) can only be dispensed from pharmacy cytotoxic dispensing areas, by designated competent oncology pharmacy staff, during normal working hours i.e. between 9.00am and 5.30pm, Monday to Friday, excluding Bank Holidays.

ITC can only be dispensed by designated competent oncology pharmacy staff who are included on the Trust ITC Register. An up to date list of registered designated ITC pharmacy staff is available in those areas outlined in Appendix 1.

Specific Standard Operating Procedures (SOPs) pertaining to the pharmaceutical management of ITC, prefixed CYT22, can be found within each pharmacy preparation unit within the ITC Division and these must be implemented in conjunction with the general SOPs pertaining to cytotoxic chemotherapy. There are specific ITC SOPs pertaining to the following:

- Clinical Checking of Prescriptions
- Aseptic Dispensing
- Distribution
- Storage

**N.B.** ITC and cytotoxic chemotherapy should **NEVER** be prepared in ward areas.

6.8 Labelling and Packaging

ALL pharmacy labels for cytotoxic chemotherapy and ITC MUST contain the following information:

- Patient’s full name and hospital number.
- Name of product and dose.
- Total volume.
- Batch number.
- Expiry date.
- Route of administration (For ITC this MUST be printed clearly in **BOLD** and in the largest font size possible).

**N.B.** Negative expressions (e.g. “Not for Intrathecal Use”) must **NEVER** be used on any pharmacy labels.
6.9 Packaging and Transportation

ITC is packed with the ITC Prescription Chart, in a clear zip-locked bag and transported in a designated ITC cool box. ITC MUST always be packed and transported separately from treatment for administration via any other route.

**N.B.** Although a group of paediatric ITC’s can be transported and stored collectively, each ITC is prepared, packed, issued, checked and recorded individually.

6.10 Issuing ITC

Only designated members of pharmacy staff, can issue ITC to a competent doctor. Both names must appear on the Trust ITC Register. (The pharmacist is referred to as ‘the issuer’ and the doctor is referred to as ‘the collector’).

ITC drugs are issued as follows:

- In pharmacy, ‘the issuer’ physically hands over the ITC to ‘the collector’ who will be administering the ITC in the designated area.
- ‘The issuer’ takes the ITC to the designated area where the ITC will be administered and physically hands the ITC over to ‘the collector’ who will be administering the ITC.

‘The issuer’ must sign release of the ITC in the allocated section of the ITC Prescription Chart. ‘The collector’ must also sign in the allocated section of the ITC prescription to confirm receipt of the ITC.

**N.B.** When a number of paediatric ITCs are issued collectively each ITC must be released and received individually.

6.10.1 Timing of Issuing ITC

Although, in ideal circumstances, ITC should **NOT** be given on the same day as intravenous cytotoxic chemotherapy, it is acknowledged that the Trust manages patients from across the Northern Region. In instances when ITC is administered on the same day as intravenous cytotoxic chemotherapy the following safeguards **MUST** be enforced:

- Intravenous cytotoxic chemotherapy **MUST** be issued and administered **FIRST**.
- ITC can only be issued following written confirmation that the intravenous cytotoxic chemotherapy, for the named patient, for that day, has already been administered i.e. by checking the patient’s medicine chart/chemotherapy administration chart.

Those patients who are in the middle of an intravenous cytotoxic chemotherapy infusion, which has been started elsewhere, may continue their treatment providing:

- There is written confirmation that the intravenous infusion(s) has started
before the ITC is issued from the pharmacy
  - That the closed system is maintained and the infusion bag is not changed during the ITC procedure.

Children & adolescents scheduled to receive both intravenous and intrathecal chemotherapy on the same day should have early appointment times for clinic, to ensure all IV bolus chemotherapy is given on the ward or day unit before the ITC general anaesthetics list starts in theatres. If the IV chemotherapy has not been administered by 12:45 hrs the ITC will be cancelled.

'The issuer' must make the following checks, BEFORE delivering the ITC and signing the ITC Prescription Chart:
  - That ITC and intravenous cytotoxic chemotherapy have not been supplied together, by mistake.
  - That any intravenous cytotoxic chemotherapy, prescribed for administration on the same day, has already been administered.
  - That there are no IV drugs available in the ward drug fridges for any patient due an intrathecal.

Intravenous chemotherapy for subsequent days for patients due an intrathecal will be returned to pharmacy to be quarantined during the intrathecal procedure. This can only be released by an authorised pharmacist following written confirmation that the ITC has been administered.

There should be no delivery of IV chemotherapy to the paediatric oncology ward or day unit for patients due an intrathecal between 12 noon until all of the patients have returned from theatre.

6.11 Interim Storage

Once dispensed, ITC and intravenous cytotoxic chemotherapy must be distributed and stored in accordance with relevant SOPs, Trust policies, procedures and guidelines (NuTH NHS Trust 2010).

If interim storage of prepared ITC is required then ‘the collector’ will be responsible for placing the ITC into the dedicated facility i.e. the appropriately labelled and locked ITC refrigerator, which is reserved for that purpose alone. No other drugs can ever be stored in the ITC refrigerator, even when it is not in use. ITC refrigerators are located in the following areas in the RVI:
  - Ward 33 FRH.
  - Ward 36 (Day Unit) FRH (Intrathecal Chemotherapy Room).
  - Pharmacy New Victoria Wing RVI
  - Children’s Theatres – New Victoria Wing RVI (20) (Anaesthetic Room).

The dedicated ITC refrigerators can only be used to store ITC between issuing and administration. The nurse in charge will keep the key for the ITC refrigerator and the refrigerator can only be unlocked when ITC is being deposited or withdrawn. Only competent doctors or individuals whose names appear on the
Trust ITC Register, are able to remove ITC from the ITC fridge.

**N.B.** When a number of paediatric ITCs are stored collectively, each dose of ITC must be removed from the locked refrigerator on an individual, named and patient number, basis. Once an ITC is withdrawn from the ITC refrigerator it must be re-locked.

All unused doses of intrathecal chemotherapy must be destroyed by placing in the cytotoxic bin in theatre and writing “Destroyed” across the prescription by the Doctor to whom they were issued. The prescription should be returned to pharmacy to enable records to be updated.

### 6.12 Patient Review

A competent Consultant ST3 or above and Speciality Doctors, whose name appears on the Trust ITC Register, **MUST** have reviewed every patient before ITC is administered, ensuring that:

- Consent has been acquired (DoH 2001)
- The patients has been explicitly told the nature of the procedure, the route of administration, and the drug to be administered. This includes providing communication support for the patient where required
- The appropriate tests have been conducted, results reviewed and documented in the patient’s medical notes i.e. establishing that the patient is fit for treatment.
- The correct ITC has been prescribed i.e. drug, dose and route.
- Members of staff assisting in the procedure are on the register for the task they are carrying out

Confirmation that the review has taken place should be written in the patient’s medical notes.

### 6.13 Checking and Administration

ITC **MUST** only be administered by a competent Consultant, ST3 or above or Speciality Doctor, whose name appears on the Trust ITC Register, during normal working hours, i.e. between 9.00am and 5.30pm, Monday to Friday, excluding Bank Holidays.

ST1 & ST2 **ARE NOT** permitted to prescribe or administer ITC within the NuTH NHS Foundation Trust.

ITC can only be administered to a patient in a designated area, during a predetermined time that has been negotiated by the clinical team in collaboration with the patient / relatives (during normal working hours). ITC can only be administered in designated areas when no other cytotoxic chemotherapy drugs are currently being administered or stored. When ITC is being administered, the designated area **MUST NOT** be used for any other purpose.

### 6.13.1 Checking

The checking process prior to administration is vital in ensuring that the
correct drug and dose is being given to the correct patient, via the correct administration route. The following individuals must be involved in the checking process:

- The competent Doctor, whose name appears on the Trust ITC Register, who will be responsible for administering the ITC.
- An ITC Paediatric oncology / Adult haemato-oncology trained nurse, whose name appears on the Trust ITC Register.
- One of the following:
  - The patient.
  - A theatre nurse or Operating Theatre Practitioner, if the procedure is performed under general anaesthesia, or a chemotherapy nurse.
  - A relative or guardian.

In order for a patient, relative or guardian to actively participate in the checking process, if they so desire, they must be well informed regarding the nature of the procedure, the route of administration and the drug to be administered.

The following checks MUST be made and documented PRIOR to the administration of ITC.

A competent doctor and a nurse, whose names appear on the Trust ITC Register, when preparing to treat a patient with ITC, must check the following:

- Details on the ITC product label, including the batch number and expiry date.
- Product and patient details on the ITC Prescription Chart.
- The identity of the patient, via their patient identity band (wrist band).
- That the ITC is due to be given that day according to the treatment protocol / flowsheet within the patient’s medical notes.

The senior theatre nurse or patient / relative or guardian is also responsible for confirming the patients identity and that they are due to receive intrathecal chemotherapy.

**N.B.** Within NuTH a second doctor cannot substitute for a competent ITC Paediatric oncology nurse / Adult haemato-oncology nurse, taking part in the checking process.

**6.3.2. Administration**

ITC is administered in accordance with Trust procedures (Appendix 6a, 6b) and may require general anaesthetic, sedation (NuTH NHS Trust 2009) or local anaesthetic. The competent Consultant / ST3/ Speciality doctor, whose name appears on the Trust ITC Register, who is responsible for administering the ITC MUST, be present when the ITC is administered. In a situation where there is difficulty in performing the lumbar puncture another doctor may insert the needle but ITC must still be given by, or under the direct supervision of, a competent Consultant, whose name appears on the Trust ITC Register. The latter only applies when an ITC registered Consultant is training / assessing a colleague for entry onto the Trust ITC Register.
The following information MUST be recorded on the ITC Prescription Chart:
- Date and time.
- Name and signature of the Consultant / ST3 administering the ITC.
- Name and signatures of the two checkers.

N.B. The full signatures of ALL clinical staff involved in prescribing, dispensing, collecting, checking and administering ITC MUST be recorded in the allocated section of the ITC Prescription Chart.

6.14 Workload

The maximum number of children undergoing ITC under general anaesthetic in one operating session is twelve, unless exceptional circumstances prevail. The competent Consultant in charge of the operating list, whose name appears on the Trust ITC Register, must perform a risk assessment and document instances when this number is exceeded.

In the event of more patients than the maximum number (as stated above) requiring intrathecal chemotherapy, a review of the patients on the list must be undertaken involving all relevant clinical staff. This may result in patients being deferred to another scheduled list if clinically appropriate. The agreed maximum number of patients can only be exceeded if all relevant clinical and support staff agree and a formal risk assessment has been completed. The completed risk assessment form and associated documentation (contained in the risk assessment form) of this agreement must be retained for future review by the National Peer Review Team, as well as for local audit purposes.

An annual review of the number of intrathecal procedures will be undertaken by the ITC Lead. If it is projected that the number of procedures will exceed 500 per year, a risk assessment will be undertaken as per National Guidance.

6.15 Out of Hours

If a patient is late for their appointment, but their arrival is within normal working hours, there must be sufficient flexibility in the designated area’s working arrangements to enable their treatment to proceed. However, if a patient arrives for their planned ITC outside normal working hours i.e. between 9.00am and 5.30pm, Monday to Friday, excluding Bank Holidays then a new appointment must be made.

Only in the most exceptional circumstances e.g. the urgent treatment of central nervous system (CNS) leukaemia requiring emergency treatment, can ITC be given outside normal working hours. In these instances:

- There must be a clear clinical need for the procedure to be undertaken immediately and in these circumstances a Consultant, whose name appears on the Trust ITC Register, must clearly document in the patient’s medical notes the risk / benefit analysis that has led to their decision to treat the patient out of
hours / outside a designated area.

- Methotrexate 12mg is the ONLY preparation that can be prescribed and administered by an ITC Consultant outside normal working hours.
- A pharmacist, whose name appears on the Trust ITC register, must speak directly to the ITC Consultant ordering and administering the ITC, establishing that there is an absolute clinical need and ensuring that all details are completed on the ITC Prescription Chart. The pharmacist will then facilitate and document the supply of ITC using the cytotoxic chemotherapy on-call guidance documentation and the appropriate ITC SOPs.
- In instances when ITC is administered on the same day as intravenous cytotoxic chemotherapy the pharmacist MUST confirm that any intravenous cytotoxic chemotherapy, for the named patient, for that day, has already been administered i.e. by checking the patient’s medicine chart / chemotherapy administration chart.
- Duplicate copies of the ITC Prescription Chart MUST be kept in pharmacy, in line with standard procedure. On the next working day, the emergency duty pharmacist will inform the Intrathecal Chemotherapy Pharmacist or the ITC Senior Pharmacy Technician that an emergency intrathecal Methotrexate syringe has been issued. The ITC pharmacist or the ITC Senior Pharmacy Technician will ascertain if the ITC was administered and then verbally, or via Trust e-mail, notify the ITC lead of ITC administered outside normal working hours.
- The ITC will be delivered to the designated ITC administration point by the ITC Consultant and the administration of ITC MUST be supported by a competent Paediatric oncology / Adult haematology oncology nurse, whose name appears on the Trust ITC Register. Although administration will be in accordance with the Trust ITC Policy, all Health Care Professionals involved in dispensing, checking and administering ITC outside normal working hours MUST also confirm that the drug details on the manufactured drug label correspond to those on the dispensing label. N.B. Following issue from pharmacy, the expiry date will only facilitate administration, provided it is stored in accordance with the Trust ITC Policy.
- The ITC Consultant MUST notify the ITC Lead, in writing, of the details pertaining to the requirement for administration outside normal working hours, including the actions taken and the outcome. A copy letter is sent to the ITC pharmacist, who logs the letter in the ITC Master File. The ITC pharmacist and ITC Lead are responsible for monitoring the frequency of out of hours ITC administrations.

### 6.16 Giving an intrathecal in a non-designated area

ITC must only be administered with the designated areas which are

**Adult Haemato-oncology / Oncology**
- Ward 33 FRH (Intrathecal Chemotherapy Room)
- Ward 36 FRH (Intrathecal Chemotherapy Room)

**Paediatric Oncology**
- Children’s Theatres – New Victoria Wing RVI (20 or 21-25) (irrespective of the need for anaesthetic)
Only in exceptional circumstances may they be given outwith a designated area (e.g. ICU or radiology). This must be a clear decision that to move the patient or prolong anaesthetic for transfer would increase the risk to the patient. There must be a clear clinical need for the procedure to be undertaken immediately and in these circumstances a Consultant, whose name appears on the Trust ITC Register, must clearly document in the patient’s medical notes the risk/benefit analysis that has led to their decision to treat the patient outside a designated area.

- The ITC must be administered by an ITC Consultant and supported by a nurse on the ITC checker and a third checker who is experienced in doing this (senior theatre nurse).
- The ITC Consultant MUST notify the ITC Lead, in writing, of the details pertaining to the requirement for administration outside of designated area, including the actions taken and the outcome. A copy letter is sent to the ITC pharmacist, who logs the letter in the ITC Master File. The ITC pharmacist and ITC Lead are responsible for monitoring the frequency using a non-designated area.

6.17 Being prepared to challenge

All staff involved with the management of patients receiving ITC are actively encouraged to challenge colleagues, irrespective of their seniority, if:

- Policies and procedures are not being followed.
- The actions of an individual could increase the potential risk to a patient.

Challenging a colleague is not viewed adversely, but as an additional check to improve patient safety and reduce potential risks.

6.18 Error / Incident reporting

The ITC Lead Clinician and ITC pharmacist must be notified immediately of any error, incident or near miss associated with the prescribing, dispensing, checking or administration of ITC. These individuals are then responsible for:

- Undertaking a root cause analysis
- Recommending any changes necessary
- Oversees the implementation of any changes

**N.B. ALL** errors, incidents or near misses must be reported in line with Trust procedures (NuTH NHS Trust 2010b).
7 Training

Refer to section 6.3 on Education, Training and competency assessment

8 Equality and diversity

The Trust is committed to ensuring that, as far as is reasonably practicable, the way we provide services to the public and the way we treat our staff reflects their individual needs and does not discriminate against individuals or groups on any grounds. This policy has been appropriately assessed.

9 Monitoring Compliance

The Trust ITC lead is responsible for initiating the review of the Trust ITC Policy, which reflects the National ITC guidance. The Trust ITC policy will be reviewed bi-annually or more regularly if required. The Trust Lead Chemotherapy nurse, in collaboration with the Matrons, is responsible for ensuring that hard copies of the National ITC Guidelines and the Trust ITC Policy are kept up to date in all wards / departments (Section 2 & Appendix 1). An audit of documentation will be carried out during the life of this policy.

N.B The ITC pharmacist is responsible for co-ordinating the review and authorisation of all additional documentation that supports the administration of ITC within the Trust.

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<th>Standard / process / issue</th>
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10 Consultation and review

This policy has been produced by the Directorate of Pharmacy and Medicines Management in consultation with the Trust Intrathecal Chemotherapy designated lead.

11 Implementation (including raising awareness)

The ITC Lead Clinician and the main author of this policy will ensure that all staff working within Adult haematology and Paediatric Oncology are aware of this policy and liaise, as required, with the relevant individuals to ensure implementation.

12 References


13 Associated documentation


Injectable Medicines Policy
Medical Device Management Policy
Purple book Procedures for the prescribing, recording and administration of medicines
Medicine Policy - The Newcastle upon Tyne Hospitals NHS Foundation Trust

Appendix 1

Areas where hard copies of the Trust ITC policy and National Guidance can be found

Adult Haematology/Oncology
- Ward 33 FRH
- Ward 36 (Day unit) FRH
- Ward 34 FRH
- Ward 35 FRH
- Bobby Robson Clinical Trials Unit

Paediatric Oncology.
- Children’s Theatres – New Victoria Wing RVI
- Ward 4 GNCH
- Ward 14 Paediatric Oncology Day Unit GNCH

Pharmacy
- Pharmacy Production Unit RVI
- Pharmacy New Victoria Wing RVI (in cool store next to IT locker)
- NCCC Cytotoxic Dispensing Unit
Appendix 2

ADMINISTRATION OF INTRATHECAL CHEMOTHERAPY

Information for all staff working on Ward 33 FH, Ward 34 FH, Ward 36 FH, Ward 4 GNCH RVI, Ward 14 Day Unit GNCH Children’s Theaters New Victoria Wing RVI

As you will be aware, these are specialist areas that administer different types of chemotherapy via various routes. Due to the specialist nature of these clinical areas your involvement with chemotherapy will be minimal unless you have undertaken specialist training.

This Trust has strict policies to adhere to regarding the administration of Intrathecal chemotherapy.

The Administration of Intrathecal Drugs is a procedure that is performed in these specialist areas on a regular basis. There is a Trust policy relating to this procedure that is available in the Intrathecal Resource File held in the designated treatment rooms/theatres.

Under no circumstances will you be asked to perform any part of this procedure unless you have undertaken specialist training deemed competent and appear on the Trust ITC Register.

If you are asked to accept delivery of an Intrathecal drug from the pharmacy staff – you must refuse. Drugs may only be accepted for delivery by an competent doctor who’s name appears on the Trust ITC Register.

If you are asked to check an Intrathecal drug with a doctor – you must refuse.

If you are unsure about what to do please ask a member of the Nursing Team and they will be happy to help you.

Only competent nurses whose name appears on the Trust ITC Register will be able to check intrathecal drugs with a competent doctor. These nurses are listed on a register that is on the wall in the designated treatment rooms / theatres.
Appendix 3

ITC Prescription Chart life cycle flow diagram

IT Drugs prescribed for individual patients on designated form by Consultant / Reg.

Prescription collected by designated pharmacist

IT prescription clinically checked & signed by pharmacist

Worksheet generated
Records generated of all raw material batch numbers, aseptic processing methods & staff involved in preparation

IT prescription processed in the pharmacy production / cytotoxic unit

IT prescription signed by pharmacist at final check
White copy retained & reconciled with worksheet

RVI (paediatrics)
Drugs Dispatched to RVI-Victoria Dispensary

IT Drugs received in pharmacy, checked & stored as required in designated refrigerator

Designated pharmacist to check any IV drugs have been given. IT drug released from pharmacy by designated staff to doctor. Both sign prescription. Pink copy retained in main pharmacy

Yellow prescription & prepared IT drug taken to administration area. Drug checked by Nurse, Dr & Patient (Or representative) & prescription signed IT dose given & prescription signed by administering Doctor

Prescription filed in patients notes
Appendix 4

Appendix 4a

ITC Administration Procedure (Lumbar Puncture)

- Small Dressing Pack
- Sterile gloves
- Lumbar puncture needle (22G; 1.5 inches, 2.5 inches or 3.5 inches depending on patient size)
- X 1 green needle
- X 1 orange needle
- X1 10 ml luer lock syringe
- Sterile sample pot
- Mediwipes
- Sharps box
- Sterile towel
- Liquid soap / Handrub
- Intrathecal chemotherapy
- Betadine (Antiseptic solution, povidone-iodine 10% in aqueous solution)
- Elastoplast or OP-site spray and a small piece of cotton wool.

For procedures performed under local anaesthetic - 1% Lidocaine 10 ml

1. Remove watch and rings and wash hands and forearms thoroughly for one minute.

2. Dry hands on sterile paper towel.

3. Assistant to clean work surface / tray with Mediwipes and open dressing pack without touching the inside and place it onto the work surface.

4. Don sterile gloves being careful not to touch the outer part of gloves with your ungloved hand.

5. Assistant to open syringe and needles onto the sterile sheet and place Betadine in the container provided (for skin preparation).

6. Check that the patient is due for ITC chemotherapy by cross-checking against the patient’s treatment protocol / flowsheet in the medical notes.

7. Open ITC from its pharmacy packet and place on sterile sheet. Check ITC drug and dosage to be given from the ITC prescription chart and check the labelled syringe containing the ITC (Section 15 Trust ITC Policy). This must be checked by the Registered ITC Consultant / ST3 administering the chemotherapy together with the Registered Paediatric oncology / Adult haemato-oncology nurse and the senior theatre nurse, patient, relative or guardian.

8. Place the syringe containing the ITC on the sterile sheet.

9. When the patient is in the lateral supine position with the legs appropriately
positioned and the patient is ready for the procedure, (confirmed by the
anaesthetist if the patient is under a general anaesthetic); clean the skin twice
with the sterile gauze and Betadine from the dressing pack.

10 Clean excess Betadine from the patient’s skin.

11 Place a sterile towel or piece of gauze over the anterior superior iliac spine and
select the intravertebral disc that is perpendicular to the anterior superior iliac
spine.

12 If the patient is NOT having a general anaesthetic infiltrate the skin and disc
space with 1% Lidocaine.

13 Insert the lumbar puncture needle in this disc space until it is in the
cerebrospinal fluid (CSF) space.

14 Withdraw the stylet.

15 If CSF flows freely then have the assistant catch eleven drops in a sterile
universal container (sterile sample pot) for cyto spin analysis.

16 If the CSF does not flow, or flows with difficulty, reinsert the stylet and adjust the
lumbar puncture needle until the CSF flow is satisfactory.

17 Connect the syringe containing the ITC onto the end of the lumbar puncture
needle.

18 If the patient is under the influence of a general anaesthetic check with the
anaesthetist that they are happy for you to proceed with an injection of ITC.

19 Inject the ITC slowly into the CSF via the lumbar puncture needle.

20 After completion, withdraw the needle with syringe attached and have the
assistant straighten the patient’s legs. If appropriate, spray the skin with OP-site
spray and place a small piece of cotton wool over the site to minimise leakage,
or apply a dressing.

21 Dispose of the sharps from the work surface in the appropriate sharps bin/s and
clean the work surface.

22 The Registered ITC Consultant / ST3 must sign and date the ITC Prescription
Chart to confirm that the ITC has been given. The nurse checker and second
checker MUST also sign and date the ITC Prescription Chart to confirm their
role in the procedure (Section 15 Trust ITC Policy).

23 The Registered ITC Consultant / ST3 must write in the patient’s notes describing
the procedure performed and confirming the time and date.

24 Dispose of equipment in line with Trust guidelines / procedures (NuTH NHS
Trust 2010)
Appendix 4b
ITC Administration Procedure (Intraventricular (Ommaya) Reservoir)

- Small Dressing Pack
- Sterile gloves
- 25 gauge butterfly needle (e.g. 20 mm: 0.75 inch needle)
- X 1 green needle
- X1 10 ml luer lock syringe
- X1 10ml sodium Chloride 0.9% for injection
- Sterile sample pot
- Mediwipes
- Sharps box
- Sterile towel
- Liquid soap / Handrub
- Intrathecal chemotherapy
- Betadine (Antiseptic solution, povidone-iodine 10% in aqueous solution)
- Elastoplast or OP-site spray and a small piece of cotton wool.

For intraventricular procedure EMLA cream may be applied at reservoir site one hour prior to procedure

1. Remove watch and rings and wash hands and forearms thoroughly for one minute.

2. Dry hands on sterile paper towel.

3. Assistant to clean work surface / tray with Mediwipes and open dressing pack without touching the inside and place it onto the work surface.

4. Don sterile gloves being careful not to touch the outer part of gloves with your un gloved hand.

5. Assistant to open syringe and needles onto the sterile sheet and place Betadine in the container provided (for skin preparation).

6. Draw up 2ml Sodium Chloride 0.9% for injection, remove green needle. Dispose of green needle in sharps box.

7. Check that the patient is due for ITC chemotherapy by cross-checking against the patient’s treatment protocol / flowsheet in the medical notes.

8. Open ITC from its pharmacy packet and place on sterile sheet. Check ITC drug and dosage to be given from the ITC prescription chart and check the labeled syringe containing the ITC (Section 15 Trust ITC Policy). This must be checked by the Registered ITC Consultant / ST3 administering the chemotherapy together with the Registered Paediatric oncology / Adult haemato-oncology nurse and the senior theatre nurse, patient, relative or guardian.

9. Place the syringe containing the ITC on the sterile sheet.
10. When the patient is positioned appropriately, and the patient is ready for the procedure, remove EMLA cream if used; clean the skin twice with the sterile gauze and Betadine from the dressing pack.

11. Clean excess Betadine from the patient’s scalp.

12. Place a sterile towel or piece of gauze below the site of the Ommaya reservoir.

13. Using a 25-gauge butterfly needle insert the needle in to the centre of the reservoir. Ideally, the precise position of entry should be varied between successive punctures.

14. Using a 10ml syringe withdraw the volume of fluid to be injected into the reservoir (i.e. total volume of drug/s plus 2ml Sodium Chloride 0.9% for injection flush), slowly from the reservoir, over 2 minutes prior to drug/s administration. In total no more than 10ml of CSF should be removed at any one procedure.

15. Eleven drops of CSF should be collected in a sterile universal container (sterile sample pot) for cytospin analysis.

16. Connect the syringe containing the ITC onto the end of the butterfly needle. ITC is administered over 30 seconds to 60 seconds (depending on volume). When more than one ITC is given during the same procedure (e.g. when using triple therapy) no flush is required between ITC.

17. When all required ITC have been delivered, flush the reservoir with 2ml of Sodium Chloride 0.9% for injection to ensure ITC has reached the ventricles.

18. While the Sodium Chloride 0.9% is being injected and near completion withdraw the butterfly needle with syringe attached. If appropriate, spray the skin with OP-site spray or apply a dressing.

19. Dispose of the sharps in the appropriate sharps bin/s and clean the work surface.

20. The Registered ITC Consultant / ST3 must sign and date the ITC Prescription Chart to confirm that the ITC has been given. The nurse checker and second checker MUST also sign and date the ITC Prescription Chart to confirm their role in the procedure (Section 15 Trust ITC Policy).

21. The Registered ITC Consultant / ST3 must write in the patient’s notes describing the procedure performed and confirming the time and date.

22. Dispose of equipment in line with Trust guidelines / procedures (NuTH NHS Trust 2010)
14 APPENDIX 5
Dilution and labelling of Vinca Alkaloids for intravenous use

Dilution
To reduce the risk of inappropriately administering Vincristine and other Vinca Alkaloids via the intrathecal route, and in order to comply with current National ITC guidelines the following rules apply:

<table>
<thead>
<tr>
<th>Ward</th>
<th>Presentation of Vinca alkaloids</th>
</tr>
</thead>
</table>
| Ward 4 RVI Paediatric Oncology Day Unit (PODU/14DU) | **Vincristine**  
Doses equal to or less than 1mg diluted to a 0.1mg/ml (100micrograms/ml) solution, or to a final volume of 10ml, presented in a syringe.  
Doses greater than 1mg diluted to a final volume of 20ml presented, in a syringe.  
**Vinblastine, Vindesine and Vinorelbine**  
Diluted to a final volume of 20ml presented in a syringe. |
| Ward 33 FRH | Doses of Vincristine, Vinblastine, Vindesine and Vinorelbine must always be added to a 50ml minibag of Sodium Chloride 0.9% Injection |
| Ward 34 FRH |  |
| Ward 35 FRH |  |
| Ward 36 FRH |  |
| Bobby Robson Clinical Trials Unit |  |

Note: The recommended presentation of vinca alkaloid treatment is not based on the age of the patient, but on where treatment is given. This may result in some patients having vinca alkaloids diluted in different ways on some occasions.

Labelling
The labels for Vinca Alkaloids and drugs with similar life threatening consequences, MUST also clearly warn of the consequences of administration by other routes e.g. “For Intravenous Use Only - fatal if given by other routes”.

Exception: Presentation of Vinca alkaloids outwith National ITC Guidelines
The only exceptions to the above presentation requirements is where:

1. Combination chemotherapy of doxorubicin/vincristine is required in a number of regimes for example VAD, EPOCH and C-VAD.

Doxorubicin and vincristine will be combined and presented in an elastomeric infusion for intravenous administration. The required dose/volume of each drug will be further diluted with glucose 5% or sodium chloride 0.9% and the elastomeric infusion will contain a final volume of 48ml to be administered intravenously over 96 hours.

2. Vincristine is given as an infusion over 24 – 96 hours as required within specific protocols.
Vincristine will be diluted to a suitable volume which must be greater than 20ml and presented in a syringe or elastomeric device.

As for other vinca alkaloid presentations, elastomeric infusion devices or syringes for infusion containing vinca alkaloids **MUST** also be labelled to clearly warn of the consequences of administration by other routes e.g. “For Intravenous Use Only - fatal if given by other routes”.
# Register of Those Accredited for Nursing Aspects of Intrathecal Chemotherapy

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<thead>
<tr>
<th>NAME</th>
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<td>Jane</td>
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<td>Girlie-May</td>
<td>Bencito</td>
<td>Staff Nurse</td>
<td>√</td>
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<td>Collins</td>
<td>Sister</td>
<td>√</td>
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<tr>
<td>Dot</td>
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<tr>
<td>Amanda</td>
<td>Henderson</td>
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<td>Shepherd</td>
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✓ = authorised, × = not authorised

Register Created By: Denise Blake, ITC Pharmacist

Register Authorised By: Prof Graham Jackson, Trust ITC Lead
### Register of Those Accredited for Nursing Aspects of Intrathecal Chemotherapy

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<td>Dr Geoff Shenton</td>
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<td>Christina Johnson</td>
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<td>Sharon Phillipson</td>
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<td>✓</td>
<td>Aug-18</td>
<td>Dr Geoff Shenton</td>
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✓ = authorised, X = not authorised

Register Created By: Denise Blake, ITC Pharmacist

Register Authorised By: Prof Graham Jackson, Trust ITC Lead
Register of Those Accredited for Medical Aspects of Intrathecal Chemotherapy

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<td>SpR</td>
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<tr>
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<td>Jackson</td>
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✓ = authorised, X = not authorised

* SpR also on the register for Paediatric oncology between the following dates:

Register Created By: Denise Blake, ITC Pharmacist

Register Authorised By: Prof Graham Jackson, Trust ITC Lead
### Register of Those Accredited for Medical Aspects of Intrathecal Chemotherapy

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## Register of Those Accredited for Pharmacy Aspects of Intrathecal Chemotherapy

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