Guideline for safe administration of Chemotherapy for malignant disease in Paediatrics

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Key Amendments

Date	Amendment	Approved by
February 2019	No first dose sentence removed. First doses given now	Paediatric QI
19th Nov 2020	Document extended for 1 year	Dr J West/Paediatric QIM
26th March 2021	Approved with no amendments	Paediatric QIM
9th Feb 24	Approved with no changes	Paediatric Guideline Reivew

Introduction

All paediatric oncology/haematology patients cared for within WAHT receive shared care as part of a formal arrangement with Birmingham Children's Hospital (BCH).

Chemotherapy treatment will only be administered at Worcestershire Royal Hospital in line with BCH established protocols.

The principles of care will follow guidance from BCH. Many of the principles within this guideline have been adapted from the BCH guidance – to ensure practice is consistent wherever the patient is cared for – grateful thanks are extended to BCH for this. There are also some areas of care which it is unlikely that WAHNHST will be asked to provide locally but for which we feel it is important to provide guidance. Practitioners are advised to refer to the West Midlands Paediatric Oncology Supra Network Guidance available from BCH for any areas of care not covered in this document.

The purpose of this guideline is to protect patients, their families and staff by defining safe working practices within Worcestershire Acute Hospitals NHS Trust. Paediatric chemotherapy is not administered at the Alex or Kidderminster hospitals. It can however be administered by appropriately trained personnel in a community setting e.g. family homes/schools by Orchard Service Community Childrens Nurses.

Orchard Service Community Children's Nurses are covered by this guideline for the administration of cytarabine IV bolus injections provided they have undertaken the West Midlands Paediatric Oncology Supra Network Group recognised 'low risk' regime training or are covered by the exemption as outlined in the DH (2009) Children's Cancer Measures. This consists of:

- Obtaining competence to administer drugs via a CVL/Vascuport
- Undertaking the DVD training (obtainable from the CLIC Lead Cancer Nurse for Children and Young People)
- Clinical Practice observed by a competent member of the team

Pregnancy/Breast Feeding

- WAHT recognises that expectant mothers and those who are returning to work whilst continuing to breastfeed their babies may have concerns regarding the administration of chemotherapy and caring for patients who have received chemotherapy. It is recommended that individual situations are discussed with the Children and Young People's Lead Cancer Nurse or nominated deputy.

Staff Training

All staff administering chemotherapy to children must have completed the West Midlands Paediatric Oncology Supra Network group approved competency based training programme (as mentioned above) or be covered by the exceptions for the administration of anti-cancer drugs (defined in the DH (2009) Children's Cancer Peer Review Measures) and work within professional and local guidelines and protocols for the checking and administration of both the prescription and the drugs (BCH 2015b).

Only POSCU nurses who have been assessed as competent by completing the West Midlands Paediatric Oncology Supra Network approved training programme or who are covered by the exemptions outlined in the DH Children's Cancer Peer Review Measures (2009) may administer cytotoxic drugs.

NB: All chemotherapy should be checked by 2 nurses who have completed the relevant staff training as specified above. There will be some occasions where nurses who are undergoing training will act as 'a third checker' – these nurses should always be supervised by another nurse who has undergone the relevant training.

The Lead POSCU Paediatrician and the Deputy Lead POSCU Paediatrician are the only members of the Medical team at WAHT who are able to administer cytotoxic chemotherapy. This is not routinely required however may be done provided the "Low Risk" Chemotherapy Training for one specific drug group e.g. the administration of intravenous bolus vinca-alkaloids has been completed or the exemption in the DH (2009) Children's Cancer Measures applies.

Consent

Verbal consent from parent/carer (with parental responsibility) should be obtained prior to the administration of any chemotherapy drug. This verbal consent should include ensuring that the child/family understand the drug administration procedure, the effects and side effects of the drug to be administered. Written informed consent is obtained at BCH prior to treatment commencing – this consent covers the administration of all drugs within the protocol wherever they are administered (BCH, community or at a designated POSCU)

Prescribing

The decision to treat a child/young person with chemotherapy is ***ALWAYS*** taken by a paediatric oncologist/haematologist at BCH.
All initial courses of chemotherapy are prescribed at BCH.
All chemotherapy is to be prescribed by the POSCU Lead Paediatrician, Deputy Lead Paediatrician or the Children and Young People Lead Cancer Nurse. These prescriptions should then be checked and authorised by a pharmacist (as per the WAHT aseptic SOP).
In the very rare event that the Lead Clinician is asked to prescribe off protocol drugs by the Principal Treatment Centre, it will only be done in accordance with local policies and under the strict supervision of BCH.

Treatment Records

The DH (2009) Quality Measure for Children's Cancer Services (09-7C-131) states that the following criteria should be available in treatment records prior to each cycle of chemotherapy:

- The results of essential serial investigations applicable to that cycle (and prior to an administration within a cycle, if applicable);
- Any dose modifications and whether or not they are intended to be permanent;
- Any cycle (or administration delays);
- Any introduced support drugs not previously recorded

The DH (2009) Quality Measure for Children's Cancer Services (09-7C-130) also states that the following should be contained within treatment records prior to starting a course of chemotherapy:

- Patient's identification
- Weight, height, surface area

- Cancer type
- Regimen and doses (including all cytotoxic chemotherapy drugs to be used and elective essential supportive drugs other than antiemetics); trial name or number if applicable
- Route of administration (oral, IV, IV Infusion, IM, SC)
- Number of cycles intended
- Frequency of cycles and of administration within a cycle
- Investigation necessary prior to starting the whole course
- Investigation to be performed serially during the course (to detect / monitor both toxicity & response) and their intended frequency
- Planned attendances managed by agreed non-medical staff, for example, nurse-led attendances
- Site of administration (PTC, POSCU, Community)

N.B. The DH (2009) Quality Measures for Children's Cancer Services provides the following definitions of treatment duration:
A course – a complete period of treatment. E.g. UKALL 2003 would be described as a course of treatment.
A cycle – Drugs, either singly or in combination, given as in a repeated pattern. E.g. 12 week maintenance cycles within UKALL 2003
An administration – the separate occasions when drugs are given within a cycle

If WAHT does ***NOT*** administer the initial courses of chemotherapy, it is considered that all of the above information is contained within the child's notes at the PTC. The following should however be kept in POSCU medical notes:

- Patient's identification
- Weight, height, surface area
- Cancer type
- Treatment regimen – with clear indications for those cycles to be administered at WAHT

Pre Chemo Clinical Investigations

WAHT follows guidance from BCH regarding the specific laboratory tests and other investigational parameters that should be completed locally prior to chemotherapy administration. Individual patients will have specific information in their medical notes. The following guidance from BCH (2015b) can be used as a guide:

'Before a course of chemotherapy to be given by any route the patient must be clinically assessed to ensure:

- Haematology parameters, particularly neutrophil and platelet counts are sufficient for treatment to proceed.
- Clinical chemistry parameters, appropriate to the treatment and as set out in the treatment protocol, are sufficient for the treatment to proceed.
- Any other investigations e.g. renal function, audiology or cardiology, that impact on whether the treatment can be given and/or at what dose, have been performed, reported and reviewed.
- Investigations listed on the front of prescriptions or as detailed in the clinical trial protocol or national guideline.
- The patient is clinically well.

(BCH 2015b)

Administration

All Paediatric chemotherapy is administered in the designated haematology/oncology session in Children's clinic at Worcester Royal Hospital. All chemotherapy should be administered within the hours of 0900 – 1700 Monday – Friday (normal working hours).

Area for Administration

The designated area for administration of outpatient chemotherapy is in the 4 bedded bay in Children's clinic or a clinic consulting room that has been designated as the isolation cubicle on the day by the nurse in charge of the clinic area.

Any area which is to be used for chemotherapy administration should have the following available:

- The appropriate regimen details for the regimen that is to be administered
- Emergency bell/telephone
- Resuscitation equipment
- Drugs for the management of emergencies – cardiac arrest and anaphylaxis
- Extravasation kit
- Cytotoxic spillage kit
- Access to running water
- Disposal equipment e.g. appropriate sharps bins
- Copies of relevant policies and procedures

On the days that IV chemotherapy is being administered, the designated area will only be used for this purpose or other outpatient or day care clean treatments or procedures as specified by the nurse in charge

The only exception to this is if a child is admitted as an in patient but is considered medically fit to receive their IV bolus cytarabine or oral chemotherapy which would normally be administered at home by the Orchard community children's nursing service or parents. In this situation the child may continue to receive their chemotherapy from appropriately qualified members of the nursing team or parents may self medicate oral chemotherapy.

NB These may be scheduled to be administered over the weekend and can therefore continue to be given although they are being administered outside of 'normal working hours'.

Collection From Pharmacy

Prior to commencing a POSCU clinic, a designated member of the POSCU team will collect all chemotherapy needed for the clinic from the aseptic suite at WRH. This will then be stored in the appropriate areas in Children's Clinic prior to administration. If in exceptional circumstances the planned chemotherapy is to be administered on the ward, special instructions for storage will have been discussed with the Children and Young People's Lead Cancer Nurse or the Lead Clinician for the POSCU service.

Storage

All chemotherapy to be administered in children's clinic should be stored in the medicines room adjacent to the 4 bedded bay area prior to its administration. IV chemotherapy and oral medicines to be dispensed for administration at home will be collected from pharmacy immediately ahead of the Lead Clinician's oncology/haematology clinic.

Any oral medications that families bring into WRH from home for administration when children are inpatients (as detailed above) should be stored in a separate clearly labelled box inside the locked self medication cupboard in the drugs room on Riverbank ward

Pre filled cytarabine syringes (dispensed from BCH) that families bring into WRH for administration (as detailed above) should be kept with the child/family in their isolation cubicle and administered asap after being brought onto the premises. Families should be encouraged to take any additional cytarabine doses home on a daily basis.

PPE

WAHT has decided to follow BCH guidance regarding the use of Personal Protective Equipment (PPE) when administering chemotherapy. It is considered that this will prevent confusion for children and their

families by ensuring that practice is consistent wherever they receive their chemotherapy (PTC or POSCU). PPE should therefore be worn by *ALL* staff involved in the handling/administration of paediatric chemotherapy (administrator/checker) as follows:

- Gloves should be worn when handling pre prepared chemotherapy injections or closed bottles of oral chemotherapy – tablets, capsules or suspensions (Staff are reminded that it is possible for chemotherapy to have contaminated the outside of it's container – care should therefore be taken at all times).
- Gloves, Armlets, Safety glasses and a plastic apron should be worn when preparing/administering chemotherapy to patients. **(BCH 2016a)**

Prior to Administration

Prior to commencing the chemotherapy checking; the responsible nurse collects all of the relevant documents and information needed to complete the check. These will include, but may not be limited to:

- Patient's prescription sheet
- Patient's individual protocol sheet from their medical notes
- Protocol
- A written or verbal instruction that the patient is fit to receive their chemotherapy

The administering nurse and the second checker are then able to confirm the dose prescribed with the protocol and check any anomalies with the prescriber prior to commencing administration.

Following the decision to proceed, the administering nurse and the second checker obtain the chemotherapy from the locked cupboard/fridge (checking that the drugs have been correctly stored). The drugs are then checked individually by each administering nurse against the prescription to verify that the patient name, date of birth, hospital number, name and dose of drug are all correct. Both nurses then repeat the checks verbally together.

Following the correct procedure for administering drugs via the chosen route (peripheral or central), the administering nurses can then proceed to the patient bedside where a final verbal check of the following is made with the patient (or their parent/carer if child is too young to provide information);

- Name
- Date of birth
- Address
- Expected treatment
- Allergies

NB: All chemotherapy should be checked by 2 nurses who have completed the relevant staff training as specified above (or 1 nurse who has completed the relevant training and the lead clinician). There will be some occasions where nurses who are undergoing training will act as 'a third checker' – these nurses should always be supervised by another nurse who has undergone the relevant training.

Venous Access

Intravenous chemotherapy can be administered via central venous line or peripheral cannula. If the nurse administering the chemotherapy is not assessed as competent to cannulate children, the cannula may be sited by a medic prior to the administration. All practitioners involved should ensure there is minimal delay between the siting of the cannula and the commencement of the chemotherapy administration. Cannula patency should always be checked by ensuring that blood can be easily obtained. If there is any doubt over the patency of the cannula, it should not be used and a new cannula sited.

The administering practitioner must ensure appropriate venous access with regards to:

- site
- position
- patency
- integrity
- visibility

Use of aseptic non-touch technique, observation of universal precautions and product sterility are required in all intravenous procedures**.**

(BCH 2015b)

Devices should be placed in the peripheral veins in the arm but may also be placed in the veins of the hand or foot.

The smallest, shortest gauge cannula should be used; it has been shown that the incidence of vascular complications increases as the ratio of cannula external diameter to vessel lumen increases (BCH 2015b).

Vesicant drugs should be given via a newly established cannula wherever possible. The practitioner should sit with the patient and deliver a slow bolus manually using a regular flashback technique.

Centrally inserted devices should also be checked for patency by obtaining a 'flash back of blood'. Further information regarding the use of centrally inserted lines and ports in children can be found in WAHT-PAE-035 and WAHT-PAE-029 guidelines. These are both available on the trust intranet. Patency should be re-checked during administration of every few millilitres during the administration of a vesicant using the flashback technique.

Intravenous bolus injections should be given SLOWLY, over approximately 5 minutes.

Luer-lock syringes must be used for the bolus administration of all intravenous chemotherapy.

Prior to administration the patient should be advised of possible local or systemic adverse events and asked to immediately report any that occur.

(BCH 2015b)

Observation of a peripheral administration site should be maintained at regular intervals. Signs of infiltration, extravasation must be addressed immediately as outlined in this guideline.

Reasons To Stop Administration Of Cytotoxic Drugs

Cytotoxic drugs can be administered via a variety of routes. Regardless of the route of administration practitioners should **STOP** if:

- The patient or their parent/carer requests the treatment to stop. In the case of a child too young to be competent to give consent the nurse must assess the reasons for the child requesting the treatment to stop, e.g. painful cannula. If after thorough assessment there is no obvious reason to stop treatment should be continued with appropriate reassurance to the child and ongoing vigilance for a problem developing.
- The patient demonstrates unexpected side effects or complications which are not routinely managed with planned supportive care, particularly signs of hypersensitivity reaction or anaphylaxis.
- The equipment fails to function effectively or as expected.

(BCH 2015b)

Reasons Not To Start Administration Of Cytotoxic Drugs

Cytotoxic drugs can be administered via a variety of routes. Regardless of the route of administration ***DO NOT START*** administration if:

- The environment in which treatment is being administered is deemed unsafe.
- There is any doubt regarding the stability of the drug, route and method of administration, expiry, drug dosage, pre-treatment investigations or the prescription is in any way unclear as to what is required.
- There is any doubt regarding the integrity of the venous access device being used**.**

(BCH 2015b)

Spillage

A spillage kit is available in Children's Clinic and the Children and Young People's Lead Cancer Nurses office. There is also a spillage kit in the dirty utility room on Riverbank Ward should there be a large spill of cytotoxic body waste. The contents should be used as directed to handle any cytotoxic spills however small.

PPE as for the preparation of chemotherapy should be worn**.**

All staff must take reasonable precautions to avoid spillage.

The advice below is taken from BCH (2012) 'Procedure for the management of spillage of cytotoxic drugs' further information can be obtained from the Children and Young People's Lead Cancer Nurse or her nominated deputy.

Protective clothing must be worn at all times when handling cytotoxic drugs.

Any spill, however small, must be dealt with as a matter of urgency.

Any spill, however small, must be 'cordoned off' in a way that prevents other staff, parents, visitors and patients coming into contact with the spillage.

No spill should be left unattended.

ALL spills of cytotoxic drugs must be reported as a clinical incident.

Any clothing which becomes contaminated should be removed from the patient, visitor or member of staff as quickly as possible and treated as soiled linen.

Any person whose clothing becomes contaminated should be bathed or showered at the earliest opportunity paying particular attention to the area below where the contamination occurred, unless it is *CERTAIN* that the contamination did not penetrate the clothing and contact the patient's skin.

Any clothing (e.g. theatre gown), bed-linen or other fabric material belonging to the **Trust** that becomes contaminated should be removed as soon as possible and treated as soiled linen.

If any clothing, bed-linen or other fabric material belonging to the **patient** or their family becomes contaminated the material should be treated as soiled linen until it can be washed. A cycle appropriate to the fabric being washed should be used but the washing machine should NOT be run on a 'half-load' setting since this reduces the amount of water used. While the washing machine is running it should be labelled as containing cytotoxic-contaminated materials and once the patient's materials have been removed it should be run through a complete cycle empty as a flushing procedure.

Procedure for Contamination of Other Materials

If a cytotoxic spillage occur in the patient's bed area it is possible that other materials will be contaminated.

If these are of a non-porous nature e.g. a plastic toy, gross spillage should be dealt with as above. The item should then be placed in a plastic bag and washed at the earliest opportunity. This should be done away from other staff and visitors ensuring that the appropriate protective clothing is used.

If the contaminated items are porous, for example a soft toy, gross spillage should be dealt with as above. Parents/carers should then be informed that it is impossible to ensure that all contamination has been removed and that the safest thing to do would be to destroy the item.

If parents/carers are agreeable to the destruction of the contaminated item it should be dealt with as contaminated waste according to WAHT policy.

If parents/carers are unwilling to allow the item to be destroyed it should be placed in a plastic bag and returned to them. They should be asked to remove the item from the ward at the earliest opportunity and also to sign a statement that they have been advised to destroy the item.

(BCH 2012)

Handling Body Waste

When caring for young children who are receiving chemotherapy, it is important to remember that they may not be continent or be unable to anticipate vomiting. It could therefore be the responsibility of nursing staff and/or parents/carers to dispose of their body waste. In doing so, it is important to recognise that chemo-therapeutic drugs and their metabolites may be excreted in urine and faeces both during treatment and for some days after the administration of treatment is completed. Drugs may also be present in vomit, saliva and tears.

The following is taken from BCH guidance and is therefore the same information that parents receive: **(BCH 2016c)**

Clinical Samples

Any clinical sample consisting of fluid (e.g. blood, urine, saliva) or faeces taken from a patient identified as having received chemotherapy, should be considered as being potentially contaminated with cytotoxic drugs and/or their metabolites.

Since the volumes of clinical samples will generally be small (less than 10ml.) the amount of cytotoxic drug present will also be small.

Standard techniques for taking samples, which aim to avoid or reduce the risk of contamination of the sample or contact by healthcare staff, will also protect against contact with cytotoxic drugs or metabolites.

All staff taking or handling clinical samples from patients should wear gloves.

ALL clinical samples obtained should be placed and sealed into the appropriate container AT ONCE. If for practical purposes this is impossible, the samples should be transferred and sealed at the earliest opportunity.

Body Waste

All staff handling body waste from patients identified as having received chemotherapy in the previous 7 days should wear gloves, eye protection and a plastic apron.All body waste, including but not limited to urine, faeces and vomit, should be disposed of as soon as possible to avoid the risk of any spillage.

Any testing required should be done as soon as possible to minimise the period of storage and the sample disposed of in the correct manner once testing has been done.

Any spillage during storage or disposal should be managed according to the appropriate policy.

Advice for Parents

Advice regarding the administration of oral chemotherapy at home will have been given to parents/carers by BCH during their initial assessments. Copies of this information can be found in BCH 'Guidelines for the administration of chemotherapy for malignant disease' - a copy of which is available in Children's Clinic or on Riverbank Ward.

(BCH 2015b)

Management Of Possible Complications

As with any drug administration, chemotherapy has the potential to cause side effects/complications. It is therefore important that staff have an awareness of the most common complications; how to manage them locally and when to refer to BCH for specialist support.

Neutropenic Sepsis

Individuals receiving chemotherapy have weakened immune systems. This places them at increased risk of life threatening complications from infections. It is therefore important that they have rapid access to appropriate medical advice/support.
All children and young people who are receiving care from WAHT POSCU team have 'open access' to Riverbank children's ward. They are therefore able to access medical assessment 24 hours/day, 7 days/week.

When a child/young person presents to the ward and neutropenic sepsis is suspected, they are commenced on the 'CARE PATHWAY for Children and Young Persons with Febrile Neutropenia, Neutropenic Sepsis or Suspected Central Venous Line Infections' (CP-PAE-001).

Blood Products

It is not unusual for children/young people with cancer to need occasional blood product support during their treatment. Guidance on the use of blood products in paediatrics is available from the Paediatric blood transfusion policy (WAHT-PAE-068).

Nausea/Vomiting

WAHT follows the guidance provided by BCH 'guideline for the management of chemotherapyinduced Nausea and Vomiting' – a copy of which is available in Children's Clinic or on Riverbank Ward.
(BCH 2016b)

Extravasation

Prevention

The following guidance should be followed to ensure the risk of extravasation is minimised:

- Cytotoxic drugs should only be administered by appropriately trained, competent personnel.
- Vesicant drugs should be administered via a central line or vascuport whenever such a device is available.
- Where a peripheral route must be used the injection or infusion should be through a newly-sited cannula or a peripheral long line. Venepuncture near joints should be avoided. The most vesicant drugs should be administered first.
- The positioning and patency of a central line or Vascuport should be checked before the administration of any cytotoxic drug, by bleeding and flushing the line. If a line or lumen does not sample, advice should be sought from the Children and Young People's Cancer Nurse or Lead/Deputy Lead POSCU Paediatrician.
- Dressings should be taken down from a peripheral line and blood drawn back before and during administration and the site observed for signs of swelling or leakage. If in doubt about patency **STOP ADMINISTRATION** and seek advice from the Children and Young People's Cancer Nurse or Lead POSCU Paediatrician. Keep infusion site exposed so that regular monitoring can be performed during drug administration.
- The vein should always be flushed with a compatible fluid after administration of drug.

(BCH 2009)

There is an extravasation kit available in Children's Clinic treatment room that can be used for the immediate management of cytotoxic extravasation (following discussion with BCH).
However in line with BCH policy, any children/young people with extravasation injuries should be reviewed by a plastic surgeon as soon as possible. **Children/Young People who receive any such injury within WAHT should therefore be referred to BCH immediately.**

Anaphylaxis

Anaphylaxis should be treated as per the trust anaphylaxis policy (WAHT-ANA-012). Any suspected allergic reaction should be reported to the child/young person's BCH consultant as soon as possible. Any change in drug regime/doses will be directed by BCH.

Diarrhoea

WAHT follows the guidance provided by BCH 'guideline for the prevention and management of chemotherapy and radiotherapy induced diarrhoea' - a copy of which is available in Children's Clinic or on Riverbank Ward. (BCH 2012b)

Mouthcare

All children who have received chemotherapy should have their mouth checked daily during inpatient admissions. Any concerns should be reported to the Children and Young People's Cancer Nurse or the POSCU Lead Paediatrician. Any mouth care advice given will be in line with the UKCCSG-PONF (2006) evidence based 'Mouthcare for Children and Young People with Cancer' guidance - a copy of which is available in Children's Clinic or on Riverbank Ward.

REFERENCES

- BCH (2009) *Extravasation Policy* Extravasation Working group, Birmingham Children's Hospital, Birmingham
- BCH (2012a) *Policy for the management of spillage of cytotoxic drugs.* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (2012b) *Guidelines for the prevention & treatment of chemotherapy induced diarrhoea* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (2015a) *Policy on the handling of chemotherapy by staff who are pregnant* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (2015b) '*Guidelines for the Administration of Chemotherapy for Malignant Disease*' Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (20106a) *Policy for the use of Personal Protective Equipment when handling chemotherapy, spillage of chemotherapy, body waste and /or clinical samples from patients receiving chemotherapy.* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (2016b) *Guideline for the management of chemotherapy induced nausea and vomiting.* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- BCH (2016c) *Policy for the management of body waste and clinical samples from patients receiving cytotoxic drugs.* Chemotherapy working group, Birmingham Childrens Hospital, Birmingham
- DH (2009) *Childrens Cancer Peer Review Measures* National Cancer Peer Review-National Cancer Action Team, London
- WAHT (2009) *Pharmacy chemo checking SOP* Aseptic Suite, Worcestershire Royal Hospital