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ONCOLOGY AND HAEMATOLOGY TREATMENT CENTRE
Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy

Guidelines For
The Safe Delivery of Systemic Anti-Cancer Therapy
NHS Borders

EVIDENCE BASED REVIEW

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Abstract
Systemic Anti-Cancer Therapy (SACT) includes cytotoxic agents and biological therapies. Cytotoxic therapy is known to be potentially carcinogenic and mutagenic and is defined as hazardous by the Control of Substances Hazardous to Health regulations 2002. (COSHH).
These guidelines are written to promote the safe delivery of SACT throughout NHS Borders and are based upon current evidence and recognised best practice.
While written primarily for use in the cancer setting the use of these drugs in non cancer settings should be consistent with the processes and practice identified within this guidance.
The guidelines have been adapted from previous versions and from the Edinburgh Cancer Centre guidance.

Date reviewed: March 2014
Reviewer: Judith Smith

REVISION HISTORY

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ONCOLOGY AND HAEMATOLOGY TREATMENT CENTRE
Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy

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Introduction

Cytotoxic Therapy is known to be potentially carcinogenic and mutagenic and is defined as hazardous by the Control of Substances Hazardous to Health regulations 2002. (COSHH) The risks to those receiving treatment with cytotoxic therapy is well recognised and weighted against clinical benefit. The risk to healthcare workers through occupational exposure, although less clear, is sufficient to indicate that all necessary measures be implemented to prevent and minimise risk from exposure.

Aim

To promote the safe delivery of Systemic Anti-Cancer Therapy (SACT) in all care settings and minimise risk to all staff involved in the preparation, dispensing, transportation, administration and disposal of SACT.

Scope

SACT encompasses cytotoxic chemotherapy agents and biological therapies. The guidance within this document is written primarily to promote the safe use of these agents in cancer conditions. However it is recommended clinical governance and risk management arrangements for non cancer indications should be consistent with this guidance.

It does not cover intrathecal chemotherapy (refer to NHS Borders policy for intrathecal chemotherapy) or hormonal therapies.

These guidelines are intended to promote the safe use of SACT in all care settings, including the patient’s home.

General Principles

- NHS Borders Control of Medicines Code of Practice must be followed regarding the prescribing and administration of SACT.
- SACT should only be administered in designated areas by staff who have undergone training in the safe handling and administration of these agents, otherwise advice should be sought from pharmacy or the Oncology Nurse Team.
- SACT should be administered, wherever possible, during 0900hrs-1700hrs Monday to Friday.
- Personal Protective Equipment must be used as advised in the document.
- Parenteral chemotherapy is not dispensed out of hours.

1. Clinical Governance, Quality and Risk Management.
Clinical Governance
The identified lead clinician for SACT is responsible for ensuring compliance with current legislation, national standards and guidelines.

The Borders Chemotherapy Group (BCG) will support the lead clinician and is NHS Borders primary source of advice on issues relating to the provision of chemotherapy services and delivery of Systemic Anti-Cancer Therapy (SACT).

The group will aim to ensure that chemotherapy services are safe, high quality, effective and equitable in line with best practice nationally and regionally.

Reporting Structure and Communication:
The BCG will report to Lead Cancer Team and Borders General Hospital Clinical Governance Committee.

Designated members from BCG will represent NHS Borders on the South East Scotland Cancer Network (SCAN) Chemotherapy Group and Lothian Cancer Therapeutics Advisory Committee (CTAC).

Quality
NHS Borders will participate in the SCAN regional audit programme which will include external peer review from another cancer network.

Action plans with priorities, timescales and responsibilities will be generated from the audit process and monitored via the BCG.

Risk Management
Incidents
All incidents actual or near misses must be reported on Datix and managed in line with NHS Borders Incident Management Policy.

In addition Datix reports are reviewed at the BCG and also fed in to the Lothian CTAC to enable shared learning.

30 Day Mortality
Deaths occurring with 30 days of administration of SACT are...
• Notified to the responsible consultant by chemotherapy nursing team
• Documented by chair of the BCG
• Reviewed at the next BCG meeting
• Outcome from BCG meeting documented and filed in BGH casenotes
• Copy of discussion and outcome sent to responsible Consultant
• Haematology are reviewed in Lothian M&M as well as locally
• BCG will assume responsibility for ensuring any actions required are documented and completed
• Chair of BCG will provide an annual summary of 30 day deaths for BCG and subsequent reporting structure

2: Education and Training
All staff involved in SACT require appropriate skills, knowledge and training in their field of practice

Evidence of education, training and competency must be documented in the staff training record and be available for audit purposes when required.

Nursing Staff Borders Macmillan Centre Chemotherapy Day Unit
All nursing staff with substantive posts in the Borders Macmillan Centre Chemotherapy Day Unit must have completed training outlined in the induction and training pack and undertake an annual update.

Registered Nursing Staff will be required to undertake the Lothian Chemotherapy Administration Module or equivalent

All bank nursing staff working within the Borders Macmillan Centre will complete training outlined in the local induction and training pack and work within this level.

Ongoing Competency
Competency will be reassessed
• Every year at the annual PDP
• Should there be any concerns regarding competency
• After a period of prolonged leave

Nursing Staff Out With Borders Macmillan Centre
Whilst SACT is not routinely delivered out with The Borders Macmillan Centre it is recognised that on occasions it may be necessary to do so and that patients may also be
admitted whilst on SACT. The following education and training should be initiated to minimise risk for patients and staff on these occasions.

The Specialist Oncology Team (Pharmacist or Nurse) when notified of a planned treatment will contact the ward or community team and arrange to deliver education as required but as a minimum will cover

- Safe handling and disposal
- Extravasation if appropriate
- Specific side effects and management
- Specific observations required
- Details of contacts for advice
- The need for safe handling and specific observations to be communicated via the ward safety brief

**Pharmacy**
All pharmacy staff must undertake in house training commensurate with their role in the provision of SACT.
At a minimum they will attend a safe handling session at induction & update every 2 years. Those staff involved in the aseptic dispensing service must successfully complete the appropriate in house training program. Competency will be assessed every 2 years.

**Medical Staff**
Level of competency is in keeping with the Edinburgh Cancer Centre Competency Levels and can be found on the Lothian intranet oncology. Ongoing competency is ensured via annual appraisal

**Ancillary Staff**
All ancillary staff should receive training commensurate with their role
3: Decision to Treat, Consent and Information for Patients

Decision to Treat
Initiation of a new course of SACT must be taken by the Consultant Oncologist or Haematologist in discussion with the MDT, if appropriate, and with patients and carers if possible.

A record of the consultation should be documented in the patient case notes and include evidence of

- Treatment decision
- Treatment intent
- Proposed treatment plan and review
- Informed consent
- Performance status
- Comorbidities

A record of the consultation should be communicated to GPs within 14 days

Consent
Consent should be taken at an appropriate time after the provision of verbal and written information which includes the potential risks and anticipated benefits of treatment. The Edinburgh Cancer Centre Systemic Anti-Cancer Therapy consent form should be used and can be accessed via The Lothian Intranet oncology or haematology.

Responsibilities

- Medical Staff for discussing the treatment and the consent process and giving the patient the consent form
- Treating Nurse for ensuring the patient has signed a consent form prior to administration of SACT

Patient Information

Patients must be offered verbal and written information prior to the initiation of SACT. This information must provide, at a minimum

- SACT protocol specific toxicity
- Signs and symptoms of extravasation
- When, who and how to access advice if toxicity develops
- Safe handling and disposal of waste
- Specific information required if patients are self administering SACT at home e.g oral chemotherapy

Information given to patients should be clearly documented.
4: Prescribing SACT

**Prescribing**

- The initial decision to prescribe cytotoxic chemotherapy should be made by a consultant oncologist/haematologist.
- Prescribing should comply with SACT protocols detailed in Clinical Management Guidelines (CMG) approved through the SCAN managed clinical network structure.
- SACT protocols and CMGs can be accessed via the Lothian Intranet oncolgy haematology
- Only staff on approved lists may prescribe SACT as per their identified competency level. A list of approved prescribers and competency levels can be accessed via the Cancer Pharmacist
- Non Medical Prescribers will adhere to NHS Borders Non Medical Prescribing Framework and will be signed off as competent by a Consultant Oncologist or Haematologist
- SACT must be prescribed on the Chemotherapy Electronic Prescribing System: Chemocare or, on a standardised paper prescription form, and contain information as outlined in Appendix One
- Prescribing of oral SACT must be carried out to the same standards as those for parental chemotherapy and state the start date and duration of each treatment cycle
- SACT must not be prescribed by repeat prescription
- Dose modifications and reasons for these must be clearly documented

5: Preparation and Dispensing

**Pharmaceutical Verification – Preparation and Dispensing**

A suitably trained pharmacist should undertake the pharmaceutical care and treatment verification for patients receiving SACT in accordance with legislative requirements, national standards and local policy.

Key checks are outlined in Appendix Two

The prescription is signed and dated as a record of pharmaceutical verification

**Parenteral SACT**

- All parenteral SACT will be dispensed by appropriately trained pharmacy staff, working to Standard Operating Procedures (SOPs).
- Dispensing will take place within an approved and validated cytotoxic safety cabinet.
- On weekdays this service will be available between 09.30 and 16.00.
- As far as possible requests for SACT should be restricted to weekday pharmacy working hours, as above.
On receipt of a prescription for SACT Pharmacy Department policies and procedures for safe handling must be followed.

Nitrile gloves must be worn by staff when handling all ampoules, vials, syringes, infusion bags and administration sets containing cytotoxic drugs.

All parenteral cytotoxic drugs will be provided to the clinical area in a ready to use form, no manipulation of the dosage should take place outwith the Pharmacy cytotoxic preparation area.

The drug will be provided in a sealed plastic overwrap.

All worksheets relating to cytotoxic drug preparation will be kept for a period of 13 years in accordance with Good Manufacturing Procedures.

**Labelling**

The drug labelling will include:

- Generic name of drug
- Quantity of drug
- Drug vehicle solution, if appropriate
- Volume of bolus doses, or approximate volume of infusion
- Batch number and expiry
- Intended route of administration
- Storage requirements
- Patient’s name and unit number
- Pharmacy name
- Any other labelling requirements as recommended by the manufacturer
- ‘cytotoxic agent’ label

Labelling will be attached to both the drug preparation and the sealed plastic overwrap, so that details can be verified at the clinical area prior to opening the final packaging.

**Preparation and labelling of Parenteral Vinca Alkaloids**

All parenteral doses of vinca alkaloids will be dispensed & supplied in a 50ml minibag by the pharmacy aseptic unit ready for administration.

The dispensing label of all vinca alkaloids must state, in addition to the standard information ‘FOR INTRAVENOUS USE ONLY – FATAL IF GIVEN BY OTHER ROUTES’

**Oral Chemotherapy Dispensing**

All oral SACT must be dispensed from within the Pharmacy Department for specific named patients.

The labelling of oral chemotherapy will comply with legal requirements and must also include:
• Appropriate direction and any time limit of treatment, eg ‘for 5 days’ followed by the phrase ‘and then STOP’
• All cytotoxic medicines must carry a warning on the label stating that it is cytotoxic.
• When dispensing nitrile gloves must be worn.
• If a dispensing triangle is required, one reserved for dispensing cytotoxic tablets must be used. This must be thoroughly cleaned after use.
• Crushing tablets or opening capsules is not recommended – if this is essential, then this procedure should be carried out in the Pharmacy Department, preferably in the cytotoxic preparation cabinet to minimise staff exposure to cytotoxic drug.
• If solutions are to be dispensed, staff must work over a leak-proof tray to contain any spillage.

6: Receipt, Storage and Transportation

Receipt and storage of SACT in pharmacy
• Safe handling procedures must be employed when handling any SACT. All staff involved must be appropriately trained.
• On receipt, SACT will be transferred to the designated safe and secure storage area within the Pharmacy. Storage conditions will be as appropriate for each medicine.
• Storage areas for SACT will be used exclusively for this purpose and will be clearly marked as containing cytotoxic medicines.

Transportation of SACT to clinical areas
• All SACT must be packaged to ensure escape, leakage or spillage cannot occur during transportation. The packaging must be robust, tamper proof and protect the handler.
• The packaging must be labelled with a biohazard symbol and labels stating “Contains Cytotoxic Drugs”
• Parenteral cytotoxic drugs must be taken directly to the clinical area by pharmacy or nursing staff who have undergone training in the safe handling of SACT.
• Procedures must be available to deal with spillage during transportation and the person transporting the SACT must be trained in the procedure outlined in Appendix 9a and 9b
• In the event of a parenteral preparation not being used or no longer required clinical staff must return the drugs to pharmacy as soon as possible, adhering to the guidelines above.
Receipt and storage of SACT in clinical areas

- Staff receiving SACT in, or for, the clinical area must be trained in safe handling and storage procedures.
- Storage requirements for SACT can be determined from the labelling details. It is the responsibility of staff receiving the SACT products to ensure they are stored appropriately.
- Clinical areas using SACT must have clearly identified, separate areas for storage of cytotoxic products. The temperature of fridges used for storage of SACT must be checked on a daily basis.
- The temperature for the fridge should be between 2°C and 8°C.
- Staff receiving SACT in, or for, the clinical area are required to sign for receipt of these products.

7: Safe Handling

Exposure to cytotoxic products may occur during drug preparation, administration, disposal of equipment or contact with human excreta through inhalation, absorption, direct skin contact or ingestion.

Adherence with the following guidance will minimise the risk of occupational exposure.

Personal Protective Equipment

- A disposable plastic apron and gloves must be worn at all times
- Wash hands thoroughly prior to application of disposable gloves and again on removal of gloves
- Powder free disposable NITRILE gloves must be used.
- Gloves should be changed every 20 minutes or immediately if they are torn, punctured or contaminated
- Change gloves between patients
- Dispose of gloves and apron in a sharps container designated for Cytotoxic waste

Recommended gloves for use during checking, administration, disposal and dealing with spillage of SACT are SAFESKIN PFE-XTRA NITRILE GLOVES.
Reproductive Risks
All staff working with SACT should be made aware of the reproductive risks and advised to discuss any concerns with their line manager.
Staff who are pregnant or are breast feeding must let their line manager know as soon as possible to ensure a risk assessment can be completed and risk management measures identified and implemented.

Guidance for risk assessment in pregnancy is located on NHS Borders intranet under Occupational Health and Safety Manual. Further advice can also be sought from the Occupational Health Department.

High risk activities to be considered in the risk assessment and avoided in pregnancy if possible are listed below

- Dispensing of parenteral products or manipulation of oral cytotoxic agents
- Managing a SACT spillage
- Managing spilled body waste and contaminated linen from patients within 7 days of SACT administration
- Intravesical administration including withdrawal of solution
- Topical administration of cytotoxic drugs
- Handling of 24 hour urine collections from patients within 7 days of SACT administration

Recommendations for patients regarding contraception during SACT

Patients and their partners who are not at risk of becoming pregnant

- Advise to use a condom throughout treatment to protect the partner from potential absorption of SACT by-products through intimate contact during this period of time.

Patients and their partners who are at risk of becoming pregnant:

- Advise to discuss methods of contraception that are suitable for use throughout treatment and on completion of treatment with their Dr
- Advise to use a condom throughout treatment to protect the partner from potential absorption of SACT by-products through intimate contact during this period of time.
8. Disposal of SACT Waste and Contaminated Products

Used Equipment
All equipment used to administer SACT must be disposed of in a sharps bin designated for cytotoxic waste.

- Designated sharps bins must be labelled clearly to show they contain cytotoxic waste and also tagged with a ward identification tag.
- Cytotoxic waste must be uplifted on a daily basis for incineration
- Syringes, needles, gloves and aprons are disposed of directly into the sharps bin.
- Equipment, which has the potential for leakage, is double wrapped and sealed in a yellow disposal bag and then deposited into the sharps bin. This includes administration sets and infusion bags.
- Administration sets, tubing and contaminated needles are disposed of intact to prevent aerosolisation.

Part Used Preparations
Part used doses of cytotoxic chemotherapy must be reported to pharmacy.

- Double wrap and seal in a yellow disposal bag and place in a sharps bin designated for cytotoxic waste and return to pharmacy.

Contaminated Linen

- Wear NITRILE gloves and a plastic apron to handle contaminated linen
- Package and seal in a contaminated linen bag and label clearly that it contains contaminated waste
- Send to laundry

Contaminated patient clothing should be treated as hazardous waste. It should be double bagged and given to relatives to take home and wash.

Relatives should be advised to

- Wear plastic gloves when handling the laundry
- Wash at the hottest setting
- Run the machine empty through the cycle again

Disposal of Excreta

Unless otherwise specified excreta from patients who have received SACT should be assumed hazardous for a minimum of 7 days after the completion of treatment. It should also be assumed that there will be a high concentration of oral Chemotherapy present in patients’ vomit for up to 2 hours after administration.
To minimise risk the following steps should be adhered to

**General Principles**

- Explain to the patient the potential hazard from excreta
- There must be designated toilets for patients only
- Male patients should be instructed to sit when urinating
- All patients should be instructed to flush the toilet twice with the lid closed
- Mattresses and pillows must be protected with plastic covers
- Bedpans, urinals and sick bowls must be disposable
- Patients receiving SACT should be clearly identified to staff via the ward safety brief
- Staff dealing with excreta must wear gloves and a plastic apron
- Excreta and disposable bedpans, urinals and sick bowls are double sluiced
- If unable to dispose of immediately then the excreta should be labelled as SACT waste and vernagel absorbent crystals added
- Use scales for urine measurement to avoid having to pour urine into a measuring jug thus avoiding aerosol formation.
- Wash hands meticulously at the end of any of the above procedures.
- Ensure patient has relevant chemotherapy information booklet about what precautions should be taken at home. Educate relatives on the need to wear gloves when handling any patient bodily fluids at home.
- Staff dealing with excreta must be aware of the procedure for safe handling and disposal of SACT products

**Specific Guidance**

**Drainable catheter bags, urometers and leg bags** - ensure that drainable catheter bags and leg bags are emptied regularly. If there is to be a delay in disposal, put absorbent crystals into a disposable urine bottle and empty the urine directly into this. Dispose of the urine bottle in the sluice machine and double sluice. Double wrap used catheter bags/urometers in plastic disposable bags and place in a SACT sharps bin.

**Patients with colostomy, ileostomy or urostomy bags on SACT** - sprinkle absorbent crystals into a hazardous waste disposal bag and put the used stoma bag into this. Seal the bag and then place into second hazardous waste disposal bag and seal. Sprinkle absorbent crystals into a dedicated SACT sharps bin and place the item into the sharps bin for disposal. Ensure bin is securely sealed.

**Patients receiving intra-vesical mitomycin C and BCG** – Contamination of skin with urine from a patient who has recently received intravesical Mitomycin: rinse contaminated skin with 8.4% Sodium Bicarbonate solution (250 ml bottle) and then wash the area thoroughly with soap and water for at least 5 minutes. Use of hand creams or other
emollient preparations is inappropriate as this may assist the penetration of any traces of Mitomycin-C into the epidermal tissue.

**Safe disposal of catheter contents and bag post bladder instillation with SACT**

- Wear an Apron and Gloves, close the flow valve to bladder drainage and remove the urinary drainage bag with SACT and urine and re connect a new catheter bag.
- Dispose of urinary drainage bag containing SACT and urine mix into a yellow disposable bag double bag seal and place in a dedicated SACT sharps bin with absorbent crystals to absorb any leakage from the catheter bag. Ensure bin is securely sealed.

**Patients with Naso-Gastric (NG) tubes on SACT**

- Syringes used to aspirate NG tubes and NG tube collection bags - sprinkle absorbent crystals into a disposable urine bottle and empty the content from the syringe or bag into this. Dispose of the urine bottle in the sluice machine and double sluice. Double wrap the syringe used to aspirate in yellow disposable bags and place in SACT sharps bin. Double wrap used collection bags in yellow disposable bags and place in a SACT sharps bin.

**Patients with chest drains**

- This must remain as a sealed unit. Double bag the drain, sprinkle absorbent crystals into base of SACT sharps bin and place the chest drain into the sharps bin for disposal. Ensure bin is securely sealed.

**Suction equipment**

- Double bag all disposable equipment, sprinkle absorbent crystals into base of SACT sharps bin. Ensure bin is securely sealed.

**9: Management of SACT Spillage and Accidental Contact**

Spillage kits must be kept in all areas of the hospital where SACT is used. It is the responsibility of the Nurse in Charge to ensure there is a kit available at all times and that staff know where it is kept.

Spillage kits are available from Pharmacy.
Sodium bicarbonate 8.4% should be available with the spillage kit where the following drugs are used

- Carmustine
- Daunorubicin
- Doxorubicin
- Epirubicin
- Mitomycin C.
- Mustine

**If a spillage occurs**

- Act immediately
- Assess spill – size, liquid, powder
- Call for assistance to bring spillage kit and protective clothing. Do not leave the spillage unattended.
- Put on protective clothing available in spillage kit
  - Always use two pairs of disposable PFE XTRA nitrile gloves
- Cover liquid spills with the absorbent pad. (For large spillages work from the outside in to minimise further spread).
- Double wrap punctured infusion bags and place directly into a SACT sharps bin prepared with vernagel crystals.
- Dry powder spills must be covered with gauze and then saturated with water.
- Any glass particles must be covered with gauze and collected using the scoop and scraper provided in the kit
- The spill area should be cleaned at least 3 times with mild detergent and clean water.
- All material contaminated with cytotoxic drugs, including disposable protective clothing, must be double wrapped and sealed in yellow plastic bags and then placed in a SACT Sharps bin for disposal as above.

**Accidental Skin Contamination**

Wash the affected area thoroughly with soap and water for at least 5 minutes

After this initial measure, if any of the following drugs are involved; use sodium bicarbonate 8.4% solution (polyfusor) if local irritancy is present

- Carmustine
- Daunorubicin,
- Doxorubicin,
- Epirubicin,
- Mitomycin C
- Mustine.
Accidental Subcutaneous Injection

- Follow NHS Borders policy for needlestick injury.

Minimise risk by using needle free devices and never re-sheath needles

Accidental Contamination of the eye

- Rinse with copious amounts of sterile water or sodium chloride 0.9% infusion bag for 10 minutes and seek medical attention

Minimise risk by always changing or hanging SACT infusions at waist level over a plastic tray

Accidental Contamination of Mucous Membranes

- Rinse mouth with copious amounts of cold water and seek medical advice

Minimise risk by avoiding ingestion of food and drink and the application of lip balm/lipstick in environments where SACT is stored, administered or disposed of

Any SACT spillage must be reported on Datix.
MANAGEMENT CYTOTOXIC SPILLAGE

CALL FOR ASSISTANCE
Spillage Kit and protective Clothing
DO NOT LEAVE SPILL UNATTENDED

PUT ON PROTECTIVE CLOTHING
2 pairs “safeskin” latex or nitrile gloves
Plastic apron
Safety Glasses
Face mask
Overshoes

ASSESS SPILLAGE

LIQUID

COVER WITH absorbent Pads
(Deal with large spills from outside.)

PLACE all contaminated material in yellow disposal bag

CLEAN the spillage area 3 times with mild detergent and water

PLACE all cleaning materials used
Protective clothing into disposal bag and seal

PLACE in a second yellow bag and seal

PLACE into Cytotoxic Waste Disposal Bin

COMPLETE Incident Report

POWDER

COVER WITH gauze and saturate with water

GLASS

COVER WITH Gauze
Collect using scraper and scoop

PLACE all cleaning materials used
Protective clothing into disposal bag and seal

PLACE into Cytotoxic Waste Disposal Bin

COMPLETE Incident Report

ONCOLOGY AND HAEMATOLOGY TREATMENT CENTRE
Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy
MANAGEMENT CYTOTOXIC SPILLAGE ON TO PERSONNEL

ASSESS
Site of Contamination

Mucous Membranes

SKIN

EYE

OTHER

CYTOTOXIC DRUG

Carmustine
Daunorubicin
Doxorubicin
Epirubicin
Mitomycin C
Mustine

WASH THOROUGHLY
with Water

WASH THOROUGHLY
with Soap and Water
Sodium Bicarbonate 8.4%
Polyethylene
If local irritation

SEEK
MEDICAL ADVICE
If appropriate

IRRIGATE
with sodium chloride 0.9%
for 10 minutes

COMPLETE
Incident Report

WASH THOROUGHLY
with Soap and Water

Revision 6
10: Extravasation

Extravasation refers to the inappropriate or accidental administration of a drug into subcutaneous or intradermal tissue rather than intravenously. This often leads to pain and erythema which, if left untreated can lead to tissue death and necrosis with associated functional loss. Extravasation is possible with any IV injection, although only considered problematic with agents classified as vesicant or irritant. It can occur during peripheral or central administration. SACT agents are classified according to their potential to cause serious necrosis when extravasation occurs.

Definitions:

**Vesicants**  
Capable of causing pain, inflammation and blistering of the local skin, underlying flesh and structures, leading to tissue death and necrosis.

**Exfoliants**  
Capable of causing inflammation and shedding of the skin, but less likely to cause tissue death.

**Irritants**  
Capable of causing inflammation and irritation, rarely proceeding to breakdown of the tissue.

**Inflammitants**  
Capable of causing mild to moderate inflammation and flare in local tissue.

**Neutral**  
Neutral compounds that do not cause inflammation or damage.

Risk factors associated with extravasation

The following factors can contribute to risk associated with extravasation

- The Technique
- The Site
- The Drug
- The Patient
- Disease Parameters

Minimising the Risk of Extravasation

The Technique

- Administration of SACT must only be carried out by staff educated and trained in the safe use of SACT on a continuing basis.
- Staff administering bolus SACT must be skilled in cannulation technique and educated and trained to a level where they can exert professional judgement in relation to type and size of cannula used.
- Nursing Staff in Borders General Hospital administering bolus SACT must have completed Lothian Administration of Chemotherapy module, or equivalent, and have
been signed off as competent to carry out this procedure by their clinical line manager.

- Adherence to principles laid out in Appendix 8 Table Two, Principles of Intravenous SACT Administration
- Vesicant drugs should only be given peripherally as a bolus with the exception of vinca alkaloids as detailed in the administration section

The Site
Sites for the administration of cytotoxic chemotherapy should be chosen on the following basis

- Adherence to principles laid out in section Administration of SACT, Table 1 Principles of Intravenous SACT Administration
- The cannula can be easily inserted and secured
- The site can be easily observed
- The site will not come under stress if the patient moves

The Patient
Several Patient related factors can contribute to increased risk of extravasation and should be considered prior to administration of cytotoxic chemotherapy, these are

Age
- Extravasation occurs most frequently in infants under 6 months
- The elderly are likely to have more fragile veins and skin and suffer from concurrent illness

Inability to communicate coherently which can result in extravasations going unnoticed

- Heavily sedated or comatosed patients
- Stroke
- Confused patients

Disease Parameters

- Circulatory problems which can result in reduced peripheral pain sensations e.g. from diabetes, raynauds phenomenon
- Lymphoedema
- Previous radiotherapy to the site of injection or close by

The Drug
Staff administering cytotoxic chemotherapy must be aware of the potential extravasation risks of individual drugs as per Appendix 4

Extravasation - Management
Symptoms of Extravasation

Suspect possible extravasation if:

- Patient complains of burning, stinging, pain or any other acute changes at the injection site. Patients should be instructed to report these immediately if they occur.
- Redness or blanching of tissue at the site
- Swelling, leakage or saturation is observed around the injection site
- No blood return is obtained from the cannula
- The infusion does not flow freely or there is resistance when attempting to give drugs by bolus injection

Delayed Extravasation

This should be considered if patients report skin changes in the area of a previous cannulation.

Extravasation Kit

- All wards and departments administering cytotoxic agents must have access to an extravasation kit.
- Staff should be aware of where the kit is kept.
- These kits should be checked weekly and any expired or used kits should be returned to Pharmacy for replacement.
Suspected/actual extravasation.

STOP infusion immediately and call for assistance.
Get extravasation kit/ask someone to collect this for you.
Apply personal protective equipment.

Disconnect infusion, DO NOT remove cannula.
Mark Area (with permanent pen)
Aspirate extravasated drug & blood if possible.
Remove cannula.

Treat affected area following guidance from within this booklet for specific drug

ELEVATE LIMB

DOCUMENT incident in:
1. Patient Notes on extravasation report form.
2. Datix
3. Green card or online [www.extravasation.org.uk](http://www.extravasation.org.uk)

Give patient information leaflet
Complete GP information letter
Inform Consultant

Replace extravasation kit
During working hours obtain from pharmacy, out of hours obtain from emergency cupboard

1. Review at agreed intervals
2. Complete follow up & document final outcome on extravasation report form in patients notes
3. Complete Green Card follow up
4. Complete outcome on Datix
General Treatment Instructions – Central Extravasation

Suspected/actual extravasation.

↓

STOP infusion immediately and call for assistance.
Get extravasation kit/ask someone to collect this for you.
Apply personal protective equipment.

↓

Disconnect infusion.

↓

Mark area with permanent pen

↓

Gently aspirate extravasated drug and blood if possible
adhering to Aseptic Non Touch Technique.

↓

DO NOT FLUSH THE LINE

↓

Ascertaining medical decision to either immediately pull line or perform
appropriate screening to rule out cardiac toxicity, pneumonia,
pleural effusion, central line thrombus.

↓

Treat affected area, as appropriate, following guidance
for the specific drug in Appendix 5

↓

Obtain peripheral access to administer any symptomatic therapies.

Document incident in:
1 Patient Notes on extravasation report form
2 Incident Form (Datix)
3 Online [www.extravasation.org.uk](http://www.extravasation.org.uk)

↓

Replace extravasation kit

During working hours obtain from pharmacy, out of hours obtain from emergency
cupboard

↓

1. Review at agreed intervals
2. Complete follow up & document final outcome on extravasation report form in
patients notes.
3. Complete online follow up, [www.extravasation.org.uk](http://www.extravasation.org.uk)
4. Complete outcome on Datix
Reporting Extravasation Incidents

Extravasation incidents must be reported in the following way

- Complete datix
- Document in clinical case notes using the extravasation form in the extravasation kit (Appendix 5)
- Complete an online report at www.extravasation.org.uk

Follow Up care

- Photograph the affected area to aid management and follow up
- Follow instructions in Appendix 5 for individual drugs
- Issue the patient information leaflet (Appendix 6)
- Complete and issue GP letter (Appendix 7)
- Observe and document the injury as per directions in Appendix 5
- Persistent swelling, pain or delayed ulceration: seek plastic surgeons advice via on call registrar at St Johns Hospital, West Lothian
- Complete follow up report on line www.extravasation.org.uk

Further information on extravasation can be found online at www.extravasation.org.uk
11. Administration of SACT

General principles

SACT should be administered

- Within well organised and safe systems of work
- Between 0900-1700hrs where possible to allow access to specialist staff
- By staff who have approved levels of skills, expertise and experience
- In dedicated areas or wards where there is easy access to expert help and all the equipment necessary for the management of emergencies such as extravasation, spillage and anaphylaxis
- Applying safe handling measures throughout

SACT should not be administered

- If there is any uncertainty about the checks being carried out
- If there are insufficient resources to monitor individual patients appropriately
- If there is any doubt to the patients fitness to receive treatment following toxicity assessment

Knowledge and skills required of staff administering SACT

- Action and side effects of the drugs being administered
- How to manage toxicity and adverse reactions
- SACT safe handling and disposal
- How to operate correctly any infusion pumps or devices to be used
- How to meet the informational needs of patients and carers
- Registered Nursing staff administering bolus chemotherapy and those working in substantive posts within the nurse led outpatient service must have completed the agreed Chemotherapy Administration Module or equivalent and be competent in the assessment and grading of toxicities using the Common Terminology Criteria for Adverse Events

Prior to administration of SACT

- The Patient is assessed for toxicity by an appropriately trained doctor or nurse
- Relevant laboratory results are reviewed to ensure they are within safe parameters for administration of SACT and taken within the accepted time frame
- Results of other relevant investigations are checked as outlined in individual SACT prescriptions and protocols e.g echocardiogram

Administration of Parenteral SACT
Intravenous access is established according to principles laid out in section 10 management of extravasation and table two in Appendix 9.

An independent double check of drugs is undertaken with another competent chemotherapy nurse or clinician prior to administration of the drug. This check should include the following:

- Blood counts are within treatment parameters
- Toxicities are within treatment parameters
- Check any other relevant investigations as per Master Prescription
- Calculate the patient's body surface area
- Calculate the dose of each agent to be administered according to the protocol and compare with the written chemotherapy prescription
- Check the patient name and CHI on the prescription matches the labels on the drugs
- Check the drugs against the written chemotherapy prescription
- Read the protocol for any specific administration instructions such as premeds
- Document the check

In addition, the nurse administering the SACT is responsible for the following steps:

- Verify identity of patient verbally confirming name and date of birth if patient is an outpatient or against wristband if an inpatient
- Check patient details match the prescription
- Check premeds have been administered
- Administer the SACT in accordance with the principles laid out in table one and any specific instructions highlighted in the chemotherapy protocol
- Document the administration

Drugs are administered according to the principles laid out in table two appendix 8, ensuring safe handling measures are employed at all times.

**Peripheral Administration of Vinca Alkaloids**

All vinca alkaloids will be given in a 50 ml infusion bag of 0.9% Sodium Chloride (which is covered by a pink bag to protect from light) over 5 minutes via a free flowing infusion. The nurse must remain with the patient during the vinca alkaloid infusion observing the cannulation site/patient/flow rate continually.

On completion of the infusion, the line is flushed over 15 minutes using:

- 250 mls 0.9% Sodium Chloride for vinblastine
- 100 mls of 0.9% Sodium Chloride for all other vinca alkaloids

A nurse must stay with the patient for the first 3 minutes of the flush. The patient must be educated on the signs and symptoms of extravasation and asked to report anything that 'doesn't feel right' immediately.
ONCOLOGY AND HAEMATOLOGY TREATMENT CENTRE
Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy

Administration of Oral SACT

All oral SACT is dispensed from pharmacy

- Safe handling measures must be employed during the administration of oral SACT
- Crushing tablets or opening capsules is not permitted. If this is deemed essential advice must be taken from pharmacy before this is carried out
- Staff must only use the specific pack labelled for an individual Patient
- Measuring spoons and cups must be used only once and disposed of into a sharps bin designated for cytotoxic waste
- If the capsules or tablets are in blister packs do not open the pack if there is evidence of leakage of capsules or it is thought that the tablets are crushed or broken. Contact pharmacy for advice
- If administering liquid preparations the dose should be measured over a leak proof tray to contain any spillage
- An independent double check of drugs is undertaken with another competent chemotherapy nurse or clinician prior to administration of the drug. This check should include the following
  - Blood counts are within treatment parameters
  - Toxicities are within treatment parameters
  - Check any other relevant investigations as per Master Prescription
  - Calculate the patients body surface area if necessary
  - Calculate the dose of each agent to be administered according to the protocol and compare with the written chemotherapy prescription
  - Check the patient details on the prescription matches the labels on the drugs
  - Check the drugs against the written chemotherapy prescription
  - Check the amount dispensed on the label is the correct
  - Read the protocol for any specific administration instructions
  - Document the check

In addition the nurse administering the SACT is accountable for the following steps

- Verify identity of patient verbally confirming name and date of birth if patient is an outpatient or against wristband if an inpatient
- Administer the chemotherapy in accordance with any specific instructions highlighted in the chemotherapy protocol
- Educate the patient on any specific instructions e.g when to take drugs, with or without food etc
- Ensure patient has been given safe handling advice
- Document the administration
Supportive Care During Treatment

Supportive care advice for the management of cancer and SACT related complications

Monday to Friday 0900-1700
   • All patients: the oncology nurse, BGH, bleep 3041

Out of Hours
   • Haematology Patients: Consultant Haematologist on call via switchboard
   • Oncology patients from: Oncology registrar on call Edinburgh Cancer Centre 0131 537 1000

Useful Telephone Numbers

   • Borders Macmillan Centre 01896 826888
   • Pharmacy department 01896 826610
   • Cancer Pharmacist 01896 826000 bleep 2074
   • Oncology Nurse 01896 826000 bleep 3041
   • Consultant Haematologist available via 01896 826000
   • Edinburgh Cancer Centre 0131 537 1000
APPENDIX ONE

SACT Prescriptions

The following patient specific information is documented:

- name, date of birth, CHI number
- height, weight and body surface area where relevant
- diagnosis
- performance status
- relevant haematology and biochemistry results
- any other relevant tests
- calculated doses to be administered
- indication of any dose modifications made.

Prescriptions are clear and unambiguous and include:

- the name of the SACT protocol
- all SACT medicines to be given including protocol doses
- the full generic name of each medicine and, where appropriate, the specific formulation and its proprietary name
- intervals between cycles
- maximum cumulative doses where applicable
- route, method and duration of administration
- where appropriate, diluents and infusion volumes
- hydration schedules if required
- pre-medication if required
- appropriate supportive therapy
- indication of concomitant radiotherapy where applicable
- cycle number and date of administration
- for oral SACT, the start date and duration of each treatment cycle
- name of prescriber, signature and date prescribed
- pharmaceutical verification signature and date
- administration signatures, date and time where relevant.
APPENDIX TWO

Key Pharmaceutical Checks

- prescriber details and signature are present and confirm they are authorised to prescribe SACT
- ensure protocol has been through local approval processes
- for the first cycle, the protocol is the intended treatment as documented in the patient specific treatment plan and is appropriate for the indication
- the protocol is appropriate for the patient’s diagnosis, medical history, performance status and SACT history
- there are no known medicine or food interactions or conflicts with patient allergies or previous adverse reactions
- the timing of administration is appropriate in relation to interval since last treatment
- patient demographics including age, height and weight are correctly recorded on prescription
- body surface area (BSA) is correctly calculated, taking into account recent weight
- all dose calculations and dose units are correct and have been calculated correctly according to the protocol and any other relevant local guidance
- cumulative dose and maximum individual dose as appropriate
- reason for any dose adjustment is documented and the dose adjustment is appropriate
- method of administration is appropriate
- relevant laboratory values are within accepted limits as defined in the SACT protocol
- other essential tests have been undertaken where appropriate
- doses are appropriate with respect to renal and hepatic function, performance status and co-morbidities and any experienced toxicities
- supportive care is prescribed and it is appropriate for the patient and SACT protocol
- requirement for dose adjustment and/or prophylaxis, to minimise risk of neutropenic sepsis, as specified in the SACT protocol.
### Potential Extravasation Risks of Individual Drugs

<table>
<thead>
<tr>
<th>Vesicants</th>
<th>Irritants</th>
<th>Non-irritants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amsacrine</td>
<td>Cisplatin</td>
<td>Arsenic trioxide</td>
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<tr>
<td>Bendamustine</td>
<td>Dacarbazine</td>
<td>Carboplatin</td>
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<td>Busulphan</td>
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<tr>
<td>Carmustine (BCNU)</td>
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<td>Etoposide</td>
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<tr>
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<td></td>
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</tr>
<tr>
<td>Dactinomycin</td>
<td>Liposomal Daunorubicin</td>
<td>Irinotecan</td>
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<td>Daunorubicin</td>
<td>liposomal doxorubicin</td>
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<td>Oxaliplatin</td>
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<td>Thiotepa</td>
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<td>Trastuzumab</td>
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</tbody>
</table>

**Controversial irritants, exceptions and special precautions**

- *Irritants in italics on the above table are controversial – only level C evidence exists at present*
- There are rare reports of dacarbazine and paclitaxel causing tissue necrosis on extravasation.
- Concentrations of cisplatin greater than 0.5mg/ml and carboplatin >10mg/ml are associated with tissue damage if extravasated.
- For the purposes of this policy, melphalan, although classed as a neutral drug, should be treated as a vesicant and only administered centrally as an infusion. This decision is based on Edinburgh Cancer Centre experience.
This booklet provides information on how to manage the extravasation of specific drugs and includes information on antidotes to be applied/instilled and application of heat or cold compression.

The drugs within the classification table are colour coded red, blue or black:

- **Red** indicates that heat should be used to treat the area
- **Blue** indicates that cold should be used to treat the area
- Drugs not given a colour utilise both heat and cold to treat the area

The drugs are given a group classification score of 1-5 with 1 indicating the lowest risk of tissue damage occurring and 5 indicating the greatest risk of tissue damage occurring.

Group Classification score key:
1. Neutral
2. Inflammitant
3. Irritant
4. Exfoliant
5. Vesicant

The information contained within this booklet has been adapted from the West of Scotland Chemotherapy Extravasation Guideline (2008). Last Updated November 2013
### Drug Classification Table

<table>
<thead>
<tr>
<th>Drug</th>
<th>Group</th>
<th>Classification</th>
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</thead>
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<td>Vinorelbine</td>
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</tbody>
</table>
General Treatment Instructions – Peripheral Extravasation

Suspected/actual extravasation.

↓

STOP infusion immediately and call for assistance.
Contact doctor/ask someone to do this for you.
Get extravasation kit/ask someone to collect this for you.
Apply personal protective equipment.

↓

Disconnect infusion, DO NOT remove cannula.

↓

Mark Area (with permanent pen)

↓

Aspirate extravasated drug & blood if possible.

↓

Remove cannula.

↓

Treat affected area following guidance from within this booklet for specific drug

↓

ELEVATE LIMB

DOCUMENT incident in:
1. Patient Notes on extravasation report form.
2. Incident Form (Datix).

↓

Give patient information leaflet
Complete GP information letter

↓

Replace extravasation kit
During working hours obtain from pharmacy, out of hours obtain from emergency cupboard

↓

5 Review at agreed intervals
6 Complete follow up & document final outcome on extravasation report form in patients notes
7 Complete Green Card follow up
8 Complete outcome on Datix
General Treatment Instructions – Central Extravasation

Suspected/actual extravasation.

↓

STOP infusion immediately and call for assistance.
Contact doctor/ ask someone to do this for you.
Get extravasation kit/ask someone to collect this for you.
Apply personal protective equipment.

↓

Disconnect infusion.

↓

Mark area with permanent pen

↓

Gently aspirate extravasated drug and blood if possible
adhering to Aseptic Non Touch Technique.

↓

DO NOT FLUSH THE LINE

↓

Ascertain medical decision to either immediately pull line or perform
appropriate screening to rule out cardiac toxicity, pneumonia,
pleural effusion, central line thrombus.

↓

Treat affected area, as appropriate, following guidance from
within this booklet for the specific drug

↓

Obtain peripheral access to administer any symptomatic therapies.

Document incident in: 1 Patient Notes on extravasation report form
2 Incident Form (Datix)
3 Green Card

↓

Replace extravasation kit
During working hours obtain from pharmacy, out of hours obtain from emergency
cupboard

↓

1. Review at agreed intervals
2. Complete follow up & document final outcome on extravasation report form in
   patients notes.
3. Complete Green Card follow up.
4. Complete outcome on Datix
Method of use of antidotes and treatments.

**Hyaluronidase:** Dilute 1500 units of hyaluronidase in 2ml of water for injection or 0.9% sodium chloride. Give as 0.2ml subcutaneous injections over and around the circumference of the affected area. Gently massage area to facilitate dispersal.

**DMSO:** Apply topically, painting on with a cotton bud 4 times a day for 5-7 days. Do not cover until area is dry as this may cause blistering.

Non-pharmacological management of extravasation

Heat and cold sources should not be applied directly to the skin. A piece of dry gauze should be placed as a protective barrier between the skin and heat / cold source.

**Heat application**
Application of heat causes vasodilation, increases drug distribution and absorption and decreases local drug concentrations. It aids the dispersal of vinca-alkaloids and other non-vesicant induced injuries where “spread and dilute” treatment is required. Heat should never be used for doxorubicin-induced injury. This increases the cellular uptake of doxorubicin, increasing cytotoxicity. Where heat is advocated, it is recommended to use a heat pack on the extravasated area for 20 minutes every 6 hours.

**Topical cooling**
Topical cooling diminishes pain and discomfort at the extravasation site and causes vasoconstriction, localising the extravasated vesicant and allowing time for the agent to be dispersed by local vascular and lymphatic systems. Decreasing the blood supply decreases the metabolic demand of the affected and at risk tissue slowing drug uptake. It also changes the fluidity of the cellular membrane making the cells less sensitive to the damaging effects of doxorubicin. This approach should not be used for vinca-alkaloid induced injuries as it is shown to increase ulcer formation. Where cooling is advocated, it is recommended to use a cold pack on the extravasated area for 30 minutes every 4 hours.

**Surgery**
Referral to a plastic surgeon is indicated when, despite conservative treatment, the extravasation injury progresses to ulceration. Wide excision with use of grafts may be indicated. Referral, if indicated, should be made via on call Plastic Surgery Registrar at St Johns Hospital.
1. Neutral Drugs

These instructions apply to the following neutral drugs:-

<table>
<thead>
<tr>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alemtuzumab</td>
<td>Clofarabine</td>
<td>Pegasparaginase</td>
</tr>
<tr>
<td>Asparaginase</td>
<td>Cyclophosphamide</td>
<td>Pemetrexed</td>
</tr>
<tr>
<td>Bevacizumab</td>
<td>Cytarabine</td>
<td>Pentostatin</td>
</tr>
<tr>
<td>Bleomycin</td>
<td>Fludarabine</td>
<td>Rituximab</td>
</tr>
<tr>
<td>Brentuximab</td>
<td>Gemcitabine</td>
<td>Thiotepa</td>
</tr>
<tr>
<td>Cetuximab</td>
<td>Ifosfamide</td>
<td>Trastuzumab</td>
</tr>
<tr>
<td>Cladribine</td>
<td>Ipilimumab</td>
<td></td>
</tr>
</tbody>
</table>

1. Follow general treatment instructions.
2. Firmly apply a heat pack to the extravasated area for 20 minutes every 6 hours for the first 24 hours.

In large volume extravasations where the patient is experiencing discomfort due to swelling, the following may be considered:

1. Dispersal of the drug can be facilitated by the use of subcutaneous hyaluronidase. Dilute 1500 units of hyaluronidase in 2ml of water for injection or 0.9% sodium chloride. Give as 0.2ml subcutaneous injections over and around the circumference of the affected area. Gently massage area to facilitate dispersal.
2. Apply heat and compression to assist natural dispersal of the drug.

2. Inflammitant Drugs

These instructions apply to the following inflammitant drugs:-

<table>
<thead>
<tr>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bortezomib</td>
<td>Fluorouracil</td>
<td>Methotrexate</td>
<td>Raltitrexed</td>
<td>Trabectedin</td>
</tr>
</tbody>
</table>

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. When the initial inflammatory reaction has subsided, a warm compression may be used to aid the dispersal of any residual fluid.
4. Apply topical or as long as erythema continues. hydrocortisone cream 1% every 6 hours for up to 7 days.
3. Irritant Drugs

These instructions apply to the following irritant drugs:-

<table>
<thead>
<tr>
<th>Arsenic Trioxide</th>
<th>Carboplatin</th>
<th>Etoposide</th>
<th>Gemtuzumab</th>
<th>Irinotecan</th>
</tr>
</thead>
</table>

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Apply topical hydrocortisone cream 1% every 6 hours for up to 7 days or as long as erythema continues.

4. Exfoliant Drugs

These instructions apply to the following exfoliant drugs:-

<table>
<thead>
<tr>
<th>Cisplatin</th>
<th>Cabazitaxel</th>
<th>Docetaxel</th>
<th>Oxaliplatin</th>
<th>Paclitaxel</th>
</tr>
</thead>
</table>

1. Follow general treatment instructions.
2. Firmly apply a heat pack to the extravasated area for 20 minutes every 6 hours for the first 24 hours.
3. Apply topical hydrocortisone cream 1% every 6 hours for 7 days or as long as erythema continues.
4. In large volume extravasations where the patient is experiencing discomfort due to swelling, dispersal of the drug can be facilitated by the use of subcutaneous hyaluronidase. Dilute 1500 units of hyaluronidase in 2ml of water for injection or 0.9% sodium chloride. Give as 0.2ml subcutaneous injections over and around the circumference of the affected area. Gently massage area to facilitate dispersal. Apply heat and compression to assist natural dispersal of the drug.
5. Arrange BGH review on days 1, 3, 10 post-extravasation.

These instructions apply to the following exfoliant drug:-

Topotecan

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Apply topical hydrocortisone cream 1% every 6 hours for 7 days or as long as erythema continues.
4. In large volume extravasations where the patient is experiencing discomfort due to swelling, dispersal of the drug can be facilitated by the use of subcutaneous hyaluronidase (1500 units in 2ml water for injection) injected around the area of injury. Gently massage the area to facilitate dispersal.
5. Arrange BGH review on days 1, 3, 10 post-extravasation.
These instructions apply to the following exfoliant drugs:

<table>
<thead>
<tr>
<th>Daunorubicin (liposomal)</th>
<th>Doxorubicin (liposomal)</th>
</tr>
</thead>
</table>

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Alternate topical DMSO and 1% hydrocortisone cream every 2 hours in the first 24 hours, starting 8 hours after the extravasation, and then four times daily thereafter for up to 14 days.
4. Arrange BGH review on days 1, 3, 10 post-extravasation.

These instructions apply to the following exfoliant drugs:

| Dacarbazine | Mitoxantrone |

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Alternate topical DMSO and 1% hydrocortisone cream every 3 hours for 5 to 7 days.
4. Arrange BGH review on days 1, 3, 10 post-extravasation.

5. Vesicant Drugs

These instructions apply to the following vesicant drugs:

<table>
<thead>
<tr>
<th>Amsacrine</th>
<th>Doxorubicin</th>
<th>Mitomycin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dactinomycin</td>
<td>Epirubicin</td>
<td>Streptozocin</td>
</tr>
<tr>
<td>Daunorubicin</td>
<td>Idarubicin</td>
<td></td>
</tr>
</tbody>
</table>

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Alternate topical DMSO and 1% hydrocortisone cream every 2 hours in the first 24 hours then every 3 hours for the next 7-10 days.
4. Arrange BGH review on days 1, 3, 10 post-extravasation.

These instructions apply to the following vesicant drugs:

| Vinblastine | Vincristine | Vindesine | Vinorelbine |

1. Follow general treatment instructions.
2. Firmly apply a heat pack to the extravasated area for 20 minutes every 6 hours for the first 24 hours.

3. Dispersal of the drug can be facilitated by the use of subcutaneous hyaluronidase. Dilute 1500 units of hyaluronidase in 2ml of water for injection or 0.9% sodium chloride. Give as 0.2ml subcutaneous injections over and around the circumference of the affected area. Gently massage area to facilitate dispersal. Apply heat and compression to assist natural dispersal of the drug.

4. Arrange review in BGH on days 1, 3, 10, post-extravasation.

These instructions apply to the following vesicant drugs:

<table>
<thead>
<tr>
<th>Bendamustine</th>
<th>Busulfan</th>
<th>Carmustine</th>
<th>Melphalan</th>
<th>Treosulfan</th>
</tr>
</thead>
</table>

1. Follow general treatment instructions.
2. Firmly apply a cold pack to the extravasated area for 30 minutes every 4 hours for the first 24 hours.
3. Apply topical 1% hydrocortisone cream every 6 hours for up to 7 days or as long as erythema continues.
4. Arrange review in BGH on days 1, 3, 10 post-extravasation.
APPENDIX 5

Extravasation Report Form
SCAN
This form is to be used in the event of a suspected or actual extravasation of a SACT drug. All extravagations are to be reported to a Senior Nurse and Medical Staff. A follow-up appointment is required prior to patient discharge and all further reviews are to be reported on this form and filed in the patient’s notes.

Consultant _________________________________
Ward / Area _________________________________
Date of incident _________________________________
Name of drugs extravasated _________________________________
Approximate Volume of drug extravasated _________________________________
Name of Doctor / nurse/ pharmacist informed _________________________________
Name of Senior Nurse Informed _________________________________

DATIX incident form completed?          Yes         No
SCAN extravasation policy followed?        Yes         No

Cannula size    ___________________________________
Type of SCAT involved    IV Bolus     IV Infusion     Other

________________________________________

Indicate site, including failed cannulation sites:

Right

Left

If extravasation was with a C-VAD, indicate type/site:........................................................................
Pre-injection – was the IV access patent?       Yes      No      Unknown
Post-injection – was there a blood return?      Yes      No      Unknown
Was the patient provided with information?      Yes      No      Unknown

Were there any sensations reported during injection?

Revision 6
ONCOLOGY AND HAEMATOLOGY TREATMENT CENTRE
Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy

**Burning**  **Pain**  **Swelling**  **Throbbing**  **Numbness**  **Erythema**

No complaints  Other – please specify:

---------------------------------------------------------------------------------------------------------------------

**Steps taken:**

Elevated limb  Warm pack  Cold pack

Hydrocortisone cream  Hyaluronidase  DMSO

Extravasation Patient Info Leaflet given

Follow up appointment given  GP letter given

**Other action taken:**

---------------------------------------------------------------------------------------------------------------------

**Assessment**

<table>
<thead>
<tr>
<th>Date</th>
<th>Colour</th>
<th>Integrity</th>
<th>Skin temp</th>
<th>Oedema</th>
<th>Mobility</th>
<th>Pain</th>
<th>Photo?</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>10</td>
</tr>
</tbody>
</table>

**Date of further follow-up (if required):** .................................................................

**Recommendations:** .................................................................................................

..................................................................................................................................

..................................................................................................................................

**Signature/Grade:** ..........................................................................................................

---------------------------------------------------------------------------------------------------------------------

**Extravasation grading system**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Colour</th>
<th>Integrity</th>
<th>Skin temp</th>
<th>Oedema</th>
<th>Mobility</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Normal</td>
<td>Unbroken</td>
<td>Normal</td>
<td>Absent</td>
<td>Full</td>
<td>Rate on a 1-10 scale with 1 = no pain and 10 = worst ever pain</td>
</tr>
<tr>
<td>1</td>
<td>Pink</td>
<td>Blistered</td>
<td>Warm</td>
<td>Non-pitting</td>
<td>Slightly limited</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>Superficial</td>
<td>Hot</td>
<td>Pitting</td>
<td>Very limited</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Blanched centre surrounded by red Tissue loss exposing subcutaneous tissue</td>
<td>Tissue loss exposing deep structures, or necrosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Blackened</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Adapted from West of Scotland Chemotherapy Extravasation Guidelines (2008))

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Revision 6
What is extravasation?
Extravasation is the accidental leakage of drugs outside of the vein and into the surrounding tissues. With some drugs this may lead to an immediate painful reaction and result in local tissue damage. You may have noticed pain, stinging, swelling or other changes in the skin at the site of the drug administration, or the nurse may have noticed that the drug was not flowing easily.

Why did this happen?
Extravasation is a rare but known complication of intravenous chemotherapy. It is impossible to completely avoid this even though we take all possible precautions. The important thing is that it has been detected and treated.

Why is extravasation a problem?
It can lead to pain, stiffness and tissue damage.

What treatment have you received to prevent tissue damage?
The nurse/doctor have given you the recommended treatment for the extravasation. Although this will help to minimise the chance of developing further problems, you will need to keep checking the area every day.

Checking the area
Once a day, check the area for the following:
> Has the area changed colour or increased in redness?
> Is the area blistering, peeling or flaking?
> Is the area more uncomfortable?
> Is the pain making it difficult for you to exercise the arm or hand?
If you answered yes to any of the questions in the checklist, or if you have any other concerns, then you should contact us:

Contact number: ___________ (N.B. it is not appropriate to refer extravasations to CTH)

What else do you need to do?
> Gently exercise the affected arm or hand.
> Take mild painkillers if required.
> Do not apply any other lotions, creams or ointments unless you have been instructed to do so
  by a doctor or nurse.
> Do not expose the area to strong sunlight.
> Avoid wearing tight clothing around the affected area.
> Protect the affected area when bathing (or having a shower) so that it does not get wet.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Times when treatment to be applied*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0800  1200  1400  1600  1800  2000  2200</td>
</tr>
</tbody>
</table>

*Your nurse/doctor will tick the times when you should be applying the treatment you have been prescribed

(Adapted from West of Scotland Chemotherapy Extravasation Guidelines (2008))
Borders General Hospital
Melrose
TD6 9BS

Dear Dr._________________________

RE:_________________________

Your patient has experienced an extravasation of their anti-cancer treatment (see below for specific drug).
The Chemotherapy Unit will take responsible for the acute management of this complication. This may range from monitoring the patient for skin breakdown in the affected area to input from the plastic surgical team, particularly if the damage gets worse. This is dependent upon the drugs involved, the amount extravasated and the area infiltrated by the drug.
You are not expected to undertake the management of this but it is recommended that you retain this information in the patients file in the event of any future intervention being required. If you have any questions do not hesitate to call the unit.

Date of extravasation
Drug (s) extravasated

Vesicant / irritant

Acute treatment given

Next Review Date in Oncology
Expected Outcome

Nurse Involved
Contact No. Ward: Consultant:
Signature

Many Thanks

APPENDIX 8
Table Two: Principles of intravenous SACT administration

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting a site</td>
<td></td>
</tr>
<tr>
<td>Most suitable: Veins in the forearm</td>
<td>Ease of access. Sufficient tissue to protect nerves and tendons. Allows some flexibility and movement</td>
</tr>
<tr>
<td>Possible: Veins on dorsum of hand or wrist</td>
<td>Superficial veins easy to observe</td>
</tr>
<tr>
<td>Avoid: Antecubital Fossa</td>
<td>Extravasation difficult to detect</td>
</tr>
<tr>
<td>Avoid: Limbs with compromised circulation</td>
<td>Detection of extravasation more difficult. Venous return less efficient/increased risk of infection</td>
</tr>
<tr>
<td>e.g lymphoedema, axillary node clearance</td>
<td></td>
</tr>
<tr>
<td>or bruised areas</td>
<td></td>
</tr>
<tr>
<td>Avoid sites previously exposed to radiation</td>
<td>“Recall phenomena” may occur</td>
</tr>
<tr>
<td>If peripheral venous access poor i.e. less</td>
<td>Cytotoxic chemotherapy irritant to veins with potential to damage veins for future use</td>
</tr>
<tr>
<td>than 3 veins consider hickman line or picc</td>
<td></td>
</tr>
<tr>
<td>catheter</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting a cannula</td>
<td></td>
</tr>
<tr>
<td>Cannula should be Teflon or silicone</td>
<td>Allow greater flexibility than steel cannula</td>
</tr>
<tr>
<td>The smallest cannula suitable for the</td>
<td>The smaller the cannula the less trauma associated with cannulation</td>
</tr>
<tr>
<td>purpose should be used, bearing in mind</td>
<td>Short narrow pipes results in a smaller diameter for flow of fluid therefore the pressure of delivery may have to be increased. If the pressure of blood is greater than the pressure of incoming fluid there is a risk of rupture of the vein around the cannula edge. The greater the pressure of incoming fluid the greater the risk of vein wall rupture</td>
</tr>
<tr>
<td>the rational in the box opposite and taking into account venous access and drug to be infused</td>
<td></td>
</tr>
<tr>
<td>Only one venepuncture per vein. If vein punctured ideally select a vein in an opposite limb. If more than one attempt at cannulation is necessary in the same arm a proximal site should be selected</td>
<td>Potential for extravasation at previous cannulation site.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannula should be lightly taped or secured</td>
<td>Early detection of extravasation</td>
</tr>
<tr>
<td>with a transparent dressing. Do not</td>
<td></td>
</tr>
</tbody>
</table>
### ACTION  
### RATIONALE

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemotherapy Infusions</strong></td>
<td></td>
</tr>
<tr>
<td>Educate Patient to report any stinging, pain or burning at cannulation site or any symptoms which may suggest adverse reactions</td>
<td>Early detection of extravasation or adverse reactions</td>
</tr>
<tr>
<td>Inspect the cannula regularly for any signs of redness or swelling</td>
<td>To detect any condition which may render the vein unsuitable</td>
</tr>
<tr>
<td>Infuse 100 mls of NaCl rapidly</td>
<td>To check patency and integrity of vein</td>
</tr>
<tr>
<td>Check site frequently during administration</td>
<td>To detect any signs of extravasation</td>
</tr>
<tr>
<td>Flush with appropriate infusion fluid on completion of infusion</td>
<td>To remove all drug from tubing and cannula</td>
</tr>
<tr>
<td>Vesicant drugs should not be administered as slow infusions via peripheral veins</td>
<td>Increased risk of extravasation</td>
</tr>
</tbody>
</table>

### ACTION  
### RATIONALE

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Administration of bolus SACT</strong></td>
<td></td>
</tr>
<tr>
<td>Select site and cannulate with appropriate sized cannula for vein and product to be administered</td>
<td>Reduce risk of extravasation</td>
</tr>
<tr>
<td>Establish a free flowing intravenous infusion with a fluid compatible with the drug to be administered</td>
<td>Checks integrity and patency of vein.</td>
</tr>
<tr>
<td>Check for flashback</td>
<td>To check correct insertion of cannula</td>
</tr>
</tbody>
</table>

### ACTION  
### RATIONALE

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educate Patient to report any stinging, pain or burning at cannulation site or any symptoms which may suggest adverse reactions</td>
<td>Early detection of extravasation or adverse reactions</td>
</tr>
<tr>
<td>ACTION</td>
<td>RATIONALE</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>Administration of bolus chemotherapy</strong></td>
<td></td>
</tr>
<tr>
<td>Administer vesicant drugs first</td>
<td>Vein integrity at its best</td>
</tr>
<tr>
<td>Give large volumes slowly, no greater than 5ml/min</td>
<td>Allow drug dilution and minimise extravasation</td>
</tr>
<tr>
<td>Check Patient and site regularly</td>
<td>Allows early detection of problems</td>
</tr>
<tr>
<td>Flush between drugs with appropriate solution</td>
<td>Prevent interaction of drugs</td>
</tr>
<tr>
<td>Put used syringes in yellow disposal bag in yellow tray</td>
<td>Reduce exposure to cytotoxic drugs</td>
</tr>
<tr>
<td>Flush line prior to removal of cannula</td>
<td>To remove any residual drug from cannula</td>
</tr>
<tr>
<td>Remove cannula in accordance with safe handling guidelines</td>
<td>Minimise risk of exposure to cytotoxic agents</td>
</tr>
</tbody>
</table>
## APPENDIX 9a
### DEALING WITH A LEAKAGE OF CHEMOTHERAPY FROM AN APPROVED TRANSPORTATION CONTAINER FROM PHARMACY

<table>
<thead>
<tr>
<th>Put the container down on the ground immediately</th>
</tr>
</thead>
</table>

**HAS YOUR SKIN BEEN CONTAMINATED?**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

### YES

- Put out an urgent call for another porter to stay with the spill and deal with it.
- Once relieved by the second porter, wash your skin as quickly as possible at the nearest toilet facility with lots of water and then lots of soap and water.
- Ensure you have the area checked by a doctor. You should present yourself to Accident and Emergency as soon as possible to have this done.

Report the injury to your Supervisor and complete a DATIX Incident Form reporting this as an occupational injury.

This box can be used to include any other details of contacts you may wish to include.

### NO

- Make area as safe as possible and warn others to stay away.
  
  **STAY WITH THE SPILL**

- Contact Pharmacy on *(insert contact number)* (or get someone to do this for you) immediately and they will deal with the spill.

If someone from Pharmacy is unable to come immediately, ask for the spillage kit stored in *(insert name/contact no. of place stored)* to be brought to you.

- Put on gloves from the spillage kit and carefully place the absorbent pad from the spillage kit over the spill.
- Place the sign that states ‘Cytotoxic Spill – Do Not Touch’ on top of the pad.

**Dispose of the gloves in the orange hazardous waste bag found in the spillage kit.**

**STAY WITH THE SPILL**

- Someone from Pharmacy will come as soon as possible and deal with the spillage thereafter.
APPENDIX 9b
DEALING WITH A LEAKAGE OF CHEMOTHERAPY WHILST TRANSPORTING WASTE FROM PHARMACY AND/OR THE WARD AREAS

DO NOT TOUCH THE CYTOTOXIC WASTE BIN OR SPILLAGE

HAS YOUR SKIN BEEN CONTAMINATED?

YES

Put out an urgent call for another porter to stay with the spill and deal with it as detailed in right hand panel.

Once relieved by the second porter, wash your skin as quickly as possible at the nearest toilet facility with lots of water and then lots of soap and water.

Ensure you have the area checked by a doctor. You should present yourself to Accident and Emergency as soon as possible to have this done.

This box can be used to include any other details of contacts you may wish to include.

Make area as safe as possible and warn others to stay away.

**STAY WITH THE SPILL**

Contact (pharmacy 26617, BMC 26833 or ward 6, 26006) to arrange for someone to come as soon as possible to deal with the spill.

If the person who will deal with the spill cannot come immediately, ask for the spillage kit stored in (pharmacy) to be brought to you.

Put on gloves from spillage kit and carefully place the absorbent pad from the spillage kit over the spill.

Place the sign that states ‘Cytotoxic Spill – Do Not Touch’ on top of the pad.

Dispose of the gloves in the yellow hazardous waste bag found in the spillage kit.

Do not attempt to clean up the spillage yourself.

**STAY WITH THE SPILL**

The person allocated to deal with the spill will come as quickly as possible to clear it up.

NO

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Quality System
Guidelines For The Safe Delivery of Systemic Anti Cancer Therapy

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