



Kent and Medway Cancer Network

Network Guidance Document

Systemic Anti-Cancer Care Pathway

Health and Safety,
Handling and Administration

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1. Health and Safety

At all times staff must handle systemic anti-cancer therapy drugs, in whatever form, in a manner which minimises the risk of contamination to themselves, patients, family members and the environment under the Health & Safety at Work Act 1974, and the Management of Health and Safety at Work Regulations 1999. Employers must take steps to ensure employees are familiar with the local health and safety policy. In general, systemic anti-cancer therapy drugs are hazardous substances, as defined by the Control of Substances Hazardous to Health Regulations 2002 (COSHH). However, some are also considered carcinogenic and are therefore also subject to Appendix 1 of the COSHH Approved Code of Practice (ACOP) which provides additional guidance on the control of carcinogenic substances. Local risk assessments required by Control of Substances Hazardous to health regulation must be carried out for each activity that might result in exposure, such as preparation, administration, disposal and spillage.

N.B. Systemic anti-cancer therapy may be used for non-malignant conditions. The following guidelines should be followed wherever systemic anti-cancer therapy is administered.

1.1 Minimising and Controlling Exposure

Before handling or administering systemic anti-cancer therapy drugs, or caring for patients receiving them, all staff who work in these areas should have access to appropriate information, education and training, to ensure an understanding of the basic principles of the risks and consequences involved, including appropriate techniques for avoiding exposure (RCN 1998).

All staff working with systemic anti-cancer therapy agents must be made aware, and kept updated of the risks and the circumstances under which they may be exposed to the carcinogen. This guide must be available to all staff involved with the preparation, administration and disposal of systemic anti-cancer therapy, and to staff managers.

There is evidence to suggest that inadequate protection when handling systemic anti-cancer therapy agents can result in exposure from absorption, ingestion and inhalation.

In order to minimise exposure through ingestion, staff/patients should not eat, drink or apply make-up in environments where systemic anti-cancer therapy drugs are sorted, used or disposed of and they must ensure effective cleaning of their equipment and surrounding environment. Consideration must be given to those patients who wish to eat/drink during their treatment.

Contact with systemic anti-cancer therapy agents can result in injury to skin, eyes and mucous membranes. The risk of exposure through contact with sweat, saliva or tears of patients is unknown. Traces of systemic anti-cancer therapy compounds have been found in the urine, vomit and faeces of people receiving systemic anti-cancer therapy and therefore staff dealing with contaminated fluids are at risk.

Despite the risks to staff associated with the handling and administration of systemic anti-cancer therapy drugs there is no reliable method of quantifying exposure or its health consequences. Most methods for staff monitoring are not suitable and produce results which are difficult to interpret. It is essential that exposure is prevented, controlled and monitored through the provision of:

- An adequate protective environment
- The use of totally enclosed systems where possible
- Suitable personal protective equipment
- Written policies and guidelines
- On-going staff training
- Service audits
- Adequate procedures for dealing with spillages and disposal of all contaminated materials
- Risk assessment

1.2 Personnel Records

It is recommended that employers keep a health record on all staff potentially exposed to these compounds. This health record should contain the date when present employment started, and a historical record of the estimated time in this employment involving exposure to systemic anti-cancer therapy drugs. This should also include details of any screening results, such as blood results.

1.3 Environmental Monitoring

Surface sampling is standard in some Pharmacy departments, including wipe or swab sampling of the surfaces of syringes, infusion bags, floor areas and work surfaces. Contaminated settings should be cleaned appropriately according to local policies, by trained staff that are aware of the hazards of ineffective cleaning (RCN 1998) The data and recommendations presented herein are based on the work of others and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of this data or results obtained from the use thereof. All Pharmacy departments work in accordance with their agreed standard operating procedures.

1.4 Personal Protective Equipment (PPE)

Protective clothing should be worn at all times when handling systemic anti-cancer therapies. Used protective clothing should be regarded as potentially contaminated and disposed of according to the local Waste Disposal Policy. The degree of protection required will depend on the perceived exposure risk. Staff exposure is minimised by the use of Personal Protective Equipment (PPE), although there is a wide variety of PPE, the evidence base for the choice of one product over another is often equivocal.

Any PPE used must bear the European CE marking which ensures that the article complies with European regulations (RCN 1998).

Protective clothing should be worn by staff dealing with blood, vomit or waste (faeces or urine) from patients who have received systemic anti-cancer therapy drugs within the previous 48 hours or longer, if appropriate. Contaminated equipment should be cleaned and disposed of appropriately. (Refer to disposal of waste procedure 1.5)

The following PPE will reduce the risk to exposure:

i) Disposable Gloves

Disposable gloves should be worn at all times when contact with systemic anti-cancer therapy drugs is possible. No glove material is completely impermeable to systemic anti-cancer therapy drugs, and the permeation of systemic anti-cancer therapy drugs depends upon glove thickness and integrity, the properties of the drug/solvents and the contact time with the drug. Therefore users should minimise contact and change their gloves regularly. Amendments to glove usage are necessary for spillage procedures (see 1.8 Guidelines for Spillage).

Gloves should always be changed between patients, and if they become damaged. Thorough hand cleansing according to local trust policy is still required before and after glove usage. There is no consensus about which glove material offers the best protection. Maintaining manual dexterity should be a key criterion in selecting gloves, and gloves with powder must be avoided as they absorb systemic anti-cancer therapy contamination. The practice of double-gloving is unnecessary, unless dealing with a spillage.

Latex rubber and PVC gloves are most commonly used although latex is recommended in the RCN guidelines (RCN 1998) for the administration of intravenous systemic anti-cancer therapy. This should take into account any allergies to latex in these staff groups, in which case Nitrile gloves may be worn.

Cuts and scratches should be covered with a waterproof dressing to prevent infiltration of the skin if gloves are damaged. Staff with dermatological conditions e.g. eczema, should be referred to Occupational Health for assessment of fitness to operate in their role.

ii) Eye/Face Protection

Facial protection should be available within clinical areas. National guidelines recommend that goggles or face-shields should be worn during preparation and administration of systemic anti-cancer therapy and meet the British Standard EN166. However, in practice they are rarely worn during administration and cancer centres do not advocate their routine use. The risk of aerosol sprays or splashes is negligible provided the most appropriate techniques are used during the administration of systemic anti-cancer therapy, such as closed administration systems. Therefore it is recommended that the decision as to whether facial protection is worn during administration is down to the informed decisions of the individual practitioners. If worn, effective communication with the patient/carer will help reduce any anxiety or fear caused by their use.

If there is a risk of splashing or spraying of aerosols, for example when clearing up after spillages or reconstituting powders within a laminar flow cabinet, application of goggles is mandatory.

Availability of eyewash in the clinical area for treatment of spray or splash contamination is essential.

iii) Gowns/Aprons

Many gowns do not offer protection from systemic anti-cancer therapy. In most cases a plastic apron will suffice for administrations as they provide a protective, water resistant barrier to accidental spills or spray and are more practical. These should be changed between patients and procedures and disposed of as per systemic anti-cancer therapy waste guidelines (see 1.5 Handling Waste and Waste Disposal).

Gowns for reconstitution must be worn and meet standards for aseptic manufacturing procedures and be suitable for systemic anti-cancer therapy reconstitution. Gowns should be worn once only and then either disposed of or subjected to procedures which ensure removal of all systemic anti-cancer therapy particulate contamination and re-sterilised. If preparation is in closed containment technology, gowns may be worn more than once.

iv) Minimising Exposure for Pregnant Women

Pregnant staff should be aware of the risks associated with the handling and administration of systemic anti-cancer therapy and be referred to Occupational Health. Specific risks to unborn foetuses are debatable and therefore the choice of continued involvement with handling and administration must be the individual practitioners. Generally it is advisable to avoid contact with systemic anti-cancer therapy agents during the first trimester of pregnancy.

Managers will support healthcare professionals who are trying to conceive, are pregnant or breastfeeding if they choose not to work with systemic anti-cancer therapy agents. Every effort will be made to offer employees alternative duties. If proper handling and adequate safety measures are carried out exposure is substantially reduced and health risks minimised, but not eradicated.

v) Safety Orientated Products

Staff and patient exposure is minimised by:

- Selecting drugs supplied in safety orientated packaging i.e. drug containment systems such as onco-tain and onco-vial
- Purchasing solution products rather than powders and ready to use formulations such as pre-filled syringes
- Using tablets in blister or foil packets
- Using needle free, closed systems such as Luer lock
- All systemic anti-cancer therapies must be double wrapped in polythene bags or single wrapped in polythene bags and heat sealed (opaque/coloured polythene can be used for drugs requiring light protection), and transported between areas in a rigid sealable leak-proof container. The container will have identification about its destination (i.e. ward or outpatient area), and that the products being transported are systemic anti-cancer therapy drugs.

1.5 Handling Waste and Waste Disposal

These guidelines will cover the handling and disposal of:

Systemic anti-cancer therapy drugs and contaminated material (equipment and laundry).

Patient waste (including personal contamination).

Each institution should have clear procedures for the collection, segregation and disposal of waste. All staff including household/domestic/portering, and personnel who handle systemic anti-cancer therapy waste or work in areas where they are used, will require training/education on the risks involved and in the handling of waste and waste disposal procedure. Adherence to individual Trust's Waste Management Policies is assumed.

i) Handling and Disposal of systemic anti-cancer therapy Drugs and contaminated Materials

- Contaminated material such as bottles, vials, PPE and other materials used in the preparation and administration of systemic anti-cancer therapy agents should be placed in a leak-proof, puncture-proof container appropriately labelled to indicate its origin (RCN 1998)
- Systemic anti-cancer therapy sharps boxes should be plastic, with purple lids and conform to BS7320 and thus be rigid and leak proof. There is a risk of inhalations from open waste containers which contain large amounts of used syringes, infusion bags and giving sets.
- Contaminated needles, syringes, giving sets and tubing should be disposed of intact. Empty infusion bags should not be cut and emptied.
- PPE can be placed in a yellow clinical waste bag if it has not been contaminated by large amounts of systemic anti-cancer therapy agents (double bagging is not necessary)
- Part used syringes and bags of systemic anti-cancer therapy drugs should be sealed using a blind ended red bung, then sealed in a yellow bag, and placed in an unused systemic anti-cancer therapy sharps bin. This should immediately be sealed, labelled and treated as special waste in accordance with local Trust policy. Intrathecal doses which have not been given must be returned immediately to Pharmacy, still in their identifiable packaging. Whole infusions or unused syringes containing systemic anti-cancer therapy anti-cancer therapy should be returned to Pharmacy in the appropriate sealed container.
- The disposal container should be placed in a specific collection and storage area, and collected by designated personnel who have been trained to handle such waste. They should wear gloves and return the waste to a central collection point to await incineration. Waste should not be allowed to accumulate in either clinical or storages area.
- Systemic anti-cancer therapy waste will be incinerated at a recommended temperature of 1000C (ideally there will be an afterburner on the incinerator). In the absence of a suitable licensed incinerator on site, the services of a specialist waste disposal contractor is required.
- Re-usable trays and other equipment should be decontaminated with approved hard surface wipes
- Packaging for off-site transport of clinical waste will change from bags to rigid, spill proof, sealable containers.

The practice of placing any contaminated giving sets or syringes into a yellow clinical waste bag should never take place.

ii) Disposal of Contaminated Laundry

- Linen used by patients, but uncontaminated by systemic anti-cancer therapy anti-cancer therapy, can be treated normally.
- Nursing staff, Health Care Assistants and housekeeping staff should wear gloves when handling contaminated laundry.

- Contaminated linen and uniforms may be hazardous to laundry and portering staff. Usually they can be treated as 'infected waste' and dealt with by the normal laundry process. Pre-washing occurs by placing the infected linen in an alginate bag. The linen should then be placed in a **red** linen or plastic bag and labelled with the clinical area and date. When sealed sources are in use, the linen needs to be monitored using a Geiger counter.
- Heavily contaminated linen should be double bagged and sent for incineration. Advice can be taken from Pharmacy as to whether or not this is required.

iii) Handling and Disposal of Waste from Patients receiving systemic anti-cancer therapy

N.B. Patient waste includes excreta, such as urine, faeces and other bodily fluids such as vomit, saliva, sweat and blood

The excreta from patients receiving systemic anti-cancer therapy may contain potentially hazardous amounts of systemic anti-cancer therapy drugs or active metabolites, although this applies to few systemic anti-cancer therapy drugs in practice. Systemic anti-cancer therapy agents are mostly eliminated by renal or faecal excretion. The period over which staff handling waste are at risk depends on:

- Particular drug
- Pharmacodynamic factors such as dose, route of administration, duration of therapy and renal/hepatic function
- Concomitant drug therapy which may influence elimination rates

As a general rule, the excreta from patients receiving systemic anti-cancer therapy drugs should be assumed to be hazardous for at least 48 hours after the completion of treatment (Cass Y et al, 1992).

Protective clothing is required when dealing with other bodily fluids, such as drainage from wounds and secretions.

iv) Personal Protective Equipment (PPE)

Normal nursing practices and universal precautions involving the use of plastic aprons and suitable gloves for the disposal of patient waste should suffice. Patients who have received systemic anti-cancer therapy should be identified to staff so that additional care can be taken, particularly in the event of contamination.

- All protective clothing should be treated as hazardous and should be disposed of accordingly, by placing in a yellow contaminated waste bag.
- Personnel must wear aprons and gloves when handling waste containers (e.g. urine bottles). They should be instructed on the necessity of handling this waste with care and on procedures in case of spillages and leaks from containers.
- Any items contaminated with waste material should be double-washed. Disposable items are preferable and should be treated as hazardous clinical waste and disposed of accordingly. Macerator and bed-pan washers should be activated immediately the waste is deposited into them.
- Patients and staff should utilise different toilet facilities, and care should be taken that patient toilets are adequately cleaned, particularly in the case of splashes.
- Equipment or personal contamination will require thorough cleaning by staff that are aware of the hazards of ineffective cleaning.
- Follow precautions for patient waste following bladder installation of systemic anti-cancer therapy.

- Follow the protocol for intravesical systemic anti-cancer therapy anti-cancer therapy.

v) **Personal Contamination**

- Skin contact with patient waste can lead to drug absorption or local toxic and/or allergic reaction, although there is no known documentation of mutagenicity or side-effects directly related to skin contamination of nursing personnel dealing with patients' excreta.
- If contamination of the skin, eyes or mucous membranes is suspected, the areas should be rinsed thoroughly with large amounts of water for approximately 2 minutes. Refer to spillage and contamination policy, particularly for advice on injuries from contaminated needlesticks, and contamination of the eyes.
- Very little data exists on the hazards of physical contact with handling patients receiving systemic anti-cancer therapy drugs other than some conflicting findings in sweat and saliva. Certain systemic anti-cancer therapy drugs are excreted in saliva and sweat (e.g. Cyclophosphamide) and precautions should be taken to reduce the risk of exposure.
- The recommendations in this policy should be adapted for patients and their carers who receive continuous infusion or domiciliary systemic anti-cancer therapy. Particular care and attention should be given to their training and educational needs.

1.6 Disposal of systemic anti-cancer therapy in the Community

Whilst in the majority of cases it would not be appropriate for the nurse to change or handle the continuous infusion, it is essential for the community nurse to have knowledge and understanding of the condition and treatment.

If it is required that the nurse is requested to disconnect an infusion, he/she should only do this if competent to do so as per NMC Code of Conduct (2008).

It would be considered to be good nursing practice for the community nurse to liaise closely with the referring unit, so that they are able to provide appropriate support and accurate information to the patient and carers. Patients frequently hold some form of record which can also be used as a source of information and communication.

Patients having systemic anti-cancer therapy anti-cancer therapy infusors removed in the community should be sent home with a systemic anti-cancer therapy sharps bin, and a supply of blind end red bungs. Used systemic anti-cancer therapy infusors should have this blind end red bung attached to the end when removed. They must be placed in a systemic anti-cancer therapy sharps bin which is sealed with all potentially contaminated equipment.

These bins are then returned sealed by the patient/carer to the originating systemic anti-cancer therapy unit. Disposal should then take place according with local Trust policy.

1.7 Part Used Doses

Disposal of part used doses should always take place whilst wearing PPE. Syringes should be capped with a red blind end bung, sealed in a yellow bag and placed in an unused systemic anti-cancer therapy sharps bin. Part used infusion bags should have the giving set left in place and clamped off, sealed in a yellow bag and placed in an unused systemic anti-cancer therapy sharps bin. Due to the potential risk for damage to these parts used containers, the systemic anti-cancer therapy sharps bin should be sealed immediately, labelled and disposed of according to local trust policy.

1.8 Managing Spillage and Contamination

All personnel involved in handling systemic anti-cancer therapy waste or who are in an area where they are handled, should be aware of policies and protocols required for handling spillage of systemic anti-cancer therapy solution and reporting spillages. There should be a systemic anti-cancer therapy spillage kit available in all areas, wards and departments involved in systemic anti-cancer therapy handling and administration. See

Appendix 1 for an example of the kit contents and instructions. There may be variations to these as they are often outsourced from commercial companies. The individual team members should familiarise themselves with what is available in their clinical area.

These guidelines will cover:

- The key principles of the procedures for dealing with spillages
- The contamination of personnel
- The systemic anti-cancer therapy spillage guidelines

The purpose of these guidelines is to minimise patient and staff exposure to systemic anti-cancer therapy agents and prevent contamination. The following measures to prevent and contain spillage should be used at all times.

i) Key principles of the procedures for dealing with spillages

- Where there is a spillage of systemic anti-cancer therapy material contamination of the skin and eyes should be dealt with first
- Contain the spill and breakages and identify the size and type (dry or liquid) of the spillage
- Identify the spill and take prompt action to remove the hazard i.e. use the emergency spillage kit immediately
- Use good handling techniques, clothing and protective equipment, including facial and eye protection as appropriate during the cleaning operation. The PPE should then be treated as systemic anti-cancer therapy waste
- Consult safety data sheets for specific advice on cleaning up spills and decontamination procedures, although the use of decontaminants is controversial and is therefore not advised.
- Contamination materials and waste must be clearly labelled and packaged appropriately for disposal
- All spillages where staff have been exposed to risk e.g. skin absorption should be reported to Occupational Health. An incident report should always be completed detailing the day, time, drug, approximate volume, liquid or powder spill, name of the person/people involved and the location of the incident.
- COSHH risk assessment should be undertaken to ensure safe practice is followed. COSHH regulations identify what to do in the event of a spill or incident. COSHH data sheets on systemic anti-cancer therapies should be available at all times.

ii) Contamination of Personnel

- **Exposure**

Exposure can occur through accidental contact as well as through spillage. Handling equipment and waste, as well as administering the systemic anti-cancer therapy agents increase the risk of skin exposure. The principles of safe practice identified in the Handling and Administration Policy should be adhered to.

- **Skin Absorption/Contamination**

If skin contact with systemic anti-cancer therapy agents has occurred or is suspected, the affected area should be washed thoroughly with soap and water. Advice should be sought from the Pharmacy department and reported to Occupational Health and the manager of the area. Appropriate documentation should be completed. Although with the majority of compounds there is little or no absorption through intact skin, the exceptions are lipid solution systemic anti-cancer therapies.

- **Inhalation**

Inhalation can occur, for example due to spillage, or poor handling techniques, or even due to open waste containers.

- **Eye contamination**

Aerolized compounds may come into contact with eyes and mucous membranes and be inhaled. If the eyes are contaminated, immediate irrigation, for approximately 2 minutes, with water should be carried out ensuring that the eye is held open during rinsing and the head held high so that irrigation fluid from the contaminated eye does not enter the unaffected eye. Contact lenses should be removed, decontaminated and their re-use discussed with an optician. Medical attention must always be sought, and Occupational Health should be informed and the appropriate incident form completed. Acute reactions may still occur despite irrigation.

NB An emergency eye-wash should always be available wherever systemic anti-cancer therapy agents are being prepared and administered

- **Ingestion**

Although no studies have been found measuring ingestion, there is an increased risk of exposure through ingestion by eating and drinking in clinical areas along with inadequate hand washing. Prevention of ingestion is likely if practitioners use appropriate gloves and change them regularly as recommended, wash their hands thoroughly after all handling activities, change out of protective clothing used when handling systemic anti-cancer therapy drugs and ensure effective cleaning of equipment and the environment.

- **Personal Protective Equipment (PPE)**

Personal protective equipment (PPE) should be immediately removed, and disposed of appropriately. Hands must be washed after removing gloves.

- **Techniques for Handling and Transporting**

Techniques for handling and transporting drugs, equipment and waste may be critical factors influencing individual exposure, and activities involving connecting or disconnecting IV equipment and handling pressured vials containing systemic anti-cancer therapy drugs have been shown to involve particular risk of exposure. It is important to us an aseptic technique to help minimise the risk.

- **Needle-stick injury**

Needle stick injury with systemic anti-cancer therapy should be minimal as all systemic anti-cancer therapy is administered via a needle free system. However, care should be taken with sub-cut and Intra muscular administration.

Compliance with Trust Policy for needle-stick is assumed.

2. HANDLING and ADMINISTRATION

2.1 Administration and Procedural Aspects of Systemic Anti-Cancer therapy Service Delivery

Systemic anti-cancer therapy will be chosen as the treatment modality for a patient by a medical or clinical oncology consultant or Haemato-oncologist, who is competent to prescribe systemic anti-cancer therapy.

This guidance has been written to assist staff involved in treatment delivery. These topics include assessment, checking, and administration of systemic anti-cancer therapy, both oral and intravenous.

Any nursing staff administering systemic anti-cancer treatments must have completed local and network competencies and training for the administration of systemic anti-cancer therapy. They should work within professional and local guidelines and protocols for the checking and administration of the prescription and the drugs.

All nurses trained to deliver systemic anti-cancer therapy should have their competencies reviewed on an annual basis, and work within the Nursing and Midwifery Council Code of Conduct NMC (2002).

NB: This guidance does not include the use of Intrathecal systemic anti-cancer therapy. Please refer to your Trusts Policy for Intrathecal systemic anti-cancer therapy administration.

i) Facilities for Administration

- Systemic anti-cancer therapy should only be administered in named environments.
- It should have suitable, washable work surface space, and sinks.
- A floor that is washable (not carpet) to allow easy management of spillage.
- Administration trolleys with lips and plastic trays, to reduce the risk of spillage.
- Facilities for the safe disposal of systemic anti-cancer therapy waste
- Immediate access to a telephone, emergency call button and resuscitation equipment.
- Anaphylaxis, extravasation and spillage kits.
- Equipment to perform eye wash outs
- Copies of relevant policies and procedures

ii) Transportation and storage of systemic anti-cancer therapy

- Packaging must be robust, show visible signs if tampered with, able to provide protection for the handler, able to contain any leakage, and labelled to identify the nature of the contents.
- Only appropriately trained staff that are aware of the procedure to follow in the event of a spill must carry out transportation of systemic anti-cancer therapy within the hospital and between Trusts.
- Systemic anti-cancer therapy trained and accredited nurses are responsible for receiving the delivery at the administration area.
- Systemic anti-cancer therapy should not be left unattended by staff on delivery at the administration area.
- Deliveries should be unpacked and stored appropriately at the earliest opportunity
- Access to systemic anti-cancer therapy storage areas is limited to authorised staff.
- Systemic anti-cancer therapy should be stored in a safe lockable area at low level, both at room temperature and in the fridge, in an area designated for the storage of hazardous systemic anti-cancer therapy and identified as such.
- Nurses are responsible for the correct storage of drugs delivered to wards and clinical areas and appropriate monitoring of storage facilities e.g. fridges.
- Oral chemotherapy medication must be stored in a locked trolley, fridge or cupboard.
- Intrathecal doses must be managed as per Trusts Intrathecal policy
- Managers must ensure that insurance companies are made aware that systemic anti-cancer therapy drugs are transported within the relevant vehicles.

2.2 Holistic patient assessment

All patients receiving a course of systemic anti-cancer therapy must give their written, informed consent to that course of treatment. An assessment of their understanding of their diagnosis and treatment should be made prior to commencing treatment. Verbal consent and patient compliance should be confirmed prior to each consecutive cycle. If a regime is altered, verbal consent should be obtained and documented. If an alternative regime is identified in place of the original course, during treatment, written consent is required, along with a new action sheet.

In addition to the Consultant / SpR assessment, all patients will be seen by a trust/network approved systemic anti-cancer therapy nurse prior to the first course of systemic anti-cancer therapy. This systemic anti-cancer therapy nurse, within the new patient clinic will ensure the following:

- Clearly completed action sheet available, with any additional information such as dose modifications, or investigations required are documented. It should also contain details of treatment plan and intention as well as number of cycles required, and when review by the consultant and/or nurse is required.
- Signed consent form available with details of information given to patient documented. This should be signed by both the patient/carer, and the Consultant/SpR.
- Treatment specific investigations and tests have been done and are within acceptable limits. Also any additional tests requested by the medical team, prior to treatment have been performed (and reviewed if appropriate).
- Baseline clinical observations i.e. blood pressure, pulse, height and weight
- Identification of co-morbid conditions that may impact on treatment i.e. systemic anti-cancer therapy drugs diluted in 5% Glucose in diabetic patients, or patients on Warfarin etc.
- Full medication record, including any complementary medications being taken.
- Re-confirm the patient's fitness to commence treatment, their understanding of the reason for treatment, and its duration.
- Written information on neutropenic sepsis, extravasation, diarrhoea, stomatitis, mucositis, nausea and vomiting, should be given where appropriate, as well as systemic anti-cancer therapy regime specific information i.e. CANCER Macmillan sheets, and access to NHS Choices Information prescriptions where available.
- Ensure patient understands reason for taking supportive medications at home and verbalises an understanding of their administration times and need for compliance.
- The 24 hour contact details should be given, along with clear information and advice on how and when to access the service.
- A comprehensive assessment and documentation detailing the patient's physical, social, psychological, emotional and spiritual needs. Appropriate referrals to other members of the multi-disciplinary team will be made to address the carers and patients needs accordingly, and documented clearly in the patients' chemotherapy notes.
- Nutritional assessment, using the MUST score
- Baseline peripheral neuropathy assessment carried out and documented.
- Venous access assessment.
- Pregnancy advice given to both male and female patients

Prior to each subsequent cycle of treatment the patient should have a holistic assessment. This includes assessment, advice and management of:

- Physical: Side effects of treatment, performance status, disease related problems i.e. pain. These should be graded according to the WHO toxicity score criteria (CTCAE).
- Spiritual needs.
- Psychological needs.
- Social needs.
- Blood assays and tests pertinent to that cycle. Ensure within acceptable limits to proceed.
- Any dose delay, modification, changes in support drugs in response to the above should be clearly documented with the reason, and any discussions or advice sought, and from whom.
- Weight, BSA re-calculated to ensure no dose modification is required.
- Re-confirm verbal consent for treatment.

If a nurse led service is in place for assessment of patients prior to each cycle, it should be stated on the action sheet/referral form when medical review is required to determine treatment response. If there are any concerns that disease progression is evident, performance status is reduced or treatment toxicities are extreme, prior to consultant/SpR review, then an urgent review/examination by a Consultant/SpR's required before treatment is commenced. A nurse led pre systemic anti-cancer therapy assessment clinic requires additional training, education and competence to do (see K&MCN Managing Nurse Led Systemic anti-cancer therapy Pre-Assessment Guidelines).

2.3 Administration of systemic anti-cancer therapy: Techniques and Practice

Each drug should be administered by the route specified in the protocol, dose prescribed, treatment regimen, duration and goal of the treatment and patient choice. The aim of the procedure for the administration of systemic anti-cancer therapy is to protect the nurse from occupational exposure, and the patient from uncontrolled contamination and prevent extravasation of the systemic anti-cancer therapy agents.

- i) Nurses who have received appropriate training in safe administration of systemic anti-cancer therapy and been assessed as competent, may administer systemic anti-cancer therapy drugs. Nurses who have received appropriate training may administer under supervision until assessed as competent according to the core competency standards.
- ii) Systemic anti-cancer therapy should only be given in named areas as determined by local policy.
- iii) Drugs administered by routes other than the intravenous route, e.g. Intrapleural, Intravesical and Intrathecal (see separate Trust Policy for intrathecal drugs) must be administered by appropriately trained and competent personnel.
- iv) Appropriately trained personnel must comply with safe administration of systemic anti-cancer therapy in line with the Trust operational policy, the K&MCN Guidelines, and professional guidance.
- v) All prescriptions for systemic anti-cancer therapy agents must be checked by a nurse competent in systemic anti-cancer therapy administration prior to commencing each treatment cycle to ensure:-
 - Actions sheet is available, completed, signed and dated.
 - Consent form is available, signed by the patient, consultant and dated. Re-check verbal consent with patient.
 - Pre-systemic anti-cancer therapy investigations have been performed, and results reviewed if necessary
 - The correct weight and height have been recorded.
 - The body surface area calculations are correct, and the dose has been calculated accordingly.
 - That dose modifications to previous treatments are reviewed and discussed with pharmacy and clinicians.
 - All systemic anti-cancer therapy drugs and supportive therapies, including anti-emetics have been prescribed by the Consultant/SpR and screened by an Oncology/Haematology pharmacist.
 - The patient is not allergic to the prescribed medicines.
 - The route of administration and the duration of infusion have been specified on the prescription.

- The patient has appropriate venous access prior to administering systemic anti-cancer therapy drugs.
 - There is an appropriate interval between cycles, and total number of cycles has not been exceeded.
 - Check all relevant safety parameters such as complete blood counts, renal and hepatic function, toxicities and patient evaluation, and ensure it is all clearly documented.
- vi) A nurse must **never** accept verbal orders for the administration of systemic anti-cancer therapy agents or for adjustments to doses of systemic anti-cancer therapy agents. Any changes requested must be clearly documented and signed on the action sheet.

2.4 Oral systemic anti-cancer therapy Drug Administration

All staff should be aware that the prescribing, dispensing and administration of oral systemic anti-cancer therapy agents should be carried out in the same way as parenteral systemic anti-cancer therapy.

Refer to the Kent & Medway Cancer Network Guidance on the Safe use of Oral anti-cancer medicines for patients with cancer, and follow local policy.

2.5 Intravenous Administration: General Principles

The intravenous guidelines refer to administration by bolus and infusion via peripheral and central venous access devices.

Good techniques are of paramount importance in preventing occupational exposure and promoting 'best practice' and therefore the following principles should be adhered to:

- Strict aseptic techniques should be observed throughout administration, and carried out in accordance with local Trust Infection Control policies.
- Adequate skin cleansing for 30 seconds prior to cannulation using Chloraprep, followed by drying time.
- Closed systems with Luer lock attachments are required on syringes, tubing and giving sets.
- Drug free compatible intravenous fluid should be used to purge air from the intravenous tubing and tubing flow clamp should then be closed
- For the administration of infusions, the spike from the priming bag should be removed and inserted into the infusion bag containing systemic anti-cancer therapy drugs. This procedure should take place by resting the infusion of systemic anti-cancer therapy in a tray on a flat, hard surface. The tray should be watertight, and visually examined for cracks prior to use. It should be capable of holding up to a litre of fluid in case of spillage.
- Doses of vesicants should be administered first before any other systemic anti-cancer therapy drug (whilst the vein is at its most patent) by slow IV into the side-on port of a rapid infusion of compatible solution. **N.B:** Vinca alkaloids are now dispensed in 50ml saline bags. Further dilution of the drug helps prevent phlebitis and reduce the risk of extravasation.
- Ensure the syringe (if using a needle-less injection system) is attached carefully into the needle free site of the giving set or extension set.

2.6 Recommendations for the Administration of Injectable Systemic anti-cancer therapy

Simultaneous adherence to accepted standards and practices for aseptic techniques, intravenous therapy and infection control is assumed.

i) Selecting Cannulation site

The choice of vein needs to be appropriate for the proposed use of the cannula necessitating knowledge of anatomy and physiology; the smallest gauge cannula that will adequately deliver the desired therapy should be selected (Burke, 2000).

- Points to assess when making a decision where to site the cannula include:
 - The size, state and position of the vein
 - The drug's potential to irritate the vein

- The volume of fluid and flow rate
 - Patient choice and comfort
- Systemic anti-cancer therapy drugs should only be administered through a newly sited cannula, placed by a chemotherapy competent nurse.
 - The most appropriate site for the location of a peripheral cannula is considered the forearm, preferably in the cephalic or basilic veins.
 - Consider the outer aspect area of the forearm, in the first instance. Any deviation from this practice should be justified and documented as such.
 - A record of the cannulation site, cannula size, position and number of attempts taken must be made in the patients notes (RCN 2005)
 - Any subsequent cannulation for the administration of systemic anti-cancer therapy should be proximal to the previous site (Dougherty, L et al), to minimise the risk of fluid extravasation. Alternating arms should be considered.
 - The smallest, shortest gauge cannula (24 or 22 gauge) 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
 - Observe for signs of extravasation e.g. swelling or leakage at the site of injection, note the patients' comments about the site of injection and about sensation at the site, e.g. pain, stinging, swelling.

Avoid use of the following:

- The dominant arm in order to maintain patient mobility and independence whenever possible.
- The ante cubital fossa must be avoided particularly when administering vesicants, because of the risk of damage to local structures such as nerves and tendons.
- Placement over joints must be avoided as tissue damage in this area may limit joint movement in the future.
- Avoid areas proximal to skin lesions or wounds.
- Avoid veins close to arteries or deep lying vessels as accidental puncture can cause painful spasm or prolonged bleeding.
- Areas affected by invading tumour, haematoma and inflamed or sclerosed areas.
- Limbs where there is lymphatic impairment following surgery, chemical occlusion or radiotherapy, even if there is no obvious Lymphoedema.

ii) Cannulation procedure

Refer to Vascular Access Guidelines for Clinical Guidelines on venous cannulation, management and removal of cannulas

iii) Preparing to give systemic anti-cancer therapy drugs

Prior to administration of systemic anti-cancer therapy the following checks must be carried out:

- **Patient identification:**
 - Verbal identification by the patient of their full name, address and date of birth.
 - Verbal consent they wish to proceed with this cycle of treatment.
 - Patients' allergy status.
- **Pre-systemic anti-cancer therapy tests:**
 - Weight and height recorded, BSA correct.
 - Blood results available and within allowed parameters, including renal and hepatic function, and tumour markers where applicable.
 - Patient assessed fit for treatment.
 - Any pertinent test carried out and reviewed e.g. ECG, EDTA.
- **Prescription check:**
 - Action sheet available signed and dated.
 - Consent form available, signed and dated.

- Prescription matches request on action sheet, and appropriate to disease site.
- Correct cycle number and time since last treatment.
- Dose prescribed corresponds to the body surface area measurements.
- All systemic anti-cancer therapy drugs, and supportive medication prescribed for the date they are to be administered.
- All of the above have the correct patient identifiers e.g. name, address, date of birth, hospital number.
- **Pre-administration check:**
 - Check cumulative doses have not been exceeded.
 - Check prescribed antiemetics have been given.
 - Ensure hydration has been given in line with the protocol.

2.7 Administration of systemic anti-cancer therapy

i) Administration checks:

- The patient's name, hospital number, and date of birth must correspond between the proforma, patient and the pharmacy label.
- The name of the drug, dose, infusion fluid type and amount corresponds with the proforma and pharmacy label.
- The volume of fluid in the bag or syringe corresponds to the pharmacy label.
- Check all doses for precipitation or particulate contamination before administration.
- Expiry date and time on the item will not pass before administration is complete.
- If the injections or infusions have been stored in a fridge they must be allowed to reach room temperature before administration to a patient. This is to reduce the risk of infusion bags splitting during insertion of the giving set and to reduce venous spasm due to the cold.
- Ensure the correct giving set or filter is available dependant on the drug being administered.
- Do not remove the systemic anti-cancer drugs from the sealed wrapping until ready to use and all checks have been carried out.

ii) Bolus injections of systemic anti-cancer therapy

- **Cannulate the patient according to Clinical guidelines for cannulation**
- Ensure fast flowing saline infusion is maintained during administration of bolus systemic anti-cancer therapy.
- A minimum of 20 mls of sodium chloride flushes must be administered between and after each systemic anti-cancer therapy administration.
- Check for blood return, before, during and after administration.
- Maintain a closed system where ever possible using giving sets and syringes with Luer locks.

iii) Vesicants

- Should be administered first before any other systemic anti-cancer therapy drug, when the vein is likely to have greatest integrity (Dougherty 1999).
- Vesicants should never be given via a steel needle winged infusion device (i.e. butterfly).
- In the majority of cases vesicants should be administered by bolus injection. However, in line with the Rapid Response Report from the NPSA (August 2008) all Vinca Alkaloids must be administered as short infusions via minibags.
- Under **no circumstances** should Vinca Alkaloids be administered by an infusion pump, due to the risk of extravasation.
- If administering vesicant infusions such as Taxanes and Dacarbazine via an infusion pump, it is preferable that these are administered through a central line. If vesicant infusions are administered via an infusion pump peripherally, then these pumps should be set to the highest sensitivity setting.
- Patency of the device should be confirmed prior to use using blood return as a visual check. Patency should be rechecked every 3-5mls during administration of a vesicant by bolus. If using a minibag the nurse **MUST** stay with the patient whilst the drug is infusing.
- Irritant/vesicant drugs for intravenous bolus administration should be given into the line of a fast running compatible infusion as this minimises the risk of venous irritation and extravasation.
- Observations of the insertion site should be maintained during administration.

iv) Infusions

- Ensure that the giving set is primed with a suitable flushing solution.
- Carefully insert the giving set into the infusion bag. This should be carried out over a clean watertight tray which can hold up to a litre. The bag should be placed in a horizontal position within the tray, to reduce the risk of spillage in the event of a perforation or leak.
- Check the connections on the giving set for leaking or cracking.

- Non-vesicant infusions should be given via an infusion controlled device.
- Ensure that the infusion pump is set to the correct rate.
- Using infusion devices such as pumps does not take the place of vigilance of staff, and alarms should always be checked as this could be an early sign of extravasation.
- A minimum of 50 mls of fluid should be administered as a flush between each drug at the same flow rate as the previous drug administered.

v) Systemic anti-cancer therapy via ambulatory infusor

Connecting the Infuser

- The infuser pump and all the required equipment must be placed upon a trolley.
- Ensure the infuser pump is at room temperature and is intact and not damaged in any way.
- Using an aseptic technique check the central venous access device for patency and flush with 10mls 0.9% sodium chloride.
- Remove the winged Luer lock cap from the end of the infuser tubing.
- Check to make sure that liquid (tear drop) has moved to the end of the tubing.
- Connect the infuser tubing to the central line with a quarter clockwise turn.

vi) Central Venous Catheters

- Central venous access is the route of choice if the drugs or fluids are to be administered over a long duration, are irritant to the peripheral veins, or have the potential to cause tissue necrosis.
- Where the recipient of the therapy has insufficient or unsuitable peripheral venous access, insertion of a central venous device may be indicated.
- Some therapies will justify the placement of non-tunnelled, percutaneous central venous catheters. However, several months of intensive therapy may indicate the need for long term tunnelled catheters or implantable devices.

At all times the patient and vascular administration device should be monitored frequently, before during and after administration by staff competent to assess, distinguish between and take appropriate action for leakage at the site, infection, venous irritation, phlebitis, flare reaction, allergic reaction, anaphylaxis, extravasation, and know what action to take in these situations.

2.8 Administration of systemic anti-cancer therapy in non-designated areas.

In **exceptional circumstances** systemic anti-cancer therapy may be administered in non-designated areas. These may include:

- Intensive Care Unit, where it would be clinically unsafe to move them to the designated area but it is deemed imperative for them to receive systemic anti-cancer therapy
- Administration in these cases must always be decided by Oncology/Haematologist consultant, and discussed with the patient, their relatives and carers' and the systemic anti-cancer therapy nurse team. The following principles should always apply:
 - The administration should only be performed by an experienced systemic anti-cancer therapy trained nurse.
 - The nurse should carry with them to the area an extravasation kit, small spillage kit, systemic anti-cancer therapy sharps bin.
 - Before administration, the nurse should ensure resuscitation equipment, oxygen, and medical back up is available.
 - The nurse should stay with the patient throughout the administration of the systemic anti-cancer therapy
 - It is the responsibility of the nurse to ensure that the patient and the nurse caring for the patient are aware of the care required post administration, the potential hazards to staff and the side effects associated with the treatment.
 - The administration of the systemic anti-cancer therapy and care instructions should be recorded in the patients' hospital notes.

2.9 Stopping administration

Regardless of the route of administration, administration should not commence or should stop if:

- The patient requests the treatment to stop.
- There is any doubt about the integrity of the venous access device being used.

- There is any doubt regarding the stability of the drug, route and method of administration, expiry, drug dosage, pre-treatment investigations or the prescriptions is unclear.
- The patient demonstrates side effects or complications, particularly signs of hypersensitivity reactions or anaphylaxis.
- There is evidence of extravasation including pain, redness, swelling, stinging.

3.0 Extravasation

In the event of extravasation follow the extravasation policy

3.1 Anaphylaxis

In the event of anaphylaxis follow the anaphylaxis policy

4 Other Routes of Systemic anti-cancer therapy Administration

Other routes for administration of systemic anti-cancer therapy drugs include intravesical, intraperitoneal, isolated limb/breast perfusion, intrathecal, intraventricular, intra-arterial, intrapleural, intraocular, intrapancreatic, intrahepatic, pericardial, topical, subcutaneous and by nebulisation.

Advice should be taken from pharmacy when drugs are prescribed by these routes.

It is particularly important when treatment is prescribed using one of these routes that no other systemic anti-cancer therapy agents are prescribed for administration by any other parenteral route at the same time (RCN 1998).

i) Intrathecal Systemic anti-cancer therapy

Individual Trusts within the K&MCN have a separate policy for the administration of intrathecal systemic anti-cancer therapy within that Trust to cover the individual operational aspects of the supply, prescribing and administration of intrathecal systemic anti-cancer therapy. Local policy must be in place to ensure compliance with the latest National Guidance.

Please refer to KMCN policy on Intrathecal administration

ii) Administration of Systemic anti-cancer therapy subcutaneously and intramuscularly

- Sites for intramuscular (I/M) and subcutaneous (S/C) drug administration should be rotated to prevent potential skin irritation and breakdown.
- Using the smallest needle for the purpose, a deep intramuscular injection using a Z-track technique prevents leakage on to skin. Care should be taken to avoid tissue damage and bleeding as a result of thrombocytopenia.
- There is a risk of incomplete absorption when drugs are administered I/M and S/C.
- Vesicant drugs must never be given via the intramuscular or subcutaneous route.
- Systemic anti-cancer therapy drugs and biological agents can be administered by intramuscular or subcutaneous injection. Although the volume of the drug (up to 3 mls) and the diluent handled is less than for the intravenous route, preparation and reconstitution of the agent should be in line with the guidelines previously described for handling and administering systemic anti-cancer therapy drugs.
- Gloves should be worn for the administration and spillage and disposal dealt with in a similar manner in intravenous systemic anti-cancer therapies.
- Intramuscular and subcutaneous injections are often used for patient convenience and may be administered by community nurses, provided they have adequate information, education and training.

iii) Intravesical Systemic anti-cancer therapy

Intravesical systemic anti-cancer therapy involves the installation of systemic anti-cancer therapy directly into the bladder via a urinary catheter. The patient rotates during installation. Systemic anti-cancer therapy usually remains in the bladder for a minimum of one hour (refer to Trust guidelines). Intravesical installation is used in the treatment of superficial bladder carcinoma. Treatment protocols vary, but local toxicity is not a major

problem, although local inflammation, pain and burning on urination can occur. Increased fluid intake during dwell time will increase the dilution of medication required and may reduce side effects.

Nurses may administer intravesical systemic anti-cancer therapy with appropriate knowledge and training using an aseptic technique. All safe handling precautions as previously described, should be implemented for bladder irrigation with systemic anti-cancer therapy drugs, with the following additions:

- The drug must not be instilled until urine flow is observed or correct positioning of the catheter is established
- The drug should be left in situ as per protocol (usually 1–2 hours)
- Nursing staff, patients and their carers, should be given advice on good hygiene and hand washing and on the safe disposal of urine and excreta e.g. the toilet should be flushed at least twice after voiding.
- A control of Substances Hazardous to Health (COSHH) assessment should be made in accordance with Trust Risk Assessment policy.

Further information relating to the reconstitution and administration of intravesical systemic anti-cancer therapy and immunotherapy is available from the British Association of Urological Nurses (BAUN) www.baun.co.uk

iv) Intrapleural Instillation

When pleural effusion is caused by malignant cells, sclerosis with systemic anti-cancer therapy is used. This is done by instilling the therapy directly into the chest drain.

v) Intraperitoneal Instillation

Delivery of systemic anti-cancer therapy can be given into the peritoneal space for local recurrence of ovarian and colon cancer. Individual drugs used for administration by this route should be fully investigated for the appropriateness to do so.

vi) Administration of Intrahepatic Systemic anti-cancer therapy

This is administration of systemic anti-cancer therapy into the hepatic artery or portal vein. Individual drugs used for administration by this route should be fully investigated for the appropriateness to do so.

vii) Administration of Systemic anti-cancer therapy by Other Routes

- For topical applications low limiting swabs or a non-metallic spatula should be used to apply the drug and the affected area should be covered with a semi-permeable film dressing to reduce contamination of bedclothes, linen and normal skin. Eyes and mucous membranes should be avoided. The affected area should not be washed vigorously during treatment.
- The area should be observed for any adverse reactions such as pain, pruritus and hyper-pigmentation which may result in discontinuation or dose reduction.
- Administration of intra-cavity, intra-abdominal and intra-thoracic systemic anti-cancer therapy should always be performed by a doctor who has been adequately trained to undertake the procedure and understands the risks associated with handling and administration of systemic anti-cancer therapy drugs.
- Specific cancer care should be detailed, e.g. drainage times etc. Nursing staff providing after-care should be aware of the potential hazards involved.

5 Systemic anti-cancer therapy administered/managed in the home.

Developments in drug administration have enabled the emergence of domiciliary systemic anti-cancer therapy programmes where the patient is able to receive parenteral systemic anti-cancer therapy in their own home. It is essential that patients and their carers are given some training in how to react in cases of equipment failure or problems with long term vascular access devices (VADs) such as PICCs or skin tunnelled catheters. This needs to be supported by written instructions and a 24 hour telephone number to enable home-based patients to contact a member of the oncology team.

There have been advances in Ambulatory Infusion Pump technology. Appropriate selection of the ambulatory device has been shown to influence clinical outcome and the quality of life experienced by the patient (Allwood et al, 1997). Although healthcare professionals will require a detailed knowledge of infusion devices to facilitate appropriate selection, it is preferable that the number of pumps within an institution is limited for safety reasons.

Continuous infusion of systemic anti-cancer therapy via an ambulatory pump requires a clear protocol of management for the patient and carer.

Patient and staff carer education are important parts of any ambulatory programme and all the safe handling and administration, disposal of waste and spillage guidelines will apply.

Although the safety of domiciliary systemic anti-cancer therapy has been established, the complexity of infusion regimes and ambulatory pumps is increasing. The main safety issues focus on the potential risk of exposure to patients, their carers and staff.

As the most significant risk of systemic anti-cancer therapy contamination appears to be dermal absorption, it is essential that surface contamination around the home and workplace is avoided. Supplies should be given to the patient or carer together with systemic anti-cancer therapy sharp bins for the safe disposal of systemic anti-cancer therapy waste. Arrangements must be made for the safe disposal of systemic anti-cancer therapy waste. Nurses delivering systemic anti-cancer therapy in the patient's home must be aware of and know how to access the 24/7 systemic anti-cancer therapy nursing advice lines across the Network.

Any unused oral chemotherapy should be returned to the treating centre for disposal by pharmacy. All cyto-bins must be returned in a locked state, to the treating centre for safe disposal.

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DATE OF NEXT REVIEW

This item is next to be reviewed **September 2013** by Network Chemotherapy Group

Revision History

Date	Version	Status	Author	Summary of Changes
17/03/09	V0.2	Draft	Bryony Neame	Words 'chemotherapy, cytotoxic, monoclonals' changed to 'systemic anti-cancer therapy' to reflect NCEPOD report
18/06/09	V0.3	Draft	Bryony Neame	Operational change to administration of Vinca Alkaloids –"should not be given through infusion pump" , and preferable use of central lines for vesicant infusions, page 9 as suggested by L. Farrow KOC
18/07/11	V0.2	Draft	Nursing Sub group	Update of document with current practice guidelines, no operational changes
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