LONDON CANCER ALLIANCE West and South

Systemic Anti-Cancer Therapy Safe Handling and Drug Administration

Knowledge and Skills Workbook June 2014

Name of Learner:

Name of Practice Supervisor(s):

Name of Practice Assessor:

Clinical Area or Locality:

Date Commenced:

Date Completed:

Specialty: ADULT NURSES ONLY

Life demands excellence

This version has been agreed by the LCA Chemotherapy Nurses Group.

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The Systemic Anticancer Therapy (SACT) Knowledge and Skills Workbook has been developed by The Royal Marsden NHS Foundation Trust.

This workbook aims to standardise SACT drug administration training and assessment for registered nurses across LCA and to support excellence in patient care. It will also provide a quality assurance in learning and transferability of knowledge and skills.

How to use this Knowledge and Skills Workbook

A registered practitioner who works in a clinical setting that treats patients with SACTs must have successfully completed all locally required medicines management tests including intravenous drug administration (ideally should have been administering IV drugs without supervision for a minimum of 3 months, unless working in SACT / day units)

Learner should commence observing the administration of SACT agents by various routes (oral, infusion and bolus) before commencing the knowledge and skills workbook

Approval from direct line manager obtained to undertake extended role which will be indicated by signature on Learning Agreement. Manager is to identify an appropriately experienced Practice Supervisor with appropriate knowledge and experience within the local working area to guide knowledge and skill development

Practice Supervisor is to support nurse with the completion of the Self Assessment of Knowledge and Understanding Form and proactively arrange to meet a minimum of once a week regarding progress on the workbook completion. The nurse undertaking this workbook must also meet / liaise with the Clinical Practice Educator a minimum of twice a month regarding workbook completion

Read the relevant policies and guidelines related to SACT delivery and administration (indicated in the reference list in this workbook)

Work through Part 1 of the theory components of this workbook and the calculations, mindful of the target date agreed with manager or specified in hospital policy. It is your responsibility to seek support if unable to find the answer to a particular question from either your Practice Supervisor, Assessor or Clinical Practice Educator

Follow the LCA supervised practice for the competencies relevant to your area of practice concurrent to completing the theory components of this workbook

The final practical assessment can only occur once you have successfully completed and had it marked by a Practice Educator Part 1 of the SACT workbook. You may ask for a final assessment when you feel confident with SACT drug administration using the relevant LCA competency, from a Trust approved assessor

On completion of the relevant LCA competencies, Part 1 of the SACT workbook and calculation, you can work independently within your scope of practice but Part 2 of the competency must be completed within 4 weeks of the practical assessment. Part 2 must be given to a Practice Educator for marking

Once you have passed Part 2, the approved assessor will complete the final completion checklist and the declaration form at the end of the workbook. Photocopies of the relevant LCA competencies should be taken and copies given to your ward manager

My Learning Agreement

Name: .....

Department: .....

Date I obtained IV competence: .....

I have attended all appropriate Medicines Management Study Days (induction)

on: .....

List any additional training you are required to complete for your work area, indicating whether this is pre or post workbook completion e.g. further modules, drug calculation programmes, GCP training

.....

Yes! As a learner I am ready to start my SACT Drug Administration Programme

Signed: ..... **Date:** .....

Declaration of Support

Yes! As the nurse's manager I agree with the learner's target date for completing the SACT Drug Administration Workbook and will provide access to patients that are receiving SACT to enable adequate experience to be sought. I will also support responsible protected time in order to complete this workbook (negotiated at local level)

Protected time agreed .....

Yes! As a learner I am ready to start my SACT Drug administration programme.

Signed: ..... **Date:** .....

Yes! As Practice Supervisor I am aware of

- ☐ The learner's target date for completing the SACT Drug Administration Programme
- ☐ I am a registered nurse who is experienced and up to date with my own competence in the administration of SACT's
- ☐ Familiar with the relevant policies and procedures governing the administration of SACT's
- ☐ Familiar with the content and standards set out in this workbook.

Name: ..... **Title:** .....

Signed: ..... **Date:** .....

Novice to Expert Learning Outcome Continuum

	Novice	Competent	Expert
Professional	Demonstrate knowledge and understanding of professional and legal issues in relation to SACT / chemotherapy drug administration. Documents procedure and side effects in appropriate location.	Able to apply knowledge and understanding of professional and legal issues in relation to SACT / chemotherapy drug administration and considers how to contribute to risk reduction. Considers in consultation with others any ethical components of care with a willingness to explore concerns. Is aware of professional responsibilities and confident to escalate concerns and seek advice.	Performing an adequate number of procedures each week to maintain skill and knowledge. Constantly evaluate technique, recognising difficulties, their cause and future preventative measures Able to support, teach and supervise others as a proficient role model in all circumstances.
Drug Action	Demonstrates a knowledge and understanding that different SACT exist, work in different ways, and are selected based on the patients disease type, histology, stage, and grade.	Able to access and explain comprehensively to assessor and patients about drug modality of action, classification and appropriately relate to the cell cycle.	
Side Effects	Demonstrates a knowledge and understanding that SACT can cause serious toxicities that can affect a patient's quality of life, response to their disease and overall health outcome.	Able to give advice and organise support to; prevent, recognise and treat toxicities (short & long term) and documents these in line with local guidelines. Able to escalate concerns in an appropriate and timely manner and is confident in deciding whether a patient's treatment should proceed at the scheduled time.	
Health & Safety	Demonstrate knowledge and understanding of the personal protective equipment that must be worn when preparing, handling, and disposing of SACT, including human waste products after drug administration. Has insight into local COSSH policy and practices	Able to manage and give advice in situations where health and safety might be compromised (e.g. a spillage or leakage, the handling and disposal of chemotherapy, and provide advice for the ambulatory setting on oral chemotherapy care). Able to troubleshoot, escalate concerns and complete incident form for; unsafe staffing levels, whether to give treatment outside of working hours, awareness of trial protocol and associated safety checks. Able to safely prepare, handle, and dispose of SACT, including human waste products after drug administration in line with local and national policy, providing rationale at each stage.	
Patient Preparation	Demonstrates knowledge and understanding of the different resources in the trust to support and guide a patient with advice during the different stages of their SACT journey.	Able to prepare and support a patient undergoing SACT with advice and guidance on self-care and self-management techniques. Able to recognise any complications which may arise and seek support, specifically relating to psychological well being	

Common/Core Competences: Knowledge and Skills Framework

Underpinning Principle	Competence
1. Communication	CHS48: Communicate significant news to individuals HSC 21: Communicate with and complete records for individuals And where appropriate: CS1:Communicate with children and young people, and those involved in their care GEN98: Promote effective communication in a healthcare environment GEN14: Provide advice and information to individuals on how to manage their own condition
2. Personal and People Development	GEN35: Provide supervision to other individuals M&L D7: Provide learning opportunities for colleagues HSC43 :Take responsibility for the continuing professional development of self and others LLUK L8.2010: Engage and support learners in the learning and development process
4. Service Improvement	BA3: Contribute to the development of organisational policy and practice
5. Quality	PHS08: Improve the quality of health and healthcare interventions and services through audit and evaluation
6. Equality and Diversity	HSC452: Contribute to the development, maintenance, and evaluation of systems to promote the rights, responsibilities, equality and diversity of individuals.
A. Assessment	CHS39: Assess an individual's health status CHEM13 Undertake assessment or reassessment of patient for anti-cancer therapy HSC414: Assess and individual's needs and preferences
B. Health Intervention	CHS23: Carry out intravenous infusion AG1: Develop, implement and review care plans for individuals and where appropriate: CHEM5: Apply scalp cooling CHEM1.2011: Deliver anti-cancer therapy intravenously CHS49: Deliver subcutaneous treatments using syringe drivers or infusion devices CHEM8.2011: Provide oral anti-cancer therapy medication CHS3: Administer medication to individuals CHEM2.2011: Administer anti-cancer therapy into the urinary bladder (where applicable – competency) CHEM7.2011:Administer oral anti-cancer therapy CHEM9.2011: Administer topical anti-cancer therapy (where applicable – competency) CHEM 18: Provide intra-cavity administration of anti-cancer therapy (where applicable – competency) CHEM 19: Provide intra-muscular and subcutaneous administration of anti-cancer therapy (where applicable – competency) PHARM50:Provide advice on chemotherapy for an individual CHEM 20: Provide ongoing care and support to individuals during anti-cancer therapy HSC224: Observe, monitor and record the condition of individuals CM D5: Enable patients to access psychological support HSC426: Empower families, carers and others to support individuals MH37: Recognise, respect and support the spiritual well-being of individuals
C. Health Promotion and Protection	CM G5: Work in partnership with others to promote health and well being and reduce risks within settings in defined caseload
D. Information Management/Information and Communication Technology	HSC434: Maintain and manage records and reports
H. Management and Administration	HSC3115: Receive, analyse, process and store information CM C5: Build a partnership between the team, patients and carers GEN44:Liaise between primary, secondary and community teams

Acknowledgements to Skills for Health (2011)

This workbook is divided into two parts.

Part 1 – Basic Questions - must be completed and marked within 6 weeks of receiving the workbook. Once they have been marked and the required standard has been reached a practical assessment of the administration of SACT can be undertaken by an approved assessor. If competency is achieved this will enable the learner to administer chemotherapy without supervision.

Part 2 – Advanced Questions - must be completed within 4 weeks of achieving the initial SACT competency and where possible, be marked by the same approved assessor who marked Part 1

Resources for information are indicated in blue italics after each question

Details of Supporting Parties

What is a 'Practice Supervisor?'

- A nurse who will teach and supervise the learner in the development of SACT skill

Who can be a 'Practice Supervisor?'

A nurse that:

- has been administering SACT for a one year or more,
- is up-to-date in the competency themselves
- and is on the Trust chemotherapy register as chemotherapy competent

What is an 'Assessor?'

- A nurse who can complete the summative assessment (Trust Chemotherapy Competency)

Who can be an 'Assessor?'

- A nurse that has been administering SACT for a one year or more
- has an in up-to-date competency themselves
- is on the Trust chemotherapy register as an Assessor

NB : A Practice Supervisor, Assessor and Clinical Practice Educator can be the same person

Anyone involved in your knowledge and skill development is required to document there input and a record of the number of hours support provided should be recorded here.

Name	Designation	Signature	Are you their Practice Supervisor or Assessor	Duration spent with learner (Date, time and duration)

Self Assessment of Knowledge and Understanding

BEFORE you start and **AFTER** you finish this workbook, assess your own level of knowledge and understanding in relation to the following criteria.
(Please note: you should be able to assess yourself as a minimum 'Competent' by the end of this workbook for safe unsupervised practice.)

BEFORE	Learning Outcome	Novice	Competent	Expert
Professional	Professional and legal issues for performing the skill.			
Drug Action	Ability to explain drug modality of action.			
Side Effects	Ability to prevent, recognise and treat a multitude of toxicities			
Health & Safety	Knowledge of national and local health and safety requirements			
Patient Preparation	An ability to confidently prepare a patient / relative / carer for the administration of SACT / chemotherapy and give support and advice during therapy.			

AFTER	Learning Outcome	Novice	Competent	Expert
Professional	Professional and legal issues for performing the skill.			
Drug Action	Ability to explain drug modality of action.			
Side Effects	Ability to prevent, recognise and treat a multitude of toxicities			
Health & Safety	Knowledge of national and local health and safety requirements			
Patient Preparation	An ability to confidently prepare a patient / relative / carer for the administration of SACT / chemotherapy and give support and advice during therapy.			

Knowledge for Practice: Professional Accountability / Roles and Responsibilities and Fitness to Treat

1. Awareness and understanding of your **responsibilities and accountability** is essential for safe SACT. Circle **True or False** for the following statements. ~~*Chemotherapy Treatment Policy 472*~~

True / False	SACT drug administration assessments can be carried out by any registered nurse who is already competent in SACT drug administration
True / False	It is the responsibility of the nurse to check the patient's weight on each visit for chemotherapy, record this and to inform the doctor of any significant (>10%) change in weight from the baseline measurement for the chemotherapy course.
True / False	In addition to others it is the nurse's responsibility to raise concern with the prescribing doctor or clinical nurse specialist caring for the patient if she/he has any doubts as to the ability of the patient (or their dependent carer) to successfully manage the administration of an oral chemotherapy regimen in the community setting
True / False	Any nurse can counsel a patient or relative when handing over their first cycle of oral chemotherapy.
True / False	It is only the doctor and pharmacist who are responsible for knowing the normal dose of the SACT and how to calculate a dose modification.
True / False	It is my responsibility to maintain competence and this includes organising my SACT annual self assessment

2. How many people should check SACT in your trust and what qualifications must they have? Circle one answer. ~~*Chemotherapy Treatment Policy 472*~~

a. One appropriately trained nurse: as long as she/he is chemotherapy competent.
b. Two appropriately trained nurses should independently check. The 1st nurse must be IV trained and the 2nd nurse (the nurse administering the chemotherapy), have an in-date chemotherapy competency.
c. Two nurses although the second does not need to be chemotherapy competent as long as she/he is IV trained, this includes agency staff.
d. Two nurses, although the second does not need to be chemotherapy competent as long as she/he is training towards SACT competence.

3. Which of the following forms a part of the **first** independent check? (not the administrator) Circle one answer. ~~*Chemotherapy Treatment Policy 472*~~

a. Checking the patient is fully informed of the side effects and that a consent form relating to the cycle of chemotherapy to be administered has been signed.
b. Checking the prescription against the chemotherapy agent to ensure it is the correct patient, drug, dose, date and the drug has not expired.
c. Checking the prescription against the chemotherapy syringes and/or infusion bags to ensure it is the correct patient, drug, dose, date and that the patient has valid consent and fit for treatment.
d. Checking that the patient has an appropriate vascular access device (VAD) in situ

4. According to your local policy list the responsibilities of the practitioner completing the **second independent check** in the areas listed below. ~~*Chemotherapy Treatment Policy 472*~~

Area	Responsibilities
The prescription	e.g. That the nurse is familiar with the chemotherapy regimen and is satisfied that the prescription/proforma is complete and legal
Patient information and consent	
Patient identity	
Fitness to treat	
The drug and the dose	

5. There are times when you should not administer or allow others to administer SACT. Circle **True or False** for the following statements. ~~*Chemotherapy Treatment Policy 472*~~

True / False	On completion of a bolus SACT administration and/or when a SACT infusion has been started, the nurse should ensure that the prescription chart has been signed and all other relevant documentation has been completed.
True / False	Any nurse may administer oral SACT because it is not as harmful as the intravenous route; therefore the same checks are not required.
True / False	If the consent form and the prescribed treatment do not match exactly it is ok to proceed to administer the drug(s) as long as the doctor amends the form retrospectively having acknowledged the disparity.
True / False	All first cycle chemotherapies must be administered in the in-patient setting
True / False	If I do not feel the chemotherapy is going to be beneficial to the patient, and is not in the patients best interests I am obliged to administer it if it as long as it has been prescribed and valid consent has been obtained and documented.
True / False	I should know the side effects of each of the drugs I am administering and if I do not I should know where to find the information.
True / False	It is OK for my colleague to draw up my pre-medications for me
True / False	It is a part of my responsibility as the SACT administrator to ensure that the patient has 24 hour contact details to seek advice and support.

6. Consent is a vital component of any care delivery. Please answer the following questions in relation to SACT by referring to your local Chemotherapy Treatment Policy. ~~*Chemotherapy Treatment Policy 472*~~

a. When checking the consent form against the prescription chart – what are you checking?	
b. Who can take the consent for chemotherapy and complete the form?	
c. How should patients be involved in the consenting process?	
d. What information should be provided for patients and in what form during the consent process?	
e. Who needs to confirm consent and when?	
f. Does the consent form cover the whole course of SACT/ Chemotherapy or just that cycle?	

7. How would you check the patient was fully informed and had consented to receiving systemic anti-cancer therapy? ~~*Chemotherapy Treatment Policy 472*~~

Most deaths within 30 days of chemotherapy are as a consequence of cancer progression although some are due to complications of chemotherapy (NCAG 2009). It is therefore important to consider your role in assessing toxicities and whether the patient is fit to proceed with the planned treatment. As a SACT administrator it is important that you can escalate concerns if you do not feel proceeding would be in the patient's best interests

8. According to your hospital's local policy or guidelines, list the checks / assessments that are required before **you administer** a drug in order to decide whether a patient is fit to receive the treatment. ~~*Chemotherapy Treatment Policy 457*~~ */ Peer Review Measures*

9. Please identify the performance status tool that is used in your area and briefly describe its purpose. Are you aware of any other performance status tools that are used?

10. What does the logo below mean and how does this relate to the patients undergoing SACT / in your organisation? *Cancer Research UK 2012; NHS Choices*

What is an information prescription according to Macmillan Cancer Support?		
What does the term information prescriptions system (IPS) refer to according to NHS Choices?		
How do you record the information/advice that you have provided a patient within your organisation?		

11. Intrathecal chemotherapy is administered by the spinal route and there have been fatal cases where drugs intended for intravenous medicines have been accidentally administered intrathecally. These situations would be referred to as NEVER EVENTS and measures have been taken both nationally and locally to ensure they can never happen. ~~*Intrathecal Chemotherapy Policy No 1341*~~
Please circle **True or False** to the following questions

True / False	Any doctor can prescribe intrathecal chemotherapy
True / False	Intrathecal chemotherapy can be administered at the same time as intravenous chemotherapy
True / False	Only nurses on the intrathecal register can check and witness the administration of intrathecal chemotherapy
True / False	Intrathecal chemotherapy must be administered in a designated area.

Knowledge for Practice: What are SACT's?

An understanding of the cell cycle is important when administering SACT to be able to explain to patients why they are having more than one drug, and why the drugs they are receiving are different from that of another patient.

Both cancer and normal cells go through the same cell division processes, which is referred to as the 'cell cycle'. The cell cycle is an ordered sequence of events culminating cell growth and division into two daughter cells.

The phases of cell division are…

- The **Inter phase**, divided into three phases (G1,S,G2) (longest phase)
- The **Mitotic phase** (M) (a relatively short period: 30-90mins)

Inter-Phase

- Each cell begins its growth during the 'post mitotic' period = G1
  G1 Phase= Enzymes necessary for DNA production, other proteins and RNA are produced.
- This is then followed by DNA synthesis = S
  S Phase= All DNA synthesis for a given cycle takes place.
- Then the cell enters pre mitotic phase = G2
  G2 Phase = Further protein and RNA synthesis occurs and the cell prepares for division

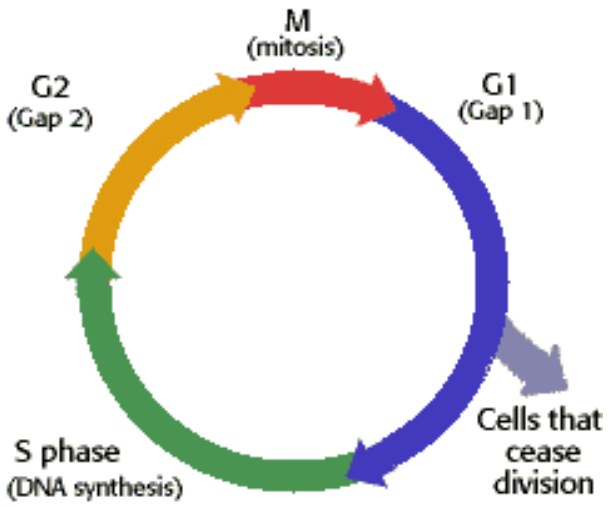
Mitotic-Phase

- G2 is immediately followed by mitosis
  M Phase = Physical division takes place and two daughter cells are formed

At the end of M phase cells either rejoin the cell cycle at G1 or enter G0

- **G0** = Exit from cell cycle. Cells are resting or inactive/ non-dividing cell with respect to macromolecular synthesis and insensitive to much traditional chemotherapy

(Skeel R.T & Khleif S.N 2011)



The Biology Project 2004

12 Match the letter of the following words to the following descriptive statements. *CRUK Website*

Letter	Description	Words
	Drugs **toxic to cells, or cell killing,** used to destroy cancer cells. They do not have the ability to distinguish a cancer cell from a healthy cell.	A. Cytostatics
	Drugs that do not kill cancer cells but work by **stopping the cancer cells from multiplying.** Therefore they stop the cancer growing, for example, they block particular receptors of the cancer cell.	B. Targeted Therapies / biological therapies
	Drugs or other substances that **block the growth and spread** of cancer by interfering with specific molecules involved in tumour growth and progression. These are often referred to as 'molecularly targeted drugs' They focus on molecular and cellular changes that are specific to cancer.	C. Cytotoxics

Phase and Cell Cycle Specificity
Most classic chemotherapeutic agents can be grouped according to whether they depend on cells being in cycle (i.e. not in G0) or, if they depend on the cell being in cycle, whether their activity is greater when the cell is in a specific phase of the cell cycle. Most agents cannot be assigned to one category exclusively. Nonetheless, these classifications can be helpful for understanding drug activity.

Active in the Cell Cycle
- **Cell Cycle Phase specific drugs**
- **Cell Cycle Phase non-specific drugs**

Not Active in Cell Cycle
- **Cell cycle non-specific**

Cell Cycle phase-specific drugs
Agents that are most active against cells in a specific phase of the cell cycle are called *cell cycle specific drugs* i.e. drugs that act only during a specific portion of the cell cycle.

Cell cycle non-phase specific drugs
Agents that are effective while cells are actively in cycle but that are not dependant on the cell being in a particular phase are called *cell cycle-specific or cell cycle phase non-specific*. This group includes most alkylating agents, the anti-tumour antibiotics and some miscellaneous agents.

Cell cycle-non specific drugs
Agents that are effective whether cancer cells are in any cycle or in the resting and are called *cell cycle non-specific drugs.* (Skeel R.T & Khleif S.N 2011)

Cancer Chemotherapy drugs tend to be administered in combination as they act upon different phases of the cell cycle, which has the intention of causing maximum cell kill.

Classic chemotherapeutic agents can be classified into categories, based on factors such as how they work, their clinical structure, and their relationship to another drug. Because some drugs act in more than one way they may belong to more than one group.

The cytotoxic drug categories are:
- Topoisomerase Inibitors (type I & II)
- Mitotic Inhibitors / Plant Alkaloid
- Alkylating Agent
- Anti-metabolite
- Anthracyclines / Anti-tumour Antibiotics

13. Based on the information you have read above complete the table below for the 5 cytotoxic drug categories *New Earth BioMed – website*

Cytotoxic drug classification.	Example of one drug	Main Toxicities	Is it cell cycle specific? (If Yes state the phase)	Modality of action
Topoisomerase Inibitors (type I & II)				
Mitotic Inhibitors / Plant Alkaloid				
Alkylating Agent				
Anti-metabolite				
Anthracyclines / Anti-tumour Antibiotics				

Knowledge for Practice: Targeted Therapies

The use of non-cytotoxic drugs for the treatment of cancer has progressed rapidly in recent years. Targeted cancer therapies are drugs or other substances that block the growth and spread of cancer by interfering with specific molecules involved in tumour growth and progression. They are also referred to as "molecularly targeted drugs/therapies".

Molecularly targeted therapies are vastly different from the traditional chemotherapeutic agents as these newer drugs are designed with the intention to specifically target molecules that are uniquely or abnormally expressed within cancer cells while sparing normal cells (Skeel and Khleif 2011).

Targeted cancer therapies interfere with cancer cell division (proliferation) and spread in different ways. Many of these therapies focus on proteins that are involved in cell growth signalling pathways, which form a complex communication system that govern basic cellular functions and activities, such as: cell division, tumour blood vessel development, cell movement, cell responses to specific external stimuli, and even cell death.

By blocking signals that tell cancer cells to grow and divide uncontrollably, targeted cancer therapies can help stop cancer progression and may induce cancer cell death through a process known as apoptosis. Other targeted therapies can cause cancer cell death directly, by specifically inducing apoptosis, or indirectly, by stimulating the immune system to recognise and destroy cancer cells and/or by delivering toxic substances directly to the cancer cells (NCI 2012a).

There are many different types of targeted therapies and categorisation and sub-classification can be seen and described in different ways and is likely to change with future drug developments.

For the purpose of this workbook 8 main categories are identified below:

a) Monoclonal antibodies (MAB) ' large molecules'
b) Cancer vaccines
c) Growth factor for blood cells
d) Cancer Growth Blockers (Small molecules Inhibitors)
e) Anti angiogenics
f) Immunotherapy (i.e. Interferon and Interleukin 2)
g) Gene therapy
h) Hormone and hormone therapy

14. Match the letter of the following words to the following descriptive statements. For each category describe their mode of action *CRUK – Website*

Letter	Description	Words
	Drugs that stop tumours from growing their **own blood vessels**. There are three different types; drugs that block the growth factor from reaching the cell, drugs that block signaling within the cell, and drugs that affect signals between cells.	A. Monoclonal antibodies (MAB) 'large molecules'.)
	A type of **protein** made in the laboratory that can bind to substances in the body, including tumour cells. These drugs are designed to recognise and find specific **proteins on cancer cells** by recognising one particular protein. They can be used alone or to carry drugs, toxins, or radioactive materials directly to a tumour.	B. Cancer vaccines
	A therapy that uses **coded messages** to tell cells how to make proteins. Proteins are the molecules that control the way cells behave. This might be to; encourage the cell to multiply (known as oncogenes), to tell the cell to stop the multiplying (tumor suppressor), or send a message to repair	C. Growth factor for blood cells
	Also called **endocrine therapy**. It can include drugs such as oestrogen (e.g. stilboestrol) or progesterone (e.g. medroxyprogesterone). They may be given to block (antagonise) the body's natural receptors.	D. Cancer Growth Blockers
	Drugs that belong to a group of body **chemicals called cytokines**. They can work in three ways by; interfering with the way cancer cells grow and multiply, by stimulating the immune system and encouraging killer T cells and other cells to attack cancer cells or by encouraging cancer cells to produce chemicals that attract immune system cells to them.	E. Anti-angiogenics
	These drugs deliver tiny amounts of proteins into the body. Depending on the drug, these proteins might come from **viruses, bacteria or cancer cells** but they are not capable of causing disease. They can either be used to **prevent or treat** cancer	F. Immunotherapy (e.g. Interferon and Interleukin 2)
	These drugs are also known as colony stimulating factors. They are substances produced by the body and there are many different types. Some types stimulate the **bone marrow** to make certain **blood cells.** We can now make some growth factors in the laboratory. Growth factors are also known as colony stimulating factors.	G. Gene therapy
	These drugs are also called **cancer growth inhibitors**. Once in the body, most small molecules can easily travel across cell membranes, including the plasma membrane. This means that they can be used to interfere with **proteins located either outside or inside the cell**. They are a type of biological therapy and include tyrosine kinase inhibitors (TKI), proteasome inhibitors, mammalian target of rapamycin (mTOR) inhibitors, Platelet derived endothelial growth factors (PDGF), PI3K inhibitors, histone deacetylase inhibitors and hedgehog pathway blockers.	H. Hormone and hormone therapy

15. What is meant by Personalised Medicine? *NCI 2012b*

16. Give an example of each of the targeted therapies below. *Macmillan Cancer Support*

	Drug
Hormone and hormone targeted therapy	
Anti angiogenics	
Cancer Growth Blockers (Small molecules Inhibitors)	
Growth factors for blood cells	
Monoclonal antibodies: HER 2 Protein	
Immunomodulator: Cancer Vaccine:	
Monoclonal antibody: VEGFR and/or E Anti angiogenics	

17. To show you have a fundamental understanding of what is meant by a targeted therapy circle whether the following statements are **True or False** *Macmillan Cancer Support*

True / False	Targeted therapies interact with specific molecules that are part of the pathway and processes used by cancer cells to grow, divide and spread throughout the body
True / False	The development of targeted therapies requires the identification of 'good targets' that are known to play a key role in cancer cell growth and survival.
True / False	Targeted therapies act on molecular or cell receptor targets which have been identified by research
True / False	Targeted therapies affect all rapidly dividing cells
True / False	Targeted therapies are deliberately chosen or designed
True / False	Targeted therapies are identified through trial and error
True / False	Targeted therapies may be associated with fewer toxicities / side effects because they cause little or less damage to normal cells
True / False	Small molecules, vaccines, antibodies and gene therapies are all types of targeted therapies.

Knowledge for Practice: Health and Safety: Safe Handling, Transportation and Disposal of Waste.

Safe Handling of SACT is imperative as there is the potential for contamination to those involved, at all stages in the process: preparation, administration and disposal of drugs. These risks can be categorised into three categories: short term effects, reproductive effects (teratogenic) and systemic effects (mutagenic and carcinogenic).

18. List three short term symptoms that could affect the skin if cytotoxic agents came in direct contact with it? *Royal Marsden Hospital Manual of Clinical Nursing Procedures (RMH Manual)*

1.	
2.	
3.	

19. As there is a small risk of exposure, what information should pregnant staff be given regarding handling cytotoxic drugs. ~~*Chemotherapy Treatment Policy 472;* Protection of New and Expectant Mothers at Work 82~~

20. It is advised that personnel handling cytotoxic drugs wear personal protective equipment (PPE) to reduce the risk of systemic absorption of Systemic Anti Cancer Therapy. Name 4 types of personal protective equipment (*Royal Marsden Hospital Manual of Clinical Procedures (RMH Manual)*

1.	
2.	
3.	
4.	

21. Are gloves required to handle oral chemotherapy? Please circle the correct answers (*RMH Manual)*

Yes/No	Staff should wear disposable gloves if cytotoxics are handled or removed from their packaging.
Yes/No	Most oral chemotherapy agents do not become active until they are in contact with the gastric enzymes

22. What does COSHH stand for? Please tick (√) the correct option. ~~*COSHH Assessment policy 107*~~

	Control of Substances Hazardous to Health
	Control of Substances Harmful to Health
	Containment of Substances Hazardous to Health
	Confinement of Substances Hazardous to Health

23. How should parenteral SACT be transported from pharmacy to a clinical area? Please tick (√) the correct option. ~~*Chemotherapy Treatment Policy 472*~~

	In any transit bag by a pharmacy porter or ward staff		In a zip-lock bag by a pharmacy porter or ward staff
	In a dedicated transit bag by a pharmacy porter or ward staff		Within the pharmacy stock box.

24. SACT should be stored in the ward environment in a specific area which should be identified with a yellow and purple label stating 'FOR STORAGE OF CHEMOTHERAPY ONLY'. Please place a tick (√) next to the statements below to indicate where SACT should be stored if not required for immediate use. ~~*Chemotherapy Treatment Policy 472*~~

	In a locked medicine cupboard or fridge		Any where as long as it is aware from the immediate clinical environment.
	In a designated locked cupboard / chemotherapy fridge that is labelled, within a restricted access room		In a tray in the treatment room

25. List the actions you would take in the following situations when disposing / handling drugs or equipment that has been contaminated with SACT. ~~*Waste Management Policy 112 / Chemotherapy Treatment Policy 472 /*~~ *RMH Manual* ~~*/ RMH Patient information leaflet: Taking oral chemotherapy*~~

A partially used bag or syringe of chemotherapy	
A completed, bag or syringe of chemotherapy	
A capecitabine (Xeloda) capsule	
An unused intact bag of chemotherapy	

26. List two practical activities you can do when giving IV SACT drugs to reduce the risk of a cytotoxic spillage? *RMH Manual*

1.	
2.	

27. According to your local policy please describe steps you would take to deal with a liquid chemotherapy spillage on the floor? ~~*Chemotherapy Treatment Policy472*~~

	Actions
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

28. Please read the following statements related to the advice you would give a patient, relative or carer to minimise contamination in the home environment and circle **True or False** accordingly. ~~*Waste Management Policy 112 / Chemotherapy Patient Information Leaflet /*~~ *RMH Manual*

True / False	Wash hands thoroughly after taking / giving oral chemotherapy
True / False	Throw any remaining unused tablets into the domestic waste bin
True / False	Relatives / carers should wear disposable gloves to handle these drugs or push the oral medicine out of its blister pack (if applicable) into a medicine pot as there is a risk of skin absorption
True / False	Place all disposable used items (e.g. medicine pots) into the clinical waste bag
True / False	Dispose of cytotoxic waste in to a yellow lidded sharps bin

Knowledge for Practice: Health and Safety: Preparation for Administration

29. The dose of chemotherapy is usually determined by one of the following. Please state what the abbreviations stand for and explain how they are calculated in your clinical area? Then based on the information in the boxes, determine the dose the patient is due? *Chemotherapy Proformas*

	Stands for	What is it and what information do you need in order to calculate it?	Calculate the following doses based on the information provided
BSA			**BSA** Height 158 cm / Weight 52kg = BSA = 1.5 Drug dose = 75mg/ m^2 Therefore the drug prescribed should be:
AUC (e.g. used to determine carboplatin dosing)			**AUC** GFR = Glomerular Filtration Rate AUC = 5 EDTA GFR 90ml/min Drug dose = (GFR+25)x5 Therefore the drug prescribed should be:

30. The functioning of certain body organs requires checking prior to the administration of SACT to ensure patient safety. For those listed explain the significance of assessing the physiology prior to administering *Lilly Book*

Organ Function	Why do we need to assess?	What test or investigation is often requested?
Liver Function		
Cardiac Function		
Renal Function		
Lung Function		

Haematopoietic (blood) Function		

Knowledge for Practice: The Administration of Cytotoxic Chemotherapy

31. List the routes that SACT can be administered via. *RMH Manual*

1.		6.			
2.		7.			
3.					
4.					
5.					

32. There are advantages and disadvantages to each of these routes. Please list two of each for the oral and intravenous route. *RMH Manual*

Route	Advantage	Disadvantage
Oral		
Intravenous		

33. Chemotherapy can cause damage or harm to surrounding tissue if they leak from the vein. Match the following terms with the correct description by placing the matching letter in the box. ~~*Extravasation Policy 67*~~

Letter	Description	Letter & Word
	Whilst the medications themselves can not damage the tissues, if the volume of fluid is large, the swelling can result of compression of the nerve	A Irritant
	The inadvertent administration of non-vesicant solution/medication into surrounding tissues	B Vesicant
	Inadvertent leakage of vesicants out of the vein into surrounding tissues	C Non-Vesicant
	A drug that has the potential to cause tissue damage such as necrosis if it leaks into the tissues	D Infiltration
	A drug that can cause local tissue irritation if it leaks into the tissue	E Extravasation

34. Complications can occur during the administration of any intravenous medication, therefore knowledge on flare reaction and venospasm is especially important in chemotherapy care. Complete the box below. ~~*Extravasation Policy 67*~~*/ RMH Manual*

Complication	Definition / Description	Management
Flare reaction		
Venospasm		

35. It is important that you familiarise yourself with your local extravasation policy/guidance. Please list 5 chemotherapy drugs which are vesicants and 5 which are irritants. ~~*Extravasation Policy 67*~~, *Lilly Book.*

	Vesicants	Irritants
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

36. Name four aspects of the venous access device/site which must be checked and assessed before and during the administration of chemotherapy (applies to both peripheral and central venous access device. ~~*Extravasation Policy 67*~~

	Checks / Assessment
1.	
2.	
3.	
4.	

37. You are about to administer chemotherapy via a peripherally inserted central catheter (PICC). You find it can be flushed although will not "flash-back" blood.

a) What would term would be used to refer to this situation? Circle one correct answer. ~~*Extravasation Policy 67*~~

Persistent Withdrawal Occlusion	Extravasation
Partial Withdrawal Occlusion	Infiltration

b) What two documents or publications can you refer to in order to find written guidance on what action to take in this situation? ~~*Intranet RMH*~~

	Reasons
1.	
2.	

38. Give one reason why bolus irritant or vesicant SACT should be given via the side arm of a fast running infusion (NB this applies to adult and teenage patients only) *RMH Manual*

	Reason

39. Why is it suggested that vesicants should be given first when administered via a peripheral cannula? *RMH Manual*

Reason

~~40.~~Which of the following are potential signs of an extravasation, circle **True or False**? ~~*Extravasation Policy 67*~~

True / False	No blood return
True / False	Resistance on plunger or poor flow rate, infusion slows or stops or absence of free flow
True / False	Swelling or Induration
True / False	Low grade fever
True / False	Discomfort – burning, stinging, pain.
True / False	Redness or blistering
True / False	Blanching then inflammation
True / False	Nettle rash

~~41.~~40.

41. If extravasation has occurred whilst administering a vinca alkaloid which of the following actions should be taken~~? *Extravasation Policy 67*~~

True / False	Stop the infusion / injection and withdraw as much drug as possible
True / False	Apply a warm pack
True / False	Apply a cold pack and elevate the limb
True / False	Apply thin layer of DMSO topically to the marked area using the small plastic spatula in lid of the bottle
True / False	Document
True / False	Provide/ offer a patient information sheet on the subject with contact details for advice and support
True / False	Inject 1500iu hyaluronidase subcutaneously around the site

Knowledge for Practice: Side Effects / Toxicities and their management: Bone Marrow Depression (BMD)

Bone Marrow Depression (BMD) is a serious side effect of chemotherapy and it is vital that all nurses working with drugs that have the potential to cause BMD hold a fundamental understanding of the nursing and medical management in order to prevent, recognise and treat it.

42. What is Bone Marrow Depression and how does cytotoxic chemotherapy cause it? *NICE Guidelines 2012*

43. It is important that you can assess your patient's clinical status in terms of assessing their fitness to proceed with treatment. Circle **True or False** to the following statements. *NICE Guidelines 2012*

True / False	Bone Marrow Depression is abnormally low numbers of white blood cells, red blood cells and/or platelets.
True / False	The time when the blood count reaches its lowest point is called the nadir. This varies depending on the chemotherapy drugs used, but it usually occurs 7-10 days after treatment.
True / False	Bruising, nosebleeds and bleeding gums are often signs that a patient is thrombocytopenic
True / False	Chemotherapy induced anaemia is the most common dose limiting-toxicity associated with systemic chemotherapy
True / False	Up to 60% of people having chemotherapy for solid tumours experience anaemia.
True / False	Courses of chemotherapy may be delayed if the patient remains neutropenic
True / False	Patients always have a febrile neutropenic episode after each course of chemotherapy.
True / False	Neutropenic sepsis is a life-threatening medical emergency
True / False	Not all patients with neutropenic sepsis require treatment with IV antibiotics.

Reducing / preventing neutropenic sepsis is difficult. Granulocyte colony stimulating factors (GCSF), antibiotics, and alterations to the cytotoxic regimen are the main prophylactic strategies (NICE 2012)

44. Advice to support patients is an additional strategy to preventing neutropenic sepsis. List 4 pieces of verbal / written advice would you give a patient, relative or carer to help them self-care having started a chemotherapy regimen, which can cause bone marrow suppression, for the first time? *Avoiding Infection When You Have Reduced Immunity, Macmillan Cancer Support 2013 - video*

1.	
2.	
3.	
4.	

The decision to proceed with treatment in terms of the full blood count is ultimately the responsibility of the patient's medical team (or formally delegated to another reviewing party). However, recognising whether a patient's blood results are within the correct parameters is also an important part of the chemotherapy administrator's role in terms of the checking process (for this it is important to refer to your local tumour group guidelines or protocol).

45. It is important as the administrator that you have first-hand insight into the normal full blood count value ranges. Please complete the box below with the correct ranges. ~~*HIS*~~

Haemoglobin (Hb)	Female	Male
Platelets		
Total White Blood Cells (WBC)		
Neutrophils		

46 List 4 signs and symptoms a patient with neutropenic sepsis could present with? ~~*RMH intranet Management of neutropenic sepsis*~~

	Signs and symptoms
1.	
2.	
3.	
4.	

47. List 4 nursing actions you would take when monitoring a patient with suspected or confirmed neutropenic sepsis? ~~*RMH intranet Management of neutropenic sepsis*~~

	Monitoring
1.	
2.	
3.	
4.	

48. Neutropenic sepsis is an oncology emergency so it is therefore important you are familiar with how neutropenic sepsis in patients having anticancer treatment is defined. According to the NICE (2012) Neutropenic Sepsis: prevention and management of neutropenic sepsis in cancer patients guidelines, please tick (√) the correct option from the statements below. *NICE Guidelines 2012*

	An absolute neutrophil count of ≤ 0.5 x 10^9/L and a temperature > 38°C or other signs or symptoms consistent with clinically significant sepsis.
	An absolute neutrophil count of ≥ 1.0 x 10^9/L and a temperature > 38.5°C with any signs or symptoms consistent with clinically significant sepsis.
	An absolute neutrophil count of ≥ 1.0 x 10^9/L and a temperature > 37.0°C

49. What does NICE (2012) recommend as a first line antibiotic treatment for neutropenic sepsis, excluding patients with central venous access devices? *NICE Guidelines 2012*

50. All patients with suspected neutropenic sepsis should start antibiotic treatment as soon as possible and because antimicrobials are classified as a critical medicine what is the specified time, according to your local policy that they must be administered within once the patient has arrived in the hospital. Circle / state the correct answer. ~~*Reducing Harm from Delayed Omitted and Delayed Medicines 1765*~~

1 hour	2 hours	3 hours	Other state:

51. What does GCSF stand for and what is it? *NICE Guidelines 2012*

Knowledge for Practice: Side Effects / Toxicities and their management: Gastro-intestinal Tract (GI Tract)

52. Why is the gastro-intestinal tract commonly affected by chemotherapy? *Brighton and Wood (2005) RMH Handbook of Chemotherapy*

53. Identify six common gastro-intestinal side effects? *Brighton and Wood (2005) RMH Handbook of Chemotherapy*

1.		4.	
2.		5.	
3.		6.	

54. Aspects of 'oral care / hygiene' play an important role in preventing mucositis, read the following statements and indicate whether they are **True or False**. *DTC Guidelines*

True / False	Tooth brushing should be modified with thrombocytopenia
True / False	Oral hygiene should be encouraged to prevent the build up of plaque and debris
True / False	Benzydamine mouthwash (Difflam) is recommended to treat established mucositis
True / False	Chlorexidine is recommended to treat established mucositis
True / False	Encourage dental flossing and mouth washing
True / False	All patients on SACT are at risk of developing mucositis
True / False	Patients should be encouraged to use a normal oral hygiene – clean teeth with toothpaste after breakfast and a bedtime

55. It is important to obtain maximum therapeutic effect from anti-emetics in chemotherapy care. On this basis which of the following statements is **True or False**? *DTC Guidelines*

True / False	Anti-emetics are best given regularly, not as required
True / False	Optimal emetic control in the acute phase is essential to prevent nausea and vomiting in the delayed phase
True / False	If vomiting is not controlled it could be life-threatening

56. Below is the grading The National Cancer Institute Common Toxicity Criteria of Adverse Events (NCI CTCAE) the frequently used in chemotherapy toxicity assessments. Describe 2 reasons it is used in clinical practice? *National Cancer Institute website*

The National Cancer Institute Common Toxicity Criteria of Adverse Events (NCI CTCAE)
Grade 0 No adverse events
Grade 1 Mild adverse event
Grade 2 Moderate adverse event
Grade 3 Severe and undesirable adverse event
Grade 4 Life-threatening or disabling adverse event
Grade 5 Death related to an adverse event

1.		2.	

57 Each SACT has a different emetogenic potential. By referring to your local guidelines that indicate the risk of emesis, by placing 'H' for High, 'M' Moderate and 'L' for Low next to the following drugs. ~~*DTAC*~~

	Methotrexate 50mg/m2		Paclitaxel
	Cyclophosphamide (po) & Cyclophosphamide <750mg/m2		Busulphan
	Fludarabine		Gemcitabine
	Cisplatin		Oxaliplatin
	Carboplatin		Ifosfamide <1.5g/m2
	Temozolomide		Irinotecan
	Vinorelbine		Bleomycin

Knowledge for Practice: Side Effects / Toxicities and their management: Other Systemic Toxicities

There are many other side effects associated with SACT that have not yet been covered in this workbook. It is important, as an administrator you familiarise yourself with the specific tumour guidelines or unit protocol, taking time to discover, within you field of work, how you can support patients to prevent, recognise and treat these side effects. For this next section of the workbook focus has been placed on the remaining common side effects.

With all side effects it is important to have an awareness of the base-line investigations requested on the associated proforma and / or in the protocol. As a SACT administrator it is important you check these have been completed as required to allow for later comparisons and reduce the chance of protocol breaches. As your knowledge grows awareness of the parameters may also prove useful to aid decision making regarding decisions on the patients' fitness to treat.

Knowledge for Practice: Side Effects / Toxicities and their Management: Other Systemic Toxicities

58. For the following toxicities a) name two signs and symptoms and b) the nursing observation / monitoring / investigations that are required if these side effects / toxicities occur. *Standardised care plans, Protocols and Proformas, Lilly Book*

Side Effect / Toxicity	a. Signs and Symptoms	b. Nursing Observation / Monitoring/investigations required
1. Ototoxicity		
2. Pulmonary toxicity		
3. Cardiac toxicity		
4. Hepatic Toxicity		
5. Neurological e.g. Peripheral neuropathy Encephalopathy Pharyngolaryngeal dysthesia		
6. Dermatological Palmerplantar erythrodysesthesia		
7. Photosensitivity		
8. Hyperpigmentation		
9. Rash Acne form		

Knowledge for Practice: Anaphylaxis and Hypersensitivity

An Adverse Drug Reaction (ADR) can be defined as an "unwanted effect caused by a drug used in its therapeutic dose". Adverse Drug Reactions include allergy and hypersensitivity reactions plus other unwanted effects.

According to the Resuscitation Council (UK) (2011) the UK incidence of anaphylactic reactions is increasing. SACT regimens include high risk medications that can put the patient at an increased risk of a hypersensitivity reaction or anaphylaxis. It is therefore important nurses involved in SACT practice are aware of how to prevent, recognise signs and symptoms and treat both hypersensitivity and anaphylaxis in practice. Nurses also must clarify whether the patient has a true allergy or risk factors for hypersensitivity/anaphylactic reactions

59. Please briefly describe how you would define the following words/ phrases. ~~*Allergy and Hypersensitivity and Adverse Reactions Recording Policy and Procedures 1619*~~

Word	Definition
Allergy	
Hypersensitivity	
Anaphylaxis	
Drug Intolerance	

60. Administering pre medication in an aim to prevent hypersensitivity and/ or anaphylaxis occurring is important with high risk drugs, which drugs are usually used? ~~*Allergy and Hypersensitivity and Adverse Reactions Recording Policy and Procedures 1619*~~

61. It is important to proactively prepare for a hypersensitivity or anaphylactic reaction. List the measures you would take for a patient who has already experienced 'hypersensitivity' to the drug and has been admitted to your area for re-challenge / desensitisation protocol. ~~*Allergy and Hypersensitivity and Adverse Reactions Recording Policy and Procedures 1619 /*~~ *Specific Chemotherapy Proformas*

1.	
2.	
3.	
4.	

63. Please circle true or false for the following statements. ~~*Allergy and Hypersensitivity and Adverse Reactions Recording Policy and Procedures 1619*~~

True/ False	Patients having an anaphylactic reaction should be recognised and treated using the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach
True/ False	The first line treatment for anaphylaxis is a combination of Chlorphenamine 10mg and Hydrocortisone 100mg IV.
True / False	Adrenaline 1:1000 should be administered IM as the first line treatment for anaphylaxis
True / False	Medication such as, Hydrocortisone and Chlorphenamine is likely to be increased in dose and frequency before and during desensitisation / drug re-challenge.
True/ False	Intravenous adrenaline must only be used in certain specialist settings and only by those skilled and experienced in its use.
True/ False	You need a prescription for Hydrocortisone and Chlorphemamine in a life-threatening situation
True/ False	Titrating the drug dose and infusion rate are both principles for managing / preventing the onset of hypersensitivity and/ or anaphylaxis.
True/ False	It is acceptable to commence a desensitisation / drug re-challenge outside of working hours
True/ False	If the patient experiences Grade 1 or 2 side effects during the initial or first desensitisation / re-challenge the drug should be stopped and an alternative considered.
True/ False	If the patient experiences Grade 1 or 2 side effects during the initial or first desensitisation / re-challenge exposure it would be appropriate to restart the infusion after 30 minutes of the symptoms subsiding
True/ False	You need a prescription for Adrenaline in a life-threatening situation

64. Each drug has a different potential to cause hypersensitivity and anaphylaxis. From the drugs listed below please place a (H) High or (L) Low in the box to indicate which ones are more likely to cause an immediate hypersensitivity reaction by referring to the *Lilly Book.*
(Excluding the drugs listed that are a part of a clinical trial)

H or L	Drug	H or L	Drug
	Capcitabine / 5-Fluorouracil		Etoposide
	Carboplatin		L-Asparaginase
	Paclitaxel		Methotrexate
	Melphalan		Rituximab
	Bevacizumab (Avastin)		Docetaxel
	Cytarabine		Oxaliplatin

Knowledge for Practice: Side Effects / Toxicities and their management: Fertility, Reproduction and Long Term Effects

65. Chemotherapy is a systemic treatment and a number of chemotherapy agents can affect fertility in both male and female patients to varying degrees. Please read the following statements and decide whether they are **True or False.** ~~*Semen Cryopreservation Policy 158 /* Chemotherapy Treatment Policy *472 / Pregnancy Assessment 1732*~~

True / False	Sperm banking should be considered and available for all male patients where future fertility is an issue
True / False	Sperm banking will not be considered for patients over 70 years of age
True / False	Both male and female patients must use a barrier method of contraception during treatment and for a year after treatment has completed
True / False	A drug that can cause harm to an unborn child is referred to as teratogenic
True / False	It is the responsibility of the member of staff preparing the patient for treatment to confirm the pregnancy status by carrying out a pregnancy test prior to treatment.
True / False	There is no risk of altered fertility from oral SACT therefore there is no need to assess and document discussions regarding fertility for these patients
True / False	The possibility of pregnancy should be considered in all relevant female patients before treatment commences

66. Most chemotherapy side effects are temporary and disappear once a patient's treatment is over. But for some people chemotherapy can cause long term changes months or many years after the chemotherapy has finished. Please indicate whether the following statements are **True or False**. *Cancer Research UK – Long term side effects from Chemotherapy and Osteoporosis risk & Hormone Therapy – website / McMillan Cancer support 2013 / Department of Health 2013*

True / False	Many people feel more tired than usual for a long time after chemotherapy treatment
True / False	A general lowered resistance to infection is only a short term side effect
True / False	A chronic change in bowel function is common after cancer treatment
True / False	Fertility will return with all patients after treatment completion
True / False	Osteoporosis is a commonly reported long term effect from chemotherapy and/or hormone treatments for breast and prostate cancer
True / False	Evidence suggests there is a risk of secondary cancers following treatment from chemotherapy itself
True / False	Testing of organ function such as the heart or lungs may be needed for some years after chemotherapy

Knowledge for Practice: Patient Information Giving, Support and Advice

Patients, relatives and carers information needs vary and will be influenced by their disease, treatment and care plan. Their information needs will also require tailoring to ensure they are culturally sensitive, and considerate towards the persons mother tongue, personal wishes, their ability to retain information, as well as beliefs and values. However, for safety reasons there are some key facts that you should ensure are embedded into the information given to patients, relative and carers when starting SACT to accompany orientation to local practices and pathways and the answering of any questions.

We always advise patients (or their carer) to contact the hospital for help and support if they have problems following discharge post SACT administration and for this we provide them with details of the 24/7 advice services.

67. List the circumstances in which a patient should contact the hospital, rather than their GP, following SACT administration. *Peer Review Measures*

1.	
2.	
3.	

68. How would you organise translation of languages in the verbal format in your organisation ~~*RMH intranet*~~

69. Give two examples of circumstances in which you would refer a chemotherapy patient to a district nurse ~~*Chemotherapy Policy 472*~~

1.	
2.	

SACT Calculations and Dosing Considerations

In clinical practice if in any doubt with calculations please seek advice from a senior colleague and pharmacy. You should attempt all questions and seek support where needed.

1. A 50 year old women presents for chemotherapy and you are due to start her treatment. It is documented she is fit to proceed and you are happy her bloods are acceptable. Doxorubicin 60mg/m^2 and Cyclophosphamide 600mg/m^2 have been prescribed.

   Calculate the dose of both drugs to be given if the patients' BSA is 1.6

   A : Doxorubicin dose:

   B : Cyclophosphamide dose:

2. You need to check that the dose of a drug has been prescribed correctly. It is 75mg/kg. The patient weighs 60kg, what should the dose of the drug be in grams?

3. A patient is due to receive Rituximab as a part of R-CHOP 21 regimen at a dose of 375mg/m^2. This drug is a monoclonal antibody and the risk of a hypersensitivity reaction is high, it is therefore given with specific pre-medications. To reduce the risk of a reaction the drug is slowly titrated up in terms of drip rate. The instructions for the first dose at cycle 1 state to infuse at a rate of 50mg/hr for 30 mins and if tolerated increase by 50mg/hr evey 30 mins, to a maximum dose of 400mg/hr.

   A: With a BSA is 1.7 what is the dose of Rituximab the patient should be receiving? Rituximab dose:

   B: What does your local IV or chemotherapy guide suggest is an adequate diluent volume for Rituximab for most patients?

   C: Based on your answers from part A of question 3 (round to the nearest whole figure), what rate should be entered on the infusion pump in ml/hr for a bag of Rituximab? Please complete this **without** reference to a local standardised table. Please show your workings.

   1st 50mg/hr for 30 mins:
   2nd 100mg/hr for 30 mins:
   3rd 150mg/hr for 30 mins:
   4th 200mg/hr for 30 mins:
   5th 250mg/hr for 30 mins:
   6th 300mg/hr for 30 mins:
   7th 350mg/hr for 30 mins:
   8th 400mg/hr for 30 mins:

4. a) You need to mix a drug which is prescribed at a dose of 675mg and the instruction indicates to dilute to a concentration of 2mg/ml with either Sodium Chloride 0.9%. What volume of diluent should be used?

   b) What would be the volume of diluent if the final concentration was to be 4mg/ml

5. A patient has unfortunately developed some haematology toxicities and requires a dose reduction of 25%. If the starting dose was 175mg what will the new dose be?

6. A patient has been dose reduced by 75% and the dose is now 187.5mg. What was the original dose?

For the next question an example is given to assist you in the principles.

You are asked to commence a drug for a patient that is on a clinical trial. The drug needs to be administered at a rate of 2mg/min for 15 minutes and then increase if tolerated to 4mg/min. Calculate the rate to be administered in ml/hr to be programmed into the infusion pump. The drug dose is 150mg and the bag has 75ml in it.
(**NB**: you will need to sit with the patient and press stop on the pump at the end of 15 minutes).

150mg in 75ml
150mg / 75ml = 2.0mg per 1ml (2.0mg / 2.0mg = 1 mg)
1ml / 2 = 0.5ml (1mg in 0.5ml)
Or
0.5 x 2mg = 1ml (2mg in 1ml)

1st Infusion Rate 2mg/min in converted to ml/hr

2mg per min
0.5 ml per min
0.5ml x 60 = 30ml/hr
30ml/hr x 2 = 60ml/hr

2nd Infusion Rate 4mg/min in converted to ml/hr

30ml/hr x 4 = 120ml/hr

7. You are asked to commence a drug for a patient that is on a clinical trial. The drug needs to be administered at a rate of 1mg/min for 15 minutes and then increase if tolerated to 3mg/min. calculate the rate to be administered in ml/hr to be programmed into the infusion pump. The drug dose is 145mg and the bag has 58ml in it.
(**NB**: you will need to sit with the patient and press stop on the pump at the end of 15 minutes)

1st Infusion Rate 1mg/min is converted to ml/hr

2nd Infusion Rate 3mg/min is converted to ml/hr

8. You need to give atropine as a part of the pre-medication for Irinotecan. The drug comes in 600mcg in 1 ml. The dose prescribed is 0.25mg, how many ml are needed to be administered?

9. What volume of diluent (WFI) needs to be added to reconstitute a 500mg powder vial to achieve a concentration of 50mg/1ml

10. You have 750mg of a drug in a 250ml bag. What is the time frame in mls per hour that the drug should be administered over if the drug's infusion rate is 10mg/min

Protocol Familiarisation Exercise

It is a good idea to familiarise yourself with the protocols used most frequently within your clinical area and ask questions about them before you administer them. This will help with familiarity and build your confidence. With the support of your Practice Supervisor identify **three** SACT protocols used in your clinical area, at least one must be from a **clinical trial** and answer the following questions.

Protocol Familiarisation Exercise: 1	
Name of the protocol (CCR number where applicable)	
What route is the drug due to be administered via?	
What condition is this protocol being used to treat?	
What is the treatment intention outlined on the consent form and or medical records e.g. Cure / Palliation / Adjuvant / Neo-adjuvant / Disease control (state)?:	
What SACT / chemotherapy drugs are a part of this protocol?	
Are any of the drugs? a) Vesicants b) Highly emetogenic c) At risk of causing hypersensitivity / anaphylaxis	Answer Yes or No a) b) c)
Describe the treatment plan (i.e. the days drugs are given on and the rest intervals between treatments)	
List the major toxicities associated with this treatment. For each toxicity describe any measures that should be taken to reduce / prevent it	
What pre-chemotherapy checks should be carried out prior to administering the first treatment? (List specific bloods required and Investigations)	
What nursing monitoring and checks are needed during drug administration?	
What pre-chemotherapy information, verbal and written would you give to the patient before they started this drug regimen?	

Protocol Familiarisation Exercise: 2	
Name of the protocol (CCR number where applicable)	
What route is the drug due to be administered via?	
What condition is this protocol being used to treat?	
What is the treatment intention outlined on the consent form and or medical records e.g. Cure / Palliation / Adjuvant / Neo-adjuvant / Maintenance / Other (state)?:	
What SACT / chemotherapy drugs are a part of this protocol?	
Are any of the drugs? a) Vesicants b) Highly emetogenic c) At risk of causing hypersensitivity / anaphylaxis	Answer Yes or No a) b) c)
Describe the treatment plan (i.e. the days drugs are given on and the rest intervals between treatments)	
List the major toxicities associated with this treatment. For each toxicity describe any measures that should be taken to reduce / prevent it	
What pre-chemotherapy checks should be carried out prior to administering the first treatment? (List specific bloods required and Investigations)	
What nursing monitoring and checks are needed during drug administration?	
What pre-chemotherapy information, verbal and written would you give to the patient before they started this drug regimen?	

Protocol Familiarisation Exercise: 3	
Name of the protocol (CCR number where applicable)	
What route is the drug due to be administered via?	
What condition is this protocol being used to treat?	
What is the treatment intention outlined on the consent form and or medical records e.g. Cure / Palliation / Adjuvant / Neo-adjuvant / Maintenance / Other (state)?:	
What SACT / chemotherapy drugs are a part of this protocol?	
Are any of the drugs? a) Vesicants b) Highly emetogenic c) At risk of causing hypersensitivity / anaphylaxis	Answer Yes or No a) b) c)
Describe the treatment plan (i.e. the days drugs are given on and the rest intervals between treatments)	
List the major toxicities associated with this treatment. For each toxicity describe any measures that should be taken to reduce / prevent it	
What pre-chemotherapy checks should be carried out prior to administering the first treatment? (List specific bloods required and investigations)	
What nursing monitoring and checks are needed during drug administration?	
What pre-chemotherapy information, verbal and written would you give to the patient before they started this drug regimen?	

Supervised Administration Record						
Cytotoxic Chemotherapy Intravenous Administration – Bolus Injection				**C – competent**		
The practitioner can administer by bolus injection Cytotoxic Medication safely via the Intravenous route and discuss complications and ongoing care						
For <u>each</u> supervised practice the appraisee <u>must</u>	**Minimum level**	**Supervised Assessments**				
1. Legal and Ethical Issues						
		Date				
Demonstrates an understanding of their accountability and responsibility in relation to Cytotoxic Chemotherapy administration according to their governing body	C					
Hand hygiene as per infection control guidelines was maintained through out procedure	C					
2. Pre-administration Assessment						
Review of treatment order	C					
Ensures availability of prescribed and dispensed chemotherapy agents	C					
Performs appropriate procedure for correctly identifying patient	C					
Assesses patient perceptions/history including toxicity assessment	C					
Able to identify contraindications and/or pre-treatment monitoring requirements for prescribed treatment.	C					
Uses appropriate patient strategy for reduction of anxiety, increase of understanding and encouragement of compliance	C					
Communicates with patient proposed plan of care & obtains informed consent	C					
Ensures suitable venous access available and selects appropriate route for administration as per local policy.	C					
Demonstrate appropriate selection and preparation of treatment environment and equipment including access to and functionality of emergency equipment. Clear access to patient of emergency equipment and staff Vital signs monitoring equipment available Stable decontaminated treatment platform (i.e. trolley etc) Protective equipment available (nitrile powder free latex free gloves, eye protection, plastic apron) Decontaminated Drip stand and volumetric pump (if required) Cytotoxic extravasation and spill kits accessible Eyewash kit or facility available Cytotoxic waste disposal containers accessible at point of contact	C					
Offers patient the opportunity to attend to comfort needs before administration	C					

		Date					
3. Administration Preparation							
Assemble necessary equipment High sided plastic tray (decontaminate as per infection control guidelines) Intravenous administration set (20 micron filter) with needleless injection port Intravenous fluid as compatible to drug being administered Appropriate sterile pack containing absorbent sterile field and 7.5cm x 7.5cm sterile gauze squares Chloroprep wipe as per infection control guidelines Prescribed and dispensed Cytotoxic drugs for IV injection	C						
Attach primed set to patient's venous access device as per infection control guidelines ensuring it is safely secured	C						
Confirm patency of patient's venous access. The following methods must be utilised in order of listing for peripheral venous devices 1. gravity flashback method 2. syringe negative pressure method 3. venous compression/drip flow method (not suitable for administration of vesicant drugs) For Central Venous Access Devices blood withdrawal should be used. **Some CVAD will be patent but blood withdrawal will not be achievable, if there is doubt of whether a device is patent expert advice should be sought and refer to local policy.**	C						
4. Patient/Treatment Confirmation							
Adheres to local Trust Medicine Policy	C						
5. Administration Technique							
Ensures appropriate protective clothing worn as per agreed Cytotoxic policy guidelines	C						
Confirms patency and safety of needleless connection on the intravenous administration set by administering 5ml of 0.9% Sodium Chloride in a 10ml luer-lock syringe	C						
Administers medication in prescribed order i.e. pre-medication then intravenous vesicant bolus etc.							
Set gravity infusion rate to an appropriate fast flow rate.							
If peripheral venous access confirms venous patency intermittently during administration at an appropriate frequency. Intervene appropriately if patency decreases or ceases.							
Assesses patient for venous complications, anxiety and hypersensitivity reactions during administration at an appropriate frequency. Intervene appropriately if complications and/or reactions become evident.							

Name : _____ NMC Pin No : _____

		Date					
Ulitises a sterile gauze square (7.5 cm x 7.5cm) under the connection of the needleless connection and the syringe. Fully cover the connection when applying pressure to the syringe plunger. For protection of Patient, Chemotherapy Nurse and Environment from mechanical malfunction.	C						
Dispose of Cytotoxic waste in an appropriate manner conforming with agreed Cytotoxic policy guidelines.	C						
6. Termination of Procedure							
Documents episode of care in an appropriate manner conforming with NMC guidelines for records and record keeping.	C						
Ensure appropriate level and avenues of communication utilised to communicate necessary information to other MDT and/or other health care professionals.	C						
Ensures patient aware that therapeutic interaction has been completed and adequate follow-up arrangements are activated.	C						

Name : _____ NMC Pin No : _____

Please sign and print name for each entry

Supervised Administration No. 1		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 2		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 3		**Date**	
Supervisor comments			

Name : _____ NMC Pin No : _____

Administrator Comments			
Supervised Administration No. 4		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 5		**Date**	
Supervisor comments			
Administrator Comments			

Name : _____ NMC Pin No : _____

Supervised Administration Record								
Cytotoxic Chemotherapy Intravenous Administration – Infusion				**C – competent**				
The practitioner can administer by infusion Cytotoxic Medication safely via the Intravenous route and discuss complications and ongoing care								
For each supervised practice the appraisee must	**Minimum level**	**Supervised Assessments**						
1. Legal and Ethical Issues.								
		Date						
Demonstrates an understanding of their accountability and responsibility in relation to Cytotoxic Chemotherapy administration according to their governing body.	C							
Hand hygiene as per infection control guidelines was maintained through out procedure	C							
2. Pre-administration Assessment								
Review of treatment order	C							
Ensures availability of prescribed and dispensed chemotherapy agents	C							
Performs appropriate procedure for correctly identifying patient	C							
Assesses patient perceptions/history including toxicity assessment	C							
Able to identify contraindications and/or pre-treatment monitoring requirements for prescribed treatment	C							
Uses appropriate patient strategy for reduction of anxiety, increase of understanding and encouragement of compliance	C							
Communicates with patient proposed plan of care & obtains informed consent	C							
Ensures suitable venous access available and selects appropriate route for administration as per local policy.	C							
Demonstrates appropriate selection and preparation of treatment environment and equipment including access to and functionality of emergency equipment. Clear access to patient of emergency equipment and staff Vital signs monitoring equipment available Stable decontaminated treatment platform (i.e. trolley etc.) Protective equipment available (nitrile powder free latex free gloves, eye protection, plastic apron) Decontaminated drip stand and patent volumetric pump (if required) Cytotoxic extravasation and spill kits accessible Eyewash kit or facility available Cytotoxic waste disposal containers accessible at point of contact	C							
Offers patient the opportunity to attend to comfort needs before administration	C							

Name : _____ NMC Pin No : _____

		Date					
3. Administration Preparation							
Assemble necessary equipment High sided plastic tray (decontaminate as per infection control guidelines) Intravenous administration set (Appropriate for the agent being administered) Priming Intravenous fluid compatible to drug being administered Appropriate sterile pack containing absorbent sterile field and 7.5cm x 7.5cm sterile gauze squares Chloroprep wipe as per infection control guidelines Prescribed and dispensed Cytotoxic drugs for IV infusion. (Ensure that the fluid to be infused is at room temperature by removing from the refrigerator at a reasonable length of time before administration)	C						
Attach primed set to patient's venous access device as per local infection control guidelines ensuring it is safely secured	C						
Confirm patency of patient's venous access. The following methods must be utilised in order of listing for peripheral venous devices. 1. gravity flashback method 2. syringe negative pressure method 3. venous compression/drip flow method (not suitable for administration of vesicant drugs) For Central Venous Access Devices blood withdrawal should be used. **Some CVAD will be patent but blood withdrawal will not be achievable, if there is doubt of whether a device is patent expert advice should be sought. If doubt persists following expert review alternative access must be utilised**	C						
4. Patient/Treatment Confirmation							
Adheres to Trust Medicine Policy	C						
5. Administration Technique							
Ensures appropriate protective clothing worn as per agreed Cytotoxic policy guidelines	C						
Confirms patency and safety of connections on the intravenous administration set.	C						
Administers medication in prescribed order i.e. pre-medication then intravenous vesicant bolus etc.	C						
Ensure infusion is halted (volumetric pump (if utilised) paused or off) and clamp of IV administration set is closed. Ensure venous access clamps proximal to the connection closed.	C						
Arrange Cytotoxic infusion container lying flat in high sided plastic tray prepared for connection.	C						

Name : _____ NMC Pin No : _____

		Date					
Remove fluid container from intravenous administration set and dispose of appropriately. If connecting continuous infusion via ambulatory pump then remove existing intravenous administration set.	C						
6. Termination of Procedure							
Documents episode of care in an appropriate manner conforming with NMC guideline for records and record keeping	C						
Ensure appropriate level and avenues of communication utilised to communicate necessary information to other MDT and/or other health care professionals.	C						
Ensure patient aware that therapeutic interaction has been completed and adequate follow-up arrangements are activated.	C						

Name : _____ NMC Pin No : _____

LONDON CANCER ALLIANCE West and South LCA

Please sign and print name for each entry

Supervised Administration No. 1		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 2		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 3		**Date**	
Supervisor comments			

Name : _____ NMC Pin No : _____

Administrator Comments			
Supervised Administration No. 4		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 5		**Date**	
Supervisor comments			
Administrator Comments			

Name : _____ NMC Pin No : _____

Supervised Administration Record								
Cytotoxic Chemotherapy Administration – Intramuscular / Subcutaneous Injection **The practitioner can administer Cytotoxic Medication safely via the Intramuscular and subcutaneous routes and discuss complications and ongoing care**								
For <u>each</u> supervised practice the appraisee <u>must</u>	**Minimum level**	**Supervised Assessments**						
1. Legal and Ethical Issues.								
		Date						
Demonstrates an understanding of their accountability and responsibility in relation to Cytotoxic Chemotherapy administration according to their governing body.	C							
Hand hygiene as per infection control guidelines was maintained through out procedure	C							
2. Pre-administration Assessment								
Reviews the treatment order and confirms route suitable for agent	C							
Ensures availability of prescribed and dispensed chemotherapy agents	C							
Performs appropriate procedure for correctly identifying patient	C							
Assesses patient perceptions/history including toxicity assessment	C							
Able to identify contraindications and/or pre-treatment monitoring requirements for prescribed treatment.	C							
Uses appropriate patient strategy for reduction of anxiety, increase of understanding and encouragement of compliance	C							
Communicates with patient proposed plan of care & obtains informed consent	C							
Demonstrates appropriate selection and preparation of treatment environment and equipment including access to and functionality of emergency equipment. Clear access to patient of emergency equipment and staff Vital signs monitoring equipment available Stable decontaminated treatment platform (i.e. trolley etc.) Protective equipment available (nitrile powder free latex free gloves, eye protection, plastic apron) Spill kit accessible Eyewash kit or facility available Cytotoxic waste disposal containers accessible at point of contact	C							

Name : _____ NMC Pin No : _____

		Date					
3. Administration Preparation							
Assembles necessary equipment High sided plastic tray (decontaminate as per infection control guidelines) Sterile needle/s appropriate for the injection Appropriate sterile pack containing 7.5cm x 7.5cm sterile gauze squares. Chloraprep wipe as per infection control guidelines Prescribed and dispensed Cytotoxic drugs for IM or s/c injection. (Ensure that the syringe or syringes to be injected is/are at room temperature by removing from the refrigerator at a reasonable length of time before administration)	C						
4. Patient/Treatment Confirmation							
Adheres to local Trust Medicine Policy	C						
5. Administration Technique							
Ensures appropriate protective clothing worn as per agreed Cytotoxic policy guidelines	C						
Confirms needle syringe connection patency by visual inspection and light pressure	C						
Administers injection as per local guidelines via appropriate site. *For Intramuscular injections utilise the 'Z track injection' technique. Apply light firm pressure around the injection site and move the dermal and subcutaneous layers across the muscular layer by approximately 10mm, hold position whilst injecting. When injection complete release position and withdraw needle.*	C						
Dispose of used equipment as per local guidelines	C						
6. Termination of Procedure							
Documents episode of care in an appropriate manner conforming with NMC guidelines for records and record keeping	C						
Ensures appropriate level and avenues of communication utilised to communicate necessary information to other MDT and/or other health care professionals	C						
Ensures patient aware that therapeutic interaction has been completed and adequate follow-up arrangements are activated	C						

Name : _____ NMC Pin No : _____

Please sign and print name for each entry

Supervised Administration No. 1		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 2		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 3		**Date**	
Supervisor comments			
Administrator Comments			

Name : _____ NMC Pin No : _____

Supervised Administration Record								
Oral Anti Cancer Medications Administration								
The practitioner can administer Oral Anti Cancer Medications safely and discuss complications and ongoing care								**C – competent**
For <u>each</u> supervised practice the appraisee <u>must</u>	**Minimum level**	**Supervised Assessments**						
1. Legal and Ethical Issues.								
		Date						
Demonstrates an understanding of their accountability and responsibility in relation to oral anti cancer medication administration according to relevant legislation and their governing body	C							
Demonstrates and understanding of care needs of patients and carers which are specific to oral anti cancer medications								
Hand hygiene as per infection control guidelines was maintained throughout procedure	C							
2. Pre-administration Patient and Carer Education and Assessment								
Introduction								
Uses chemotherapy Patient Education Leaflet as prompt	C							
Introduces self to patient and carer	C							
Asks the patient/carer what they understand about the treatment and provides opportunities for questioning/discussion throughout interaction	C							
Able to assess patient/carers ability to self medicate: o ability to take medication correctly and monitor side effects o judge when to interrupt treatment and call the hospital if required	C							
Self Medication								
Explain/discusses regimen and intended number of cycles including treatment 'gaps'	C							
Explain/discuss how and when to take the tablets using the Oral Chemotherapy Diary.	C							
Explain/discusses what to do in the event of missing a dose	C							
Explain/discusses what to do in the event of vomiting after a dose	C							
Explain/discusses the need for, and how to obtain further supplies	C							
Explain/discusses the role their GP is expected to play in the treatment	C							
Explain/discusses principles of safe handling, storage and disposal	C							
Explain/discusses the use of medicine spoons, oral syringes or cups	C							
Explain/discusses possible interactions with other drugs including herbal and supplements	C							

Name : _____ NMC Pin No : _____

		Date					
Self Monitoring							
Explain/discusses how to access the 24 hour on call service and is specific about how severe symptoms should be to call the hospital	C						
Explain/discusses potential side effects including fertility issues.	C						
Explain dose adjustment i.e. doses will be individually adjusted to suit the patients and dosing may be interrupted or modified during treatment. This will not be detrimental to treatment. Failure to interrupt treatment appropriately could lead to longer delays.	C						
Provision of Written Information							
Provides appropriate literature and goes through this with patient and carer	C						
Written information should include: Individualised treatment plan chemotherapy alert card Chemotherapy Oral Chemotherapy Diary. drug company patient information Patient information sheets relating to special handling instructions Monitoring arrangements Next appointment with the doctor and chemotherapy nurse or pharmacist.	C						
Monitoring and Support							
Able to assess care needs in relation to oral therapy and arrange additional support i.e. community nurse or follow up telephone call if required	C						
3. Nurse Administration of Oral Anti-Cancer Medications							
Review of treatment order	C						
Ensures availability of prescribed and dispensed chemotherapy agents	C						
Performs appropriate procedure for correctly identifying patient	C						
Assesses patient perceptions/history including toxicity assessment							
Able to identify contraindications and/or pre-treatment monitoring requirements for prescribed treatment							
Ensures appropriate protective clothing worn as per agreed cytotoxic policy guidelines							
Utilises non touch technique							
Disposes of used equipment as per local guidelines							
Able to verbalise principles of safe handling of body fluids							
Documents episode of care in an appropriate manner conforming with NMC guidelines for records and record keeping							
Ensure appropriate level and avenues of communication utilised to communicate necessary information to other MDT and/or other health care professionals.							
Ensure patient aware that therapeutic interaction has been completed and adequate follow-up arrangements are activated.							

Name : _____ NMC Pin No : _____

Please sign and print name for each entry

Supervised Administration No. 1		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 2		**Date**	
Supervisor comments			
Administrator Comments			
Supervised Administration No. 3		**Date**	
Supervisor comments			
Administrator Comments			

Name : _____ NMC Pin No : _____

PART TWO - Advanced Questions

Knowledge for Practice: Side Effects/Toxicities and Their Management: Renal Tract

1. Why do we assess renal function prior to starting chemotherapy and before each cycle? *Brighton and Wood (2005) RMH Handbook of Cancer Chemotherapy*

2. What is a Glomerular Filtration Rate (GFR)? *Oxford Concise Colour Medical Dictionary*

.

3. What is the Creatinine Clearance (CrCl)? *Oxford Concise Colour Medical Dictionary*

4. Label whether the following drugs are either; potentially nephrotoxic, or whether they can cause haemorrhagic cystitis? *Lilly Book*

Cisplatin		Carboplatin	
Ifosfamide		Cyclosphosphamide	
Carmustine			

5. It is important to inform patients if any of the drugs they are due to receive could colour the urine. List three drugs that could colour the urine red and one that could colour it blue/green *Lilly Book*

1.		2.		3.		4.	

Haemorrhagic cystitis is diffuse inflammation of the bladder leading to dysuria, haematuria and haemorrhage. It can occur in 5-10% of patients receiving cyclophosphamide, and 20-40% receiving ifosphamide. Haemorrhagic cystitis can occur immediately or be delayed. It is important that you know the nursing management for patients at risk of haemorrhagic cystitis?

6. List 3 nursing interventions or monitoring you would undertake to prevent or detect the development of haemorrhagic cystitis. *Brighton and Wood (2005) RMH Handbook of Cancer Chemotherapy*

1.	
2.	
3.	

7. Briefly describe how Mesna works. *McMillan Website*

Another possible renal complication from chemotherapy is obstructive nephropathy where urine is too acidic and needs to be alkalinised. Where obstructive nephropathy of this kind is possible you may be asked to assess; urine output (strict fluid balance chart), look for excessive amounts of uric acid in the urine (24 hour urine collection) or monitor of urine Ph (urinalysis). Assessing the patient's urine pH is routinely required when giving high doses of a drug called Methotrexate to ensure that the urine is sufficiently alkaline. The frequency of testing will be dependent on the drug protocol.

8. From the options below circle the pH the urine should be maintained at according to most drug protocols. *Access local protocols*

>pH7 / 7.5	< pH 7 / 7.5	>6.0 / 6.5	<6.0 / 6.5

Tumour Lysis Syndrome (TLS) is classified an oncology emergency and requires those that administer SACT to know what it is, who is at risk, as well as how to prevent, recognise and treat patients.

9. What is Tumour Lysis Syndrome (TLS) and when does it occur? *Cairo & Bishop 2004; Howard et al. 2011.*

10. Place a tick or a cross next to the following statements to indicate which following would be at risk of TLS. A tick (**√**) indicates they are at risk and a cross indicates they are not (X). *Cairo & Bishop 2004 and Howard et al 2011.*

	A patient diagnosed with high grade non-Hodgkin Burkitt 's lymphoma, a very aggressive and rapidly dividing cancer.
	All haematology patients receiving chemotherapy.
	Any patients with cancer that does not have a sufficient fluid intake and receiving chemotherapy
	Any patient receiving SACT / chemotherapy that has a poor urine output
	Any tumour that doubles very quickly and rapidly responds to chemotherapy.

11. List eight possible clinical manifestations that could occur as a result of TLS. *Cairo & Bishop 2004; Howard et al 2011*

1.		2.		3.		4.	
5.		6.		7.		8.	

12. Recognising that a patient is experiencing Tumour Lysis syndrome is important, therefore which of the following are symptoms of the syndrome? Circle one correct answer in each box. (*Cairo & Bishop 2004; Howard et al 2011*

Hyperkalaemia	Hyperphosphataemia	Hyperuricaemia	Hypercalcaemia

Hypokalemia	Hypophosphataemia	Hypouricemia	Hypocalcaemia

13. What is the nurses role in the prevention and treatment of Tumour Lysis Syndrome throughout the SACT / chemotherapy treatment process. *Cairo & Bishop 2004; Howard et al 2011; Local Haemato-oncology Guidelines,* ~~*Tumourlysis Care Plan NR 351*~~*I have deleted as care plan is specific to RMH* ~~.~~

14. It is important to take 'Tumour Lysis bloods' at least 6 hourly to assess the response to treatment in the early onset of TLS, a) what bloods need requesting? b) on which blood form? c) in what colour bottle would they be sent in? d) how would you organise analysis of specimens out of hours*? RMH Local Guidance*

a.	
b.	
c.	
d.	

15. The treatment of Tumour Lysis Syndrome may involve the use of drugs such as Allopurinol (A) and Rasburicase (R). Match the description of drug modality of action with the appropriate substance. *Cairo & Bishop 2004 and Howard et al 2011.*

Modality of Action	Name
The drug is a xanthine analogue that, when converted in vivo to oxypurinol, is a competitive inhibitor of xanthine oxidase which inhibits the metabolism of xanthine and hypoxanthine to uric acid. The drug is known to decrease the formation of new uric acid and reduce the incidence of uric acid obstructive uropathy in patients with malignant disease at risk of TLS. The drug only prevents new uric acid formation; it does not reduce uric acid produced prior to initiation.	
This drug is recommended as first-line treatment for patients who are at high risk for clinical TLS. This drug is an enzyme that rapidly removes uric acid by converting it to allantoin, which is highly soluble and readily excreted in the urine. Blood samples for the measurement of the uric acid level must be taken whilst on this drug.	

Knowledge for Practice: Side Effects / Toxicities and their management: High Dose Methotrexate (Haematology Staff only)

Methotrexate is used in many chemotherapy protocols in standard doses and in this situation requires little special management. However, it is sometimes used in much higher doses and then requires very careful toxicity management.

16. After any high dose Methotrexate is given, a rescue drug must be administered. What is the name of this drug, and why is it so important? *UKALL 14 trial / Haemato-oncology guidelines*

Drug	
Why?	

17. Why is it necessary to administer intravenous fluids and observe urine output prior to administering high dose Methotrexate (MTX) treatment? Place a Tick (√) or cross (X) next to the correct option from the statements below. *UKALL 14 trial / Haemato-oncology guidelines*

	MTX could easily cause an anaphylactic reaction and pre-hydration will ensure that the risk of such a reaction is minimised.
	MTX is severely cardiotoxic and the it is essential intravenous fluids are given to flush the drug away from this organ
	MTX is severely nephrotoxic and it is essential that the patient is well hydrated and have a good urine output to ensure the kidneys are working at their optimum ability and elimination time is not prolonged
	MTX is severely hepatotoxic and without intense hydration drug metabolites will build up in the liver and cause toxicity

18. Why is sodium bicarbonate added to the intravenous fluids in high dose Methotrexate regimens? *UKALL 14 trial / Haemato-oncology guidelines*

Knowledge for Practice: SACT / Chemotherapy Research and the Non-Research Nurse's Role

Clinical Trials into SACT and chemotherapy help to improve knowledge about cancer and develop new treatments. In your role as a chemotherapy administrator you may be asked to administer a drug to a patient that is a part of a clinical trial. Support from the research nurse will be provided to ensure safe practice occurs with guidance on the correct monitoring, documentation and obtaining of samples.

Clinical trials to test new cancer treatments involve a series of steps, called phases. If a new treatment is successful in one phase, it will proceed to further testing in the next phase. During the early phases (phase 1 and 2), researchers figure out whether a new treatment is safe, what its side effects are, and the best dose of the new treatment. They also make sure that the treatment has some benefit, such as slowing tumour growth. In the later phase (phase 3), researchers study whether the treatment works better than the current standard therapy. They also compare the safety of the new treatment with that of current treatments. Phase 3 trials include large numbers of people to make sure that the result is valid.

19. Research Team Members include a Principal investigator (PI), research nurse, data manager, staff nurse, clinical trial officers (CTO). From the descriptions below please state the name of the researcher's role in the blank box. *National Cancer Institute website*

	Helps take care of the patients during a clinical trial		Supervises all aspects of a clinical trial.
	Responsible for booking all patients appointments and investigations		Manages the collection of data throughout the course of a clinical trial
	Educates staff, patients and other healthcare professionals about the clinical trial.		

20. Match the description to the correct phase. Choose from Phase 0 – 4 (one per box). *National Cancer Institute website*

Phase	Description
	To compare the new treatment (or new use of a treatment) with the current standard treatment Number of people taking part: From 100 to several thousand
	To determine if the new treatment has an effect on a certain cancer To see how the new treatment affects the body Number of people taking part: Less than 100
	This phase look at long-term safety and effectiveness. They take place after a new treatment has been approved and is on the market.
	This phase of trials are very small trials that help researchers decide if a new agent should be tested in a phase 1 trial
	To find a safe dose To decide how the new treatment should be given (by mouth, in a vein, etc.) To see how the new treatment affects the human body

21. What is meant by the following words Single-blinded and Double-blinded? *National Cancer Institute website*

22. What is a Serious Adverse Event (AE)? *National Cancer Institute website*

It is imperative in clinical trials to stick to the protocol; any deviations will require reporting on a document called a Case Report Form (CRF) and if a serious breach will need reporting to the MHRA.

23. It is important if you are administering SACT / Chemotherapy to a trial patient that firstly you know how to access the trial protocol both within and outside of working hours. How would you do this? *Practical knowledge locally taught*

24. It is also important that you know where to access practical support in terms of trial patients both inside and outside of working hours, name three people who you could call for guidance and direction? *Practical knowledge locally taught*

1		2		3	

25. Are you able to find out the side effects and modality of action of a trial drug if it doesn't have a name but has a number instead? If yes how, if no what would you do instead to ensure safe medicines management practice.

Completion Checklist and Declaration Form

To be completed after part 1 and 2 of SACT workbook completed and all relevant practical LCA competencies have been achieved.

Send a copy to the practice educator and ward sister.

Name:	Department:	Band:
Date Started Workbook:	Date Completed:	Job Title:

Clinical Skill: **Administration of Systemic Anti-cancer Therapy**

Practitioner and Assessor to initial when achieved the following:

Skills and Knowledge Required	Practitioner	Assessor
Identifies own professional competence and limitations relevant to the specific ward/ department		
Has read and understood the relevant clinical guidelines and Trust policy related to safe SACT administration		
Has completed all sections of this Knowledge and Skills workbook, including: • The Learning Agreement • Completed before and after self-assessment of knowledge and understanding • Successfully answered all of the knowledge for practice questions part 1 and 2 • Can provide evidence of drug calculation skills • Completed the relevant LCA chemotherapy assessments		
Is confident with their knowledge and skills to practice without supervision and agrees to do so within their scope of practice and has signing the competency declaration form		
Has successfully completed any other training required identified in the learning agreement for their area of work		
Has copied the LCA competency declaration page for: self, manager and assessor/ Clinical Practice Educator		

	Date	Signature
Competent Practitioner • I declare that I have completed the necessary training to independently administer SACT within the ward /department(s) within which I work. • I declare I am both confident and competent to administer SACT therapy • I declare that I will take professional responsibility for maintaining competence and skill and personally organise my competence re-assessments		
Assessor • I have assessed the named person and feel they are safe to independently administer SACT and will ensure this is centrally recorded for Trust records		
Manager of Clinical Department • I am satisfied that the above named person has completed the necessary training to independently administer SACT within the above named ward /department		

References and Recommended Reading

References

- Driscoll J. (1994) Reflective practice for practice *Senior Nurse* **13** pp. 47 -50
- NMC (2010) Standards for medicine management. http://www.nmc-uk.org
- NMC (2008) *The Code Standards of conduct, performance and ethics for nurses and midwives.* http://www.nmc-uk.org
- NMC (2010) Standards for Records and Record Keeping. http://www.nmc-uk.org
- Skills for Health (2011) *Chemotherapy Nurse Career Framework Level 5* http://www.skillsforhealth.org.uk/service-area/oncology,-chemotherapy-and-palliative-care/

Recommended Reading to support completion of the workbook

- American Cancer Society (2013) Different types of chemotherapy drugs [Online] Available at: http://www.cancer.org/treatment/treatmentsandsideeffects/treatmenttypes/chemotherapy/chemotherapyprinciplesanin-depthdiscussionofthetechniquesanditsroleintreatment/chemotherapy-principles-types-of-chemo-drugs (Accessed 11th Feb 2013)
- Brighton. D, Wood. M, Johnston SD, Ford H. (2005) *Royal Marsden Hospital Handbook of Cancer Chemotherapy: A Guide for the Mulitdisciplinary Team.* London – Churchill Livingston.
- Cancer Research UK (2012) *What is an information prescription?* [Online] Available at: Information Prescriptions http://www.cancerresearchuk.org/cancer-help/about-cancer/cancer-questions/what-is-an-information-prescription (Accessed 11th Feb 2013)
- Cancer Research UK (2013) (Online) Available at:Types of biological therapies http://www.cancerresearchuk.org/cancer-help/about-cancer/treatment/biological/types/ (Accessed 11 Feb 2013)
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Should the following not be deleted as they are specific to RMH and just state refer to own policies etc??

Royal Marsden NHS Foundation Trust Policies

- Allergy, Hypersensitivity and Adverse Reactions Recording Policy and Procedures (Policy 1619)
- Anaphylaxis Policy and Procedures (Policy 1515)
- Central Venous Access Devices Policy for Insertion and Care in Hospital (Policy 1748)
- Chemotherapy Treatment Policy (Policy 0472)
- Competency in Medicines Management for Registered Nurses (0455)
- Consent to Examination or Treatment Policy (0325)
- Control of Substances Hazardous to Health (COSSH) Assessment Policy (0107)
- Extravasation and Infiltration, Policy for the management of (Policy 0067)
- Identification of Patients – Adult and Children (Policy 0033)
- Intrathecal Chemotherapy Safe Administration Policy (Policy 1341)
- Patient Height and Weight Policy and Procedures (Policy 1418)
- Pregnancy Assessment / Testing Guidelines prior to treatments or investigations (Policy 1732)
- Reducing Harm from Delayed / Omitted Medicines Policy (Policy 1765)

- Semen Cryopreservation (Sperm Banking) & Artificial Insemination for patients surviving malignant disease policy (Policy 0158)
- Waste Management Policy (Policy 0112)

Royal Marsden NHS Foundation Trust Guidelines and Protocols

- Drugs and Therapeutics Committee Prescribing Guidelines (2012)
- Haemato-oncology and Lymphoma Guidelines (2013)

Royal Marsden NHS Foundation Trust Care Plans and Information Leaflets

- Taking Oral Chemotherapy: Patient Information
- Tumour Lysis Syndrome Care Plan NR 351