

CYTOTOXIC MEDICATIONS

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What are cytotoxic drugs?

Cytotoxic drugs include; fluorouracil, hydroxycarbamide, mercaptopurine and methotrexate. Cytotoxic drugs prevent cell replication or are toxic to cells and are therefore used to treat cancer, they are also used in lower doses to treat other conditions i.e. rheumatoid arthritis and inflammatory bowel conditions i.e. Crohn's disease. They affect how the body's cells grow and reduce the activity of the immune system. Once inside the body, their action is not targeted, and they can produce side effects both to the patients and others who become exposed.

Occupational exposure can occur when control measures are inadequate. Exposure may be through skin contact, skin absorption, inhalation of aerosols and drug particles, ingestion and needle stick injuries as result of the following activities:

- drug preparation
- drug administration
- handling patient waste
- transport and waste disposal, or
- cleaning spills.

The toxicity of cytotoxic drugs means that they can present significant risks to those who handle them. It is therefore very important that all care home staff involved in the administering of medicines or the handling of body fluids are provided with the appropriate training to ensure they are aware of the associated risks. In addition, women of childbearing age who are being

asked to administer cytotoxic medication must be informed of the fact that cytotoxic medication exposure may harm an unborn baby.

Personal Protective Equipment (PPE)

Care home staff should:

- Wear appropriate PPE (e.g. gloves (preferably nitrile) and a disposable apron) when administering cytotoxic medication. All disposable PPE should be disposed of safely after administration as cytotoxic waste according to local waste disposal regulatory guidelines
- Follow the same precautions and wear PPE when handling body fluids, faeces or contaminated clothing, dressings, linens etc. (for up to seven days following the last dose)
- Wash hands thoroughly following administration of cytotoxic medication.

Administration

Good practice would be for all oral cytotoxic medication doses should be double checked by another member of staff who is authorised to administer medication prior to administration. However this may not be possible in all care home settings.

Cytotoxic medication should never be dispensed in a compliance aid or a monitored dosage system (MDS). To prevent unnecessary exposure to cytotoxic medication:

- Only remove cytotoxic medication from its container when in front of the resident. It is bad practice to pre-prepare any medicines in advance
- It is advisable to use a designated spoon/medicine pot or oral syringe reserved and clearly labelled "for cytotoxic medication only to transfer medication from bottle/foil. These should be washed thoroughly between doses and safely disposed after treatment.

Monitoring

Residents taking cytotoxic medication will require regular blood tests. Any new or worsening symptoms experienced after starting cytotoxic medication treatment should be discussed with the resident's doctor.

Serious side effects can occur any time during the treatment. Residents and carers should be aware of these and stop treatment immediately and seek urgent medical advice from the doctor. These include:

- **Severe skin rash that causes blistering** (can affect the mouth and tongue)
- **Persistent cough, pain, difficulty breathing or breathlessness**
- **Skin rash and fever with swollen glands:** may be signs of a hypersensitivity reaction and usually occur within the first 2 months of treatment
- **Sore throat, fever, chills or muscle aches:** cytotoxics affect the immune system and make the resident more likely to catch infections. Care home staff should ensure precautions are taken to prevent avoidable exposure to infectious conditions

- **Severe allergic reaction (anaphylactic reaction):** sudden itchy skin rash (hives), swelling of the hands, feet, ankles, face, lips, mouth or throat (which may cause difficulty in swallowing or breathing), wheezing and feeling faint. **Although rare, if this occurs, seek medical attention immediately**
- **Whites of the eyes become yellow or severe itching of the skin:** sometimes a sign of liver problems
- **Severe and continuing diarrhoea or vomiting:** risk of dehydration can lead to the kidneys being unable to flush cytotoxics from the blood
- **New unexplained bleeding or bruising:** may indicate that blood cells are being affected by the cytotoxics
- **Chickenpox and shingles:** the resident may be at risk of severe infection from the virus if they have never had chicken pox and have had close contact with someone who has either of these conditions. If this occurs the doctor should be contacted promptly for appropriate treatment.

Safe disposal of cytotoxic medication

Cytotoxic medication must be disposed of safely to avoid potential harm to others:

- Care homes with nursing must dispose of cytotoxic medication in a cytotoxic waste disposal bin (available from their waste contractor). Cytotoxic medication must never be disposed of in an ordinary waste bin
- Care homes (without nursing) must return cytotoxic medication in a sealed container and clearly marked as 'cytotoxic medication' to the pharmacy for disposal.

Methotrexate

Methotrexate in large dose can be used to treat certain types of cancer and in smaller doses to treat severe psoriasis, rheumatoid arthritis or Crohn's disease.

Dosage

Methotrexate **is usually given as a single weekly dose and** should **never** be administered as a daily dose because it can reduce immunity and result in serious infection that could be fatal.

Care home staff should ensure safety measures to prevent dose errors are followed and be aware:

- Methotrexate is taken as a single dose, **once a week**, on the same day each week
- Only one strength of methotrexate tablet – 2.5mg is dispensed and prescribed
- The local formulary recommends that methotrexate should be labelled stating the instructions clearly, for example:

Methotrexate 2.5mg tablets

XX tablets to be taken as a single dose once a week on xxxday

- Tablets should not be crushed or broken and should be swallowed whole with water whilst sitting upright or standing

- Alcohol consumption may increase the risk of liver damage and residents taking methotrexate should avoid alcohol throughout the whole treatment period
- Folic acid may be prescribed to help to reduce the side effects of methotrexate. If a resident refuses to take their methotrexate or folic acid, the doctor must be informed
- Cytotoxics are safe and effective medication if taken at the right dose and with appropriate monitoring. Care homes must have robust procedures in place to minimise the potential for harm to the resident and staff.

Records

- On receipt of the Medication Administration Record (MAR) chart, the care home should cross through the days when methotrexate is not to be given and clearly mark the day on which it is due
- The patient-held monitoring and dosage record must be kept up to date throughout treatment.

Sample Methotrexate MAR chart

Medication		Time/dose	Week one						
			Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Friday
Methotrexate 2.5mg Tablets 10mg (4 Tablets) to be taken once WEEKLY on FRIDAY		0800 X	/	/	/	/		/	/
		1200							
		1600							
		2000							
Quantity received	16 1/4/18	Signature	NK	Checked by DR	DR				
Folic Acid 5mg Tablets Take ONE daily apart from FRIDAY (Methotrexate day)		0800 X	NK	DR			/		
		1200							
		1600							
		2000							
Quantity received	24 1/4/18	Signature	NK	Checked by DR	DR				

Administration

Oral methotrexate should be double checked by another member of staff who is authorised to administer medication prior to administration. Only **one** strength of methotrexate tablet (2.5mg) is usually prescribed and dispensed. Confirm tablet strength with the prescriber if a 2.5mg tablet is not used. Even though you are using PPE reduce the number of times you handle methotrexate to prevent unnecessary exposure when administering to patients.

Hazardous medications

Staff do not require specific training, as they would for cytotoxic medicines, to administer hazardous medicines but should refer to the summary of product characteristics (SPC) (<http://emc.medicines.org.uk/>) or medication package insert for any additional handling and disposal instructions.

Solid dosage forms of hazardous medicines should not be crushed or intact capsules should not be opened without seeking advice from a clinical pharmacist. In the event that pharmacy advise that this is appropriate, then PPE as above (including a mask) should be worn.

Table 1 below lists **some** of the hazardous and cytotoxic drugs that are commonly encountered in the community, this list is not exhaustive. Very commonly encountered drugs have been highlighted in bold, it is advisable for care staff to familiarise themselves with the summary of product characteristics for these drugs in particular for handling requirements via the EMC website listed above.

Table 1: Cytotoxic and hazardous drugs encountered in the community

Commonly used Cytotoxic Drugs	Commonly used Hazardous drugs		
Azathioprine Chlorambucil Fluorouracil Hydroxycarbamide Mercaptopurine Methotrexate	Abacavir Abiraterone Acitretin Anastrozole Atripla® (efavirenz/ emtricitabine/tenofovir disoproxil) Bicalutamide Bosentan Brincidofovir Buserelin Ciclosporin Cidofovir Colchicine Combivir® (Zidovudine/ lamivudine) Desogestrel Diethylstilbestrol Dutasteride Dydrogesterone Efavirenz Enzalutamide Estradiol Estradiol/dienogest Estradiol/drospirenone Estradiol/nomegestrol Estradiol/Norethisterone Estrogen-progesterone combinations Estrogens, conjugated Estrone Estropipate Ethinylestradiol	Ethinylestradiol/desogestrel Ethinylestradiol/drospirenone Ethinylestradiol/etonogestrel Ethinylestradiol/gestodene Ethinylestradiol/levonorgestrel Ethinylestradiol/norelgestromin Ethinylestradiol/norethisterone Ethinylestradiol/norgestimate Etonogestrel Everolimus Exemestane Finasteride Flutamide Goserelin Isotretinoin Kivexa® (lamivudine/Abacavir) Leflunomide Lenalidomide Letrozole Levonorgestrel Medroxyprogesterone Megestrol Mycophenolate Nevirapine Norelgestromin Norethisterone Norgestimate Oestrogens Oxytocin	Phenindione Raloxifene Sirolimus Tacrolimus Tamoxifen Testosterone Thalidomide Tibolone Toremifene Tretinoin Triumeq® (Doletegravir/abacavir/ lamivudine) Trizivir®* (lamivudine/ zidovudine/abacavir) Ulipristal Valganciclovir Zidovudine

References

- Joint Formulary Committee. British National Formulary 74ed. London: BMJ Group and Pharmaceutical Press; Sept 2017-Mar18
- Safe handling of cytotoxic drugs in the workplace accessed via www.hse.gov.uk
- www.hse.gov.uk/healthservices/safe-use-cytotoxic-drugs.htm
- Royal Pharmaceutical society of Great Britain: The handling of medicines in Social care. <https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Support/toolkit/handling-medicines-socialcare-guidance.pdf?ver=2016-11-17-142751-643>
- Nice guidelines SC1: Managing medicines in Care Home
- Devon CCG guidance sheet 09: Methotrexate and other cytotoxics. Accessed June 2020 at <https://devonccg.nhs.uk/health-services/medicines-and-treatments/information-for-healthcare-professionals/care-homes-caring-for-care-homes-team/guidance-sheets/guidance-sheets-00-to-10>