

VICTAG

VICTORIAN THERAPEUTICS ADVISORY GROUP

Victorian Framework

Handling of Hazardous Medicines

2021

The Victorian Therapeutic Advisory Group (VicTAG) funded the development of this framework. VicTAG's purpose is "to promote quality use of medicines by sharing unbiased, evidence-based information about medication therapy and to support the goals of, and facilitate the National Medicines Policy of access, quality and safety in the use of medicines in Victorian hospitals".

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PURPOSE

This document provides a framework to assess risk from the handling of hazardous medicines in healthcare settings and provides strategies to mitigate exposure to hazardous medicines. It includes safe handling recommendations for cytotoxic and non-cytotoxic medicines (including monoclonal antibodies) by healthcare workers.

INTENDED AUDIENCE

This framework is intended for use by Victorian health services. The guidance is relevant to all staff responsible for handling, administration and disposal of hazardous medicines. It is recognised that the content may also apply to a range of other health services, in the private sector and non-hospital environments.

BACKGROUND

Hazardous medicines are those with potential to cause harm to healthcare workers via occupational exposure.(1) The occupational exposure risks to healthcare workers is through internalisation of the hazardous substance through ingestion, aerosol inhalation or absorption through skin and mucous membranes.(2) As such, these medicines may require safe handling precautions by healthcare workers to prevent adverse health effects.(2,5)

The National Institute for Occupational Safety and Health (NIOSH; a division of the Centres for Disease Control and Prevention [CDC]) maintains a list of antineoplastic and other hazardous medicines in the healthcare setting. Based on set criteria which utilises a sequential approach for assessing and interpreting information, NIOSH determine if a medicine meets the definition of a hazardous medicine.(3) The NIOSH Proposed List is commonly referred to in guidance documents, but as this focusses on medicines approved by the US Food and Drug Administration (FDA) it is not a comprehensive list for the Australian context. There are some Australian references for hazardous medicines; Cancer Institute of NSW and the Australian Pharmaceutical Formulary and Handbook maintain lists of hazardous medicines and previous research has been undertaken by VicTAG to focus on non-cytotoxic hazardous medicines.(1,4-5)

There are several factors that need to be taken into account when considering the potential exposure of workers handling a hazardous medicine. This includes, but is not limited to the following: the dosage form of the medicine, the routes of exposure, the frequency and duration of the task, workplace practices, and the presence or absence of any exposure controls such as engineering controls, administrative controls, or personal protective equipment (PPE). Recommendations for PPE should consider all of these factors. Considerations for handling hazardous medicines should be included for preparation, administration, disposal and transportation of medicines and handling of bodily fluids or waste.

Exposure to hazardous medicines can affect a wide range of both clinical and non-clinical staff which may include but not be limited to nursing, pharmacy, medical, cleaners and delivery staff in healthcare settings.(2) The USP 800 outlines standards for handling hazardous medicines to minimise the risk to public health.(1) Other international professional organisations who also provide guidance include Occupational Safety and Health Administration (OSHA), American Society of Health-System Pharmacists (ASHP), and the Oncology Nursing Society (ONS). In Australia, the Cancer Institute of NSW provides guidance for handling of hazardous medicines in healthcare settings predominantly targeted at cancer healthcare professionals. There is often confusion about handling of non-cytotoxic hazardous medicines particularly reproductive hazardous medicines.(1,5)

INTRODUCTION

A working group was formed at the Parkville hospitals to review and update the VicTAG Framework for Handling of Hazardous Medicines. The working group compiled a comprehensive list of medicines to review by collating published lists of hazardous medicines from the following resources:

- National Institute for Occupational Safety and Health (NIOSH) List of Hazardous Drugs in Healthcare Settings, 2020 (Draft)
- Cancer Institute NSW (eVIQ) Hazardous drugs table
- Australian Pharmaceutical Formulary and Handbook 25th edition (APF25) Hazardous medicines recommended to be labelled with cautionary advisory label 21 (Table 2.3)
- VicTAG Victorian Framework for Handling of Hazardous Medicines
- Parkville local hospital guidelines (Peter MacCallum Cancer Centre, The Royal Melbourne Hospital, and The Royal Children's Hospital)

Medicines discontinued in Australia and non TGA-registered medicines that were not available in Australia at the time of publication (including specific clinical trial medicines) were excluded from the comprehensive list and not assessed against hazardous criteria.

The working group agreed on definitions of hazardous medicines through consensus discussion and reference to existing definitions in the above resources. Medicines were assessed against an agreed criteria and available information in approved medicine information resources (See CONSENSUS REVIEW METHODOLOGY). In consulting these resources, the working group acknowledged that clinical toxicity data in human studies outweighs animal studies. Following assessment, each medicine/medicine class was assigned a hazardous classification.

The guidance in this document adopts the highest level of precaution to mitigate risk from exposure from hazardous medicines available at the time of publication. Organisations may consider conducting a risk assessment and adapting recommendations based on new information and/or to operationalise recommendations to their local context.

Emergency situations: In implementing a local guideline, organisations may consider excluding or modifying PPE recommendations for medicines used in emergency settings. This would apply to PPE use for handling of medicines and not PPE as required for infectious prevention purposes or sterile procedures.

EXCLUSION CRITERIA

This framework does not address classification or PPE recommendations for the following medicine classes:

- Fusion proteins
- Viral vectors
- Vaccines and infectious agents (including Bacillus Calmette Guerin)
- Genetically modified materials being used as therapeutics
- Radiopharmaceutical products
- Complementary and alternative medicines
- Batched blood products and derivatives

DEFINITIONS OF HAZARDOUS MEDICINE

Medicines considered hazardous include those that exhibit one or more of the following six characteristics in humans or animal studies:(3)

- carcinogenicity;
- teratogenicity or other developmental toxicity;
- reproductive toxicity;
- organ toxicity at low doses;
- genotoxicity; and/or
- structure and toxicity profiles of new medicines that mimic existing medicines determined hazardous by the above criteria.

Medicines that met one or more of these criteria were classified into one of the categories in the table below:

Table 1: HAZARDOUS CLASSIFICATION AND DEFINITIONS	
Cytotoxic	Medicines capable of disrupting the growth and function of cells usually by binding directly to cellular genetic material or by affecting cellular protein synthesis. These medicines do not differentiate between healthy and cancerous cells.(6-7)
Hazardous Non-Cytotoxic (Consensus agreement)	Any medicine that meets the hazardous medicine definition but does not exhibit cytotoxic properties.
Reproductive Hazardous	Medicines that could pose a reproductive risk to staff who are actively trying to conceive or who are pregnant or breastfeeding.(6) These medicines are divided into two sub-categories in this document to stratify the risk based on available evidence: <ul style="list-style-type: none"> • Sub-Category 1: Medicines where available evidence strongly indicates presence of teratogenic and/or developmental toxic effects. • Sub-Category 2: Medicines where available evidence for presence of teratogenic and/or developmental toxic effects is not robust. <i>Refer to further definitions on page 5</i>
Reproductive Hazardous Sub-Category 1 (Consensus agreement)	Any of the following: <ul style="list-style-type: none"> • proven human teratogen; • proven animal teratogen at equivalent or less than human doses; • proven human sex hormones effects that can result in adverse pregnancy outcomes; • proven human fertility effects; • proven human fetal viability; and/or • where any of the above criteria are probable based on mechanism of action.
Reproductive Hazardous Sub-Category 2 (Consensus agreement)	Animal data for any of the following except where well-performed epidemiological studies show no increased risk of adverse reproductive effects in humans: <ul style="list-style-type: none"> • animal studies showing teratogenic effects at higher than human doses; • animal studies showing sex hormones effects that can result in adverse pregnancy outcomes; • animal studies show effects on fertility; and/or • animal fetal viability concerns at doses equivalent or higher than human doses.

Evaluation against medicines information resources

The working group reached consensus agreement on resources to be used for evaluation of clinical toxicity information. Resources used were:

- IBM Micromedex®
- Lexicomp®
- Australian Approved Product Information (accessed via MIMS Online Australia)
- REPROTOX®
- Safety Data Sheets
- Therapeutic Goods Administration (TGA) pregnancy category
- Food and Drug Administration (FDA) Prescribing Information (where Australian Approved Product Information was not available)
- Primary literature

The hazardous potential of each medicine was evaluated against the criteria included in the definitions above. Each hospital independently evaluated the medicines on the list and proposed a classification. Where there were differences in proposed classification, agreement on a final classification was reached by consensus. The evaluation approach resulted in the same final hazardous classification as for all medicines listed in NIOSH and Cancer Institute NSW hazardous medicines lists.

Evaluation by medicine class

Where medicines were structurally or pharmacologically similar, and hazardous potential deemed to be a class effect, these were assessed based on medicine class. Medicines within the following classes were deemed to have similar hazardous potential and were assigned the same hazardous classification (unless otherwise specified):

- Aminoglycosides
- Angiotensin-converting enzyme inhibitors (ACE inhibitors)
- Angiotensin II receptor antagonists (ARAs or ARBs)
- Asparaginase
- Gonadotrophins
- HMG-CoA reductase inhibitors (statins) (except pravastatin)
- Interferons
- Oestrogens
- Progesterone/progestins
- Sodium-glucose co-transporter 2 inhibitors (SGLT2 inhibitors)
- Testosterones

Individual medicines were assessed for two medicine classes: benzodiazepines and azole anti-fungals. Some medicines within these classes commonly appear in hazardous medicines resources and the working group agreed that it would be useful to assess these by individual medicine. Hazardous classification was assigned by individual medicine for these two medicine classes. For medicines that were assessed by class, all medicines available in Australia at the time of writing are listed in the hazardous medicines lists.

Reproductive hazardous sub-categories

During the review and evaluation process, it was noted that there were varying levels of evidence available regarding the reproductive hazardous potential of some medicines. Therefore, to help stratify the potential risk, the working group sub-categorised the reproductive hazardous potential of the medicine (see DEFINITIONS OF HAZARDOUS MEDICINES).

Monoclonal antibodies

Monoclonal antibodies (MABs) have diverse structures, mechanisms of action and pharmacological action. Thus, the hazardous potential of MABs were individually assessed. When evaluating newer MABs with limited safety information, mechanism of action was considered and if this indicated probable reproductive hazardous potential, medicines were classified accordingly. It is recognised that newer information may become available and should be considered when assessing individual risk.

Oral targeted cancer therapies

For oral targeted cancer therapies (e.g. tyrosine kinase, janus kinase and epidermal growth factor receptor inhibitors), when there was a lack of safety information available, the mechanism of action was considered. If this indicated probable hazardous potential, these medicines were classified as hazardous.

CONSENSUS RECOMMENDATIONS

Review of hazardous classification

The medicines that appear in the hazardous medicines lists have been assessed as hazardous by consensus agreement according to agreed definitions.

- **Hazardous Medicines Lists:** A single classification is assigned per medicine; hazardous classification is not stratified by dose or form. The recommended precautions for handling will vary according to hazardous classification, form and method of administration and individual factors of staff members involved.
- **Appendix 2:** All medicines that were assessed for this review are listed including the findings of the review based on available information. This includes medicines that did not meet the criteria for being classed as hazardous at the time of writing. This could be for one of two reasons:
 - No available data: medicines that could not be assessed due to lack of information about characteristics that meet hazardous criteria;
 - Does not meet criteria: medicines that were assessed and did not meet the definition for classification as hazardous at the time of review. New information or evidence may have emerged since publication.
- **Medicines not listed:** Medicines that do not appear in Appendix 2 have not been assessed as part of this framework. Available information should be assessed against the definitions to determine hazardous nature of any medicine not listed in Appendix 2, especially for newly registered medicines.

Methotrexate for autoimmune conditions

In this framework, hazardous classification is assigned to the medicine and is not stratified by dose or form. Organisations may choose to employ different PPE recommendations for low-dose oral and subcutaneous methotrexate for non-cancer indications. For further details on recommendations, refer to 'CATAG Position Statement on the use of low-dose methotrexate'.(8)

HAZARDOUS MEDICINES LISTS

Table 2: CYTOTOXIC MEDICINES

A	D	H	P	V
Amsacrine	Dacarbazine	Hydroxyurea	Paclitaxel	Vinblastine
Arsenic trioxide	Dactinomycin	I	Paclitaxel (NAB, nanoparticle albumin-bound)	Vincristine
Azacitidine	Daunorubicin	Idarubicin	Panobinostat	Vinflunine
B	Decitabine	Ifosfamide	Pemetrexed	Vinorelbine
Belinostat	Dexrazoxane	Inotuzumab ozogamicin	Pentostatin	Vorinostat
Bendamustine	Docetaxel	Irinotecan	Polatuzumab vedotin	
Bleomycin	Doxorubicin	Irinotecan liposomal	Pralatrexate	
Bortezomib	Doxorubicin liposomal	Ixabepilone	Procabazine	
Brentuximab vedotin	E	Ixazomib	R	
Busulfan	Enfortumab vedotin	L	Raltitrexed	
C	Epirubicin	Lomustine	Romidepsin	
Cabazitaxel	Eribulin	M	S	
Capecitabine	Etoposide	Marizomib	Streptozocin	
Carboplatin	Etoposide phosphate	Melphalan	T	
Carfilzomib	F	Mercaptopurine	Tazemetostat	
Carmustine	Floxuridine	Methotrexate*	Temozolomide	
Chlorambucil	Fludarabine	Mitomycin	Teniposide	
Cisplatin	Fluorouracil	Mitotane	Thiotepa	
Cladribine	Fotemustine	Mitozantrone	Tioguanine	
Clofarabine	G	N	Topotecan	
Cyclophosphamide	Gemcitabine	Nelarabine	Trabectedin	
Cytarabine	Gemtuzumab ozogamicin	O	Trastuzumab emtansine	
		Oxaliplatin	Treosulfan	

*Refer to [Methotrexate for autoimmune conditions](#) (page 7)

Table 3: HAZARDOUS NON-CYTOTOXIC MEDICINES

A	E	M	R
Abacavir	Enasidenib	Medroxyprogesterone acetate	Raloxifene
Abemaciclib	Encorafenib	Mestranol	Rasagiline
Afatinib	Entecavir	Methimazole	Regorafenib
Alefacept	Eslicarbazepine	Mipomersen	Ribociclib
Apalutamide	Estradiol	Mycophenolate mofetil	S
Apomorphine	Estriol	Mycophenolic acid	Selpercatinib
Asparaginase (L-asparaginase, colaspase)	Estropipate (piperazine estrone)	N	Semaglutide
Asparaginase erwinia	Ethinylestradiol	Nevirapine	Siponimod
Axitinib	Etonogestrel	Nilotinib	Sirinolimod
Azathioprine	Everolimus	Nilutamide	Sorafenib
B	Exenatide	Nintedanib	Spiroglactone
Bicalutamide	F	Niraparib	Sunitinib
Blinatumomab	Fingolimod	Nomegestrol	T
Brigatinib	Flucytosine	Norethisterone	Tacrolimus
C	Flutamide	O	Talazoparib
Carbamazepine	Foscarnet	Olaparib	Tamoxifen
Ceritinib	Fosphenytoin	Osimertinib	Temsirolimus
Chloramphenicol	G	Ospemifene	Terflunomide
Ciclosporin	Ganciclovir	Oxcarbazepine	Thalidomide
Cidofovir	Gefitinib	P	Tofacitinib
Conjugated estrogens	Gestodene	Palbociclib	Trametinib
Crizotinib	I	Palifermin	Trifluridine + tipiracil (combination only)
Cyproterone	Ibrutinib	Paraldehyde	V
D	Idelalisib	Pegaspargase	Valganciclovir
Dabrafenib	Imatinib	Phenoxybenzamine	Vandetanib
Darolutamide	L	Phenytoin	Vismodegib
Dasatinib	Lapatinib	Pomalidomide	Z
Deferiprone	Leflunomide	Ponatinib	Zidovudine
Desogestrel	Lenalidomide	Progesterone	
Dienogest	Levonorgestrel	Propylthiouracil	
Diethylstilbestrol	Liraglutide		
Drosperinone	Lomitapide		
Dydrogesterone	Lorlatinib		

Table 4: REPRODUCTIVE HAZARDOUS MEDICINES (Superscript indicates sub-category classification)

A	E	M	T
Abiraterone ¹	Efavirenz ²	Macitentan ¹	Tazarotene ¹
Acalabrutinib ²	Empagliflozin ²	Methylene blue ²	Telmisartan ¹
Acitretin ¹	Enalapril ¹	Midostaurin ²	Temazepam ²
Aflibercept ²	Entrectinib ¹	Mifepristone ¹	Terlipressin ¹
Albendazole ²	Enzalutamide ¹	Miglustat ²	Testosterone ¹
Alectinib ¹	Eplerenone ²	Minocycline ²	Testosterone decanoate ¹
Ambrisentan ¹	Eprosartan ¹	Misoprostol ¹	Testosterone enantate ¹
Amikacin ²	Erlotinib ²	N	Testosterone isocaproate ¹
Anastrozole ¹	Ertugliflozin ²	Nafarelin ¹	Testosterone phenylpropionate ¹
Apremilast ²	Ethosuximide ¹	Nandrolone decanoate ²	Testosterone propionate ¹
Artemether ²	Exemastane ¹	Neratinib ¹	Testosterone undecanoate ¹
Atezolizumab ¹	F	Nivolumab ¹	Tibolone ¹
Atorvastatin ²	Finasteride ¹	O	Tigecycline ²
Avelumab ¹	Fluconazole ¹	Olmesartan ¹	Tobramycin ²
B	Flunitrazepam ²	Oxytocin ²	Tolvaptan ²
Baricitinib ²	Fluvastatin ²	Ozanimod ¹	Topiramate ¹
Bazedoxifene ²	Follitropin alfa (rch) ²	P	Toremifene ²
Bevacizumab ¹	Follitropin beta ²	Pamidronate ²	Trandolapril ¹
Bexarotene ¹	Follitropin delta ²	Paroxetine ¹	Trastuzumab ¹
Binimetinib ¹	Fosinopril ¹	Pasireotide ²	Tretinoin ¹
Bosentan ¹	Framycetin ²	Pazopanib ¹	Triazolam ²
Bosutinib ¹	Fulvestrant ¹	Peg-interferon alfa-2a ²	Triptorelin ¹
Brolucizumab ¹	G	Peg-interferon beta-1a ²	U
Bromazepam ²	Ganirelix ²	Pembrolizumab ¹	Ulipristal ¹
C	Gentamicin ²	Penicillamine ²	Upadacitinib ²
Cabergoline ²	Goserelin ¹	Pentamidine ²	V
Cabozantinib ¹	H	Perindopril ¹	Valsartan ¹
Candesartan ¹	Human chorionic gonadotropin ²	Pertuzumab ¹	Vemurafenib ¹
Captopril ¹	Human menopausal gonadotropin ²	Phenindione ¹	Venetoclax ²
Cemiplimab ¹	I	Phenobarbitone ²	Vigabatrin ¹
Cetrorelix ²	Icatibant ²	Plerixafor ¹	Voriconazole ¹
Cetuximab ²	Interferon beta-1a ²	Podophyllotoxin ²	W
Chlorpromazine ²	Interferon beta-1b ²	Posaconazole ¹	Warfarin ¹
Choriogonadotropin alfa ²	Interferon gamma-1b ²	Primaquine ²	Z
Clobazam ²	Ipilimumab ¹	Primidone ²	Ziprasidone ¹
Clomiphene ¹	Irbesartan ¹	Q	Zoledronic acid ²
Clonazepam ²	Isotretinoin ¹	Quinapril ¹	Zonisamide ¹
Cobimetinib ¹	Isuvaconazole ²	Quinine ²	
Colchicine ¹	Itraconazole ¹	R	
Corifollitropin alfa ²	Ivabradine ¹	Ramipril ¹	
D	K	Ribavirin ¹	
Danazol ¹	Ketoconazole ¹	Riociguat ¹	
Dapagliflozin ²	L	Ripretinib ¹	
Defibrotide ¹	Lamivudine ²	Rosuvastatin ²	
Defarilix ²	Lenvatinib ¹	Ruxolitinib ¹	
Denosumab ²	Letrozole ¹	S	
Dihydroergotamine ¹	Leuprorelin ¹	Simvastatin ²	
Dinoprostone ¹	Lisinopril ¹	Sodium valproate (valproic acid) ¹	
Doxycycline ²	Lithium ¹	Sonidegib ¹	
Durvalumab ¹	Losartan ¹	Sulfasalazine ¹	
Dutasteride ¹	Lutropin alfa ²		

PERSONAL PROTECTIVE EQUIPMENT

Handling of hazardous medicines refers to the preparation, administration, disposal (including connecting and disconnecting of IV infusions) and transportation of medicines and handling of bodily fluids or waste.

Use PPE that is manufacturer-recommended for the purpose of medicines handling or specified to be fit for purpose for use with cytotoxic agents. Change, store and dispose of PPE according to local procedures. Correctly fit PPE according to manufacturer instructions with respect to other clothing, eyewear or head/face coverings.

- Gloves
 - Disposable nitrile
 - Long enough to cover wrist cuffs of gown
 - Handling cytotoxic medicines: Two pairs
 - Handling all other hazardous medicines: Single pair

Note: staff may choose to wear two pairs of gloves when handling and administering hazardous non-cytotoxic or reproductive hazardous medicines
- Protective Gown
 - Long-sleeved
 - Cuffed
 - Fluid impervious
 - Fastens at the back
- Eye Protection
 - Safety glasses – standard or over-spectacles
 - Transparent full face chemical splash shield if at increased risk of splash

Note: personal glasses or spectacles are not a substitute for protective eyewear
- Respiratory Protection
 - Mask with a P2 (N95) particulate filter

Note: surgical masks do not provide adequate respiratory protection



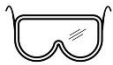

Perform fit testing as per the manufacturer instructions and organisational requirements to ensure the mask is the correct size, especially for those who wear prescription glasses. The positive and negative pressure seal of the mask should be tested to ensure correct fit by gently exhaling and inhaling; if air escapes, or the mask is not drawn into the face during inhalation, the mask needs to be adjusted.

Use eye protection and/or respiratory protection if there is a risk of exposure from splash, aerosolisation or inhalation. Clinical judgement should be used to assess risk of splash, aerosolisation or inhalation. Instances where potential risk can occur include connection/disconnection of lines, manipulation of solid formulations, reconstitution of powder form, obtaining part doses from a pre-filled syringe, or handling uncontained medicines and spills.

PERSONAL PROTECTIVE EQUIPMENT RECOMMENDATIONS

For preparation, administration and disposal of hazardous medicine, refer to Tables 5 and 6 for recommended PPE.

Refer to local area policies for the preparation of cytotoxic and hazardous non-cytotoxic medications within the Pharmacy Department.

Table 5: PERSONAL PROTECTIVE EQUIPMENT RECOMMENDATIONS FOR HANDLING OF CYTOTOXIC MEDICINES					
ROUTE	FORMULATION	Two Pairs Gloves 	Protective Gown 	Eye Protection 	Respiratory Protection 
ORAL	Intact coated tablet/capsule	✓			
	Uncoated tablet/capsule ¹	✓		✓ if risk of aerosolisation or inhalation	✓ if risk of aerosolisation or inhalation
	Oral liquid	✓	✓	✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
	Manipulated tablet/capsule (e.g. crushed or halved) <i>*Oral cytotoxic tablets are generally not suitable to be crushed. First check if medicine can be crushed or divided with Pharmacy or appropriate medicines resource*</i>	✓	✓	✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
PARENTERAL	All parenteral formulations (including intravenous ² , intrathecal, subcutaneous, intralesional, intramuscular, intravitreal, intradermal, intravesical, intravascular, intra-arterial and intraperitoneal [plus other intraoperative procedures])	✓	✓	✓	✓
OTHER	Topical (e.g. drops, creams, ointments)	✓		✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
	Clinical trial medicines: available as standard of care ³	PPE recommendation corresponding to formulation and administration above			
	Clinical trial medicines: novel therapies (unless otherwise advised by trial sponsor)	✓	✓	✓	✓





¹At the time of writing, methotrexate, mercaptopurine and tioguanine were the only uncoated cytotoxic oral forms.

²Closed-system transfer devices are strongly recommended as a primary engineering control in addition to PPE.

³Medicines that are available commercially may be included in clinical trials.

PERSONAL PROTECTIVE EQUIPMENT RECOMMENDATIONS

For reproductive hazardous medicines, PPE recommendations apply to staff who are actively trying to conceive, pregnant or breastfeeding. All other staff should use PPE as required by organisational policies and procedures.

Table 6: PERSONAL PROTECTIVE EQUIPMENT RECOMMENDATIONS FOR HANDLING OF HAZARDOUS NON-CYTOTOXIC AND REPRODUCTIVE HAZARDOUS MEDICINES					
ROUTE	FORMULATION	Single Pair Gloves 	Protective Gown 	Eye Protection 	Respiratory Protection 
ORAL	All intact tablet/capsule (coated and uncoated)	✓			
	Oral liquid	✓	✓	✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
	Manipulated tablet/capsule (e.g. crushed or halved) <i>*First check if medicine can be crushed or divided with Pharmacy or appropriate medicines resource*</i>	✓	✓	✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
PARENTERAL	All parenteral formulations (including intravenous, subcutaneous, intramuscular, intravitreal, intradermal, intravesical, intraperitoneal, intravascular) <i>*Check with Pharmacy before obtaining a dose from a compounded or pre-filled dosage forms*</i>	✓	✓	✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
OTHER	Topical (e.g. drops, patches, creams, ointments including vaginal and rectal formulations)	✓		✓ if risk of splash, aerosolisation or inhalation	✓ if risk of splash, aerosolisation or inhalation
	Inhalation or nebulisation <i>*May require additional precautions (e.g. specialised equipment, negative pressure/single room) Check with pharmacy prior to administration</i>	✓	✓	✓	✓
	Clinical trial medicines: available as standard of care	PPE recommendation corresponding to formulation and administration above			
	Clinical trial medicines: novel therapies (unless otherwise advised by trial sponsor)	✓	✓	✓	✓






MEDICINE SPILLS, BODILY FLUIDS HANDLING & DISPOSAL OF EQUIPMENT

Established, evidence-based practice mandates that safety precautions should be applied when handling bodily fluids for patients who have had a cytotoxic medicine administered within a 7-day period. For patients who are receiving prolonged or continuous duration of a cytotoxic medicine (e.g. multi-day fluorouracil infusor or continuing maintenance oral chemotherapy), ongoing precautions should be applied.(5,10-11)

A medicine spill refers to any liquid or powder spill, a spill involving crushed tablets or capsule contents of a medicine. Medicine spills pose a high risk of splash, inhalation or aerosolisation.(5) It is prudent to use a spill kit and full PPE when handling medicine spills. Refer to organisational policies and procedures for further information about handling medicine spills.(9)

Standard infection-control precautions mandates the use of PPE whenever there is a risk of exposure to body fluids. This guidance can be applied when handling of bodily fluids for patients who have received a hazardous non-cytotoxic medicine or reproductive hazardous medicine. Bodily fluids following administration of a hazardous medicine should be handled with standard infection-control precautions.

Equipment includes PPE, lines, empty infusion bags and primary medicine containers (e.g. vials). Dispose of cytotoxic equipment in a cytotoxic waste bin or cytotoxic sharps container (for contaminated sharps). Dispose hazardous non cytotoxic and reproductive hazardous medicine equipment in a biohazardous waste bin (or standard disposal as per organisational policies and procedures)

Table 7: PPE and Handling Recommendations for Medicine Spills and Bodily Fluids						
ACTIVITY	HAZARDOUS CLASSIFICATION	Single Pair Gloves 	Protective Gown 	Eye Protection 	Respiratory Protection 	Spill kit 
Medicine Spill	Cytotoxic	✓	✓	✓	✓	✓
	All other hazardous For reproductive hazardous medicines, this applies to staff who are pregnant, breastfeeding or trying to conceive	✓	✓	✓	✓	✓
Bodily fluids handling (including spills and soiled linen)	Cytotoxic	✓	✓	✓	✓	✓
	All other hazardous	Standard infection-control precautions as per organisational policies and procedures				

OTHER HANDLING CONSIDERATIONS

Transport, collection/receipt and storage: For transport, collection/receipt and storing of cytotoxic medicines in the clinical area, staff should wear at least one pair of nitrile gloves when handling to mitigate the risk of exposure due to potential contamination on outer packaging. Containers for the transport of cytotoxic medicines should be hard walled, leak-proof and made from suitable packaging material capable of protecting the product from a shock equivalent to a drop of one meter on a concrete surface. It should be securely closed and labelled with cytotoxic warnings.(5,7,10-11)

There is currently no guidance for employing similar precautions for transport, collection/receipt and storing of hazardous non-cytotoxic or reproductive hazardous medicines. Staff may choose to wear gloves as an additional precaution if they are involved in these activities. Refer to local organisational policies and procedures for institutional

guidance specific to transport, collection/receipt and storing of hazardous non-cytotoxic or reproductive hazardous medicines.

Closed-system transfer devices: For cytotoxic medicines that carry the highest risk of adverse health outcomes from occupational exposure, closed-system transfer devices (CSTD) are recommended as a primary engineering control in addition to PPE. CSTDs do not replace any specific component of PPE.(12)

LIMITATIONS

This area of practice is rapidly changing. The medicines listed within this guidance document is a snapshot of the available medications and recommendations for PPE at this point in time. The number of new medicines that meet the criteria we have proposed is rapidly expanding. Organisations will need to consider processes to evaluate these medicines as they are added to a hospital formulary due to the lack of formal guidance around this in Australia. There may be additional considerations for PPE for medication handling which fall outside of this guideline

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Acknowledgements

The working group acknowledge the contribution of the following individuals in supporting the development of this framework:

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Sophie Cameron (Acting Unit Manager [Birth Centre], The Royal Women's Hospital)

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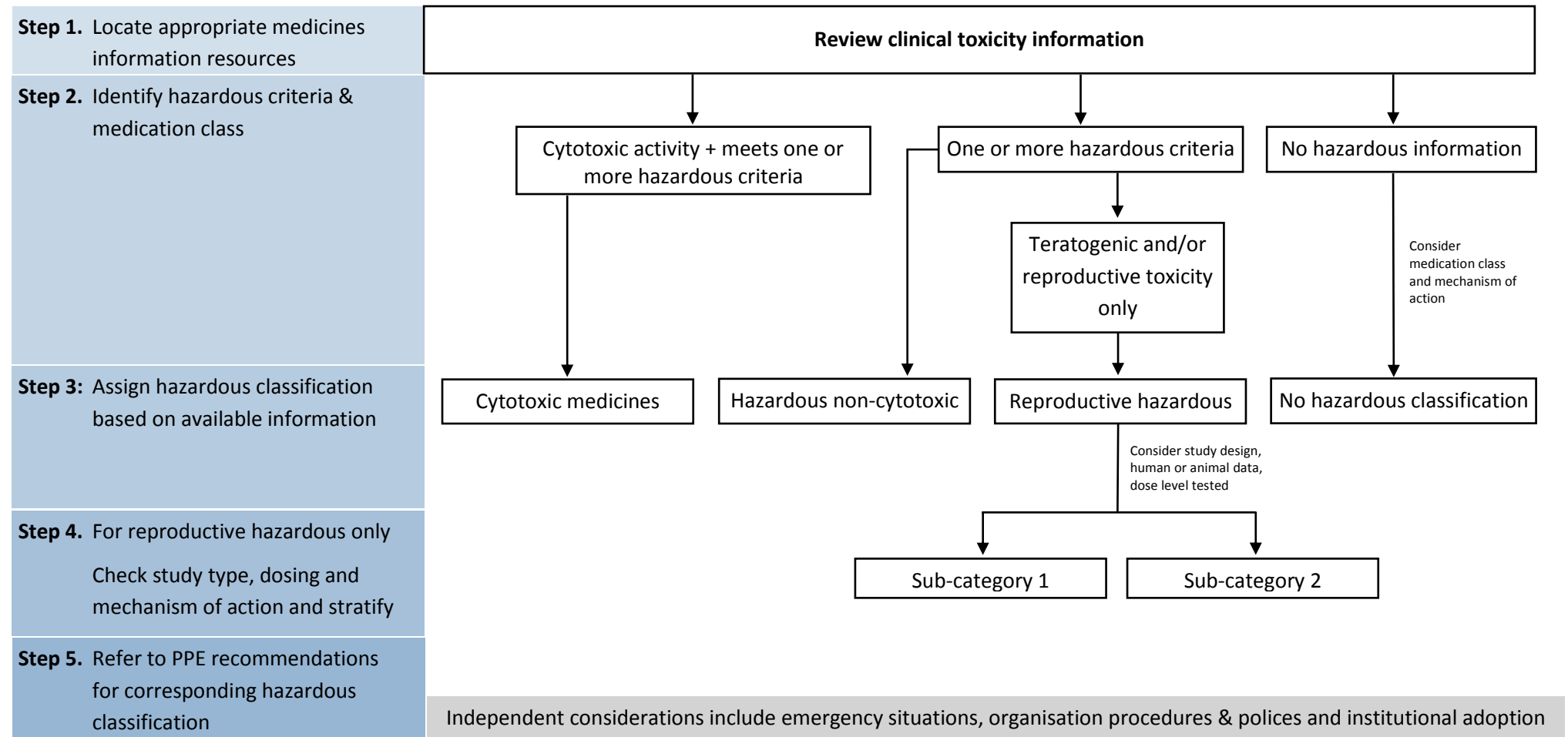
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LEGISLATION, REFERENCES AND SUPPORTING DOCUMENTS

1. Booth J, Keith C, Tanner F, Siderov J, Aminian P. Hazardous non-cytotoxic medicines: uncertainty around safe handling? A new workplace guideline for hospital staff. *Journal of Pharmacy Practice and Research*. 2019 Feb;49(1):62-8.
2. NIOSH [2020]. Managing Hazardous Drug Exposures: Information for Healthcare Settings. Hodson L, Ovesen J, Couch J, Hirst D, Lawson C, Lentz TJ, MacKenzie B, and Mead K. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH). Available at: <https://www.cdc.gov/niosh/docket/review/docket233c/pdfs/DRAFT-Managing-Hazardous-Drug-Exposures-Information-for-Healthcare-Settings.pdf>
3. NIOSH [2020]. NIOSH List of Hazardous Drugs in Healthcare Settings, 2020. Connor TH, MacKenzie BA, DeBord DG, Trout DB, O'Callaghan JP, Ovesen JL, Whittaker C. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) (Supersedes 2016-161). Available at: <https://www.cdc.gov/niosh/docket/review/docket233c/pdfs/DRAFT-NIOSH-Hazardous-Drugs-List-2020.pdf>
4. Australian Pharmaceutical Formulary and Handbook 25th edition (APF25). Australia: Pharmaceutical Society of Australia; 2021. Hazardous medicines and label 21, p 30-31.
5. Cancer Institute NSW (eviQ), 2019. Safe handling and waste management of hazardous drugs (ID 188 v.7). Available at: <https://www.eviq.org.au/clinical-resources/administration-of-antineoplastic-drugs/188-safe-handling-and-waste-management-of-hazardou>
6. Cancer Institute NSW (eviQ), 2019. Hazardous drugs table (ID 909 v.7). Available at: <https://www.eviq.org.au/clinical-resources/administration-of-antineoplastic-drugs/909-hazardous-drugs-table>
7. Safe Handling: Cytotoxic drugs & Related Waste. A Risk Management Guide for SA Health Service 2015.
8. Council of Australian Therapeutic Advisory Group, 2020. Supporting safe practices for low-dose methotrexate: Position Statement on the use of low-dose methotrexate (Version 1 October 2020). Available at: <http://www.catag.org.au/wp-content/uploads/2020/11/CATAG-Position-Statement-on-the-use-of-low-dose-methotrexate-1.pdf>
9. Cancer Institute NSW (eviQ), 2019. Clinical procedure - hazardous drug spill management (ID 919 v.5). Available at <https://www.eviq.org.au/clinical-resources/administration-of-antineoplastic-drugs/919-hazardous-drug-spill-management##procedure>
10. NSW Government, July 2017. Cytotoxic drugs and related waste – risk management. Available at http://www.safework.nsw.gov.au/_data/assets/pdf_file/0005/287042/SW08559-Cytotoxic-drugs-and-related-risk-management-guide.pdf
11. Office of Industrial Relations: Workplace Health and Safety Queensland Government, February 2017. Guide for handling cytotoxic drugs and related waste. Available at https://www.worksafe.qld.gov.au/_data/assets/pdf_file/0024/22884/guide-handling-cytotoxic-drugs-related-waste.pdf
12. Gurusamy KS, Best LM, Tanguay C, Lennan E, Korva M, Bussières JF. Closed-system drug-transfer devices in addition to safe handling of hazardous drugs versus safe handling alone for reducing healthcare staff exposure to infusional hazardous drugs. *Cochrane Database of Systematic Reviews*. 2017(11).

APPENDIX 1: KEY STEPS FOR REVIEW OF HAZARDOUS CLASSIFICATION

The following flowchart outlines key steps and considerations for reviewing the hazardous classification of new medicines or new evidence for medicines currently classified as hazardous.



APPENDIX 2: FULL LIST OF MEDICINES REVIEWED

Complete list of medicines compiled from agreed resources and assessment of available evidence on hazardous characteristics against consensus criteria. Refer to Hazardous Medicines Lists for medicines classified as hazardous.

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Abacavir	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Abemaciclib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Abiraterone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Acalabrutinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Acitretin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Adalimumab	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Adapalene	No	Available data does not meet definition	No	Available data does not meet definition	Not on hazardous medicines list
Afatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Aflibercept	No	Insufficient or no data to assess	No	Available data meets definition	Reproductive Hazardous Sub-Category 2
Albendazole	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Aldesleukin	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Alectinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Alefacept	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Alemtuzumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Alprazolam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Ambrisentan	No	Insufficient or no data to assess	No	Available data meets definition	Reproductive Hazardous Sub-Category 1
Amikacin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Amsacrine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Anastrozole	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Apalutamide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Apomorphine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Apremilast	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Aripiprazole	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Arsenic trioxide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Artemether	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Asciminib	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Asparaginase (L-asparaginase, colaspase)	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Asparaginase erwinia	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Atezolizumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Atorvastatin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Avelumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Axitinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Azacididine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Azathioprine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Baricitinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Bazedoxifene	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Belinostat	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Bendamustine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Bevacizumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Bexarotene	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Bezlotoxumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Bicalutamide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Binimetinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Birinapant	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Bleomycin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Blinatumomab	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Bortezomib	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Bosentan	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Bosutinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Botulinum toxins	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Brentuximab vedotin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Brigatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Brolucizumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Bromazepam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Busulfan	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Cabazitaxel	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Cabergoline	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Cabozantinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Candesartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Capecitabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Captopril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Carbamazepine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Carboplatin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Carfilzomib	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Carmustine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Cemiplimab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ceritinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Cetorelix	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Cetuximab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Chlorambucil	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Chloramphenicol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Chloroquine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Chlorpromazine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Choriogonadotropin alfa	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ciclosporin	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Cidofovir	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Cisplatin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Cladribine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Clobazam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Clofarabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Clomiphene	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Clonazepam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Clotrimazole	No	Available data does not meet definition	No	Available data does not meet definition	Not on hazardous medicines list
Clozapine	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Cobimetinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Colchicine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Conjugated estrogens	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Corifollitropin alfa	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Crizotinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Cyclophosphamide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Cyproterone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Cytarabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Dabrafenib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Dacarbazine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Dactinomycin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Danazol	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Dapagliflozin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Daratumumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Darbepoetin alfa	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Darolutamide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Dasatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Daunorubicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Decitabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Deferiprone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Defibrotide	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Degarilix	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Denosumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Desogestrel	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Dexrazoxane	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Diazepam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Dienogest	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Diethylstilbestrol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Dihydroergotamine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Dinoprostone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Dinutuximab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Docetaxel	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Doxorubicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Doxorubicin liposomal	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Doxycycline	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Drosperinone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Durvalumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Dutasteride	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Dydrogesterone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Eculizumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Efavirenz	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Eletriptan	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Elotuzumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Empagliflozin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Enalapril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Enasidenib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Encorafenib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Enfortumab vedotin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Entecavir	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Entrectinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Enzalutamide	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Epirubicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Eplerenone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Eprosartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ergometrine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Eribulin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Erlotinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ertugliflozin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Eslicarbazepine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Estradiol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Estriol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Estropipate (piperazine estrone)	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Etanercept	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Ethinylestradiol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ethosuximide	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Etonogestrel	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Etoposide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Etoposide phosphate	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Everolimus	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Exemastane	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Exenatide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Finasteride	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Fingolimod	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Floxuridine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Fluconazole	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Flucytosine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Fludarabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Flunitrazepam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Fluorouracil	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Flutamide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Fluvastatin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Follitropin alfa (rch)	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Follitropin beta	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Follitropin delta	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Foscarnet	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Fosinopril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Fosphenytoin	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Fotemustine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Framycetin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Fulvestrant	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ganciclovir	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ganirelix	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Gefitinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Gemcitabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Gemtuzumab ozogamicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Gentamicin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Gestodene	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Goserelin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Human chorionic gonadotropin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Human menopausal gonadotropin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Hydroxychloroquine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Hydroxyurea	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Ibrutinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Icatibant	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Idarubicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Idelalisib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ifosfamide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Imatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Infliximab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Inotuzumab ozogamicin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Interferon alfa-2a	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Interferon alfa-2b	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Interferon beta-1a	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Interferon beta-1b	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Interferon gamma-1b	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ipilimumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Irbesartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Irinotecan	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Irinotecan liposomal	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Isotretinoin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Isvaconazole	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Itraconazole	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ivabradine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ixabepilone	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Ixazomib	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Ketoconazole	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Lamivudine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Lamotrigine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Lapatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Leflunomide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Lenalidomide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Lenvatinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Letrozole	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Leuprorelin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Levonorgestrel	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Liraglutide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Lisinopril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Lithium	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Lomitapide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Lomustine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Lorazepam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Lorlatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Losartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Lutropin alfa	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Macitentan	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Maraviroc	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Marizomib	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Medroxyprogesterone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Melphalan	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Mercaptopurine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Mestranol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Methimazole	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Methotrexate	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Methylene blue	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Metypalone	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Miconazole	No	Available data does not meet definition	No	Available data does not meet definition	Not on hazardous medicines list
Midazolam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Midostaurin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Mifepristone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Miglustat	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Minocycline	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Mipomersen	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Misoprostol	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Mitomycin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Mitotane	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Mitozantrone	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Mycophenolate mofetil	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Mycophenolic acid	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Nafarelin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Nandrolone decanoate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Nelarabine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Neomycin	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Neratinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Nevirapine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Nicotine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Nilotinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Nilutamide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Nintedanib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Niraparib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Nitrazepam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Nivolumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Nomegestrol	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Noresthisterone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Obinutuzumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Ofatumumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Olanzapine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Olaparib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Olaratumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Olmesartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Omalizumab	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Osimertinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ospemifene	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Oxaliplatin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Oxazepam	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Oxcarbazepine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Oxybuprocaine	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Oxytocin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ozanimod	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Paclitaxel	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Paclitaxel (nanoparticle albumin-bound, nab)	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Palbociclib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Palifermin	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Paliperidone	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Palivizumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Pamidronate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Panitumumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Panobinostat	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Paraldehyde	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Paroxetine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Pasireotide	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Pazopanib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Pegaspargase	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Peg-interferon alfa-2a	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Peg-interferon beta-1a	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Pembrolizumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Pemetrexed	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Penicillamine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Pentamidine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Pentostatin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Pericyazine	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Perindopril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Pertuzumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Phenindione	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Phenobarbitone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Phenoxybenzamine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Phenytoin	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Plerixafor	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Podophyllotoxin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Polatuzumab vedotin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Pomalidomide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ponatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Posaconazole	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Pralatrexate	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Pravastatin	No	Available data does not meet definition	No	Available data does not meet definition	Not on hazardous medicines list
Primaquine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Primidone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Procarbazine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Progesterone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Propylthiouracil	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Quinapril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Quinine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Raloxifene	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Raltitrexed	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Ramipril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ramucirumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Ranibizumab	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Rasagiline	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Regorafenib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ribavirin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ribociclib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Riociguat	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ripretinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Risperidone	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Rituximab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Romidepsin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Rosuvastatin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ruxolitinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Selpercatinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Semaglutide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Simvastatin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Siponimod	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Sirolimus	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Sodium valproate (valproic acid)	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Solifenacin	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Sonidegib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Sorafenib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Spironolactone	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Streptozocin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Sulfasalazine	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Sulthiame	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Sunitinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Tacrolimus	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Talazoparib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Tamoxifen	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Tazarotene	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Tazemetostat	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Telavancin	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Telmisartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Temazepam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Temozolomide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Temsirolimus	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Teniposide	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Tenofovir	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Teriflunomide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Terlipressin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone decanoate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone enantate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone isocaproate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone phenylpropionate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone propionate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Testosterone undecanoate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Tetracosactide (tertacosactrin)	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Thalidomide	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Thiotepa	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Tibolone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Tigecycline	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Tioguanine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Tobramycin	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Tocilizumab	No	Insufficient or no data to assess	No	Insufficient or no data to assess	Not on hazardous medicines list
Tofacitinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Tolvaptan	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Topiramate	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1

Medicine Name	Cytotoxic or Hazardous Non-Cytotoxic Yes / No	Rationale	Reproductive Hazardous Yes / No / Not applicable	Rationale	Final classification
Topotecan	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Toremifene	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Trabectedin	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Trametinib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Trandolapril	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Trastuzumab	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Trastuzumab emtansine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Treosulfan	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Tretinoin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Triazolam	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Trifluridine + tipiracil (combination only)	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Triptorelin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Ulipristal	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Upadacitinib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Ustekinumab	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Valganciclovir	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Valsartan	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Vandetanib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Vedolizumab	No	Insufficient or no data to assess	No	Available data does not meet definition	Not on hazardous medicines list
Vemurafenib	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Venetoclax	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Vigabatrin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Vinblastine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Vincristine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Vinflunine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Vinorelbine	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Vismodegib	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Voriconazole	No	Available data does not meet definition	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Vorinostat	Yes	Available data meets definition	Not applicable	Not applicable	Cytotoxic
Warfarin	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Zidovudine	Yes	Available data meets definition	Not applicable	Not applicable	Hazardous Non-Cytotoxic
Ziprasidone	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1
Zoledronic acid	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 2
Zonisamide	No	Insufficient or no data to assess	Yes	Available data meets definition	Reproductive Hazardous Sub-Category 1

