

Medicines/pharmaceuticals of animal origin

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https://www.health.qld.gov.au/_data/assets/pdf_file/0024/147507/qh-gdl-954.pdf

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1 Purpose

This guideline provides information for clinicians to assist patients wishing to avoid animal product, to make informed decisions about their treatment/care.

2 Scope

People with food allergies or intolerances, or who want to avoid animal products for religious, cultural or secular reasons may want to know about the origin/source of drugs and excipients contained within their medicines, to enable them to make a fully informed decision about their treatment. This wish is supported by the Australian Charter of Healthcare Rights which states that 'patients have a right to have their culture, identity, beliefs and choices recognised and respected'. This document provides information for clinicians to assist patients in making this choice.

This guideline provides information for all clinicians involved in the medicines management cycle within Hospital and Health Services (HHS). While the information contained in the tables of products in the appendices is compiled from the best information available, it should not be regarded as fully comprehensive. Information on enteral and infant feeds (and many herbal and complimentary medicines) is not included in this document. Please refer to a dietitian for advice on enteral/infant feed composition.

3 Background

Person-centred care is the gold standard approach to healthcare delivery and has been shown to improve the safety and quality of health care, improve patient outcomes and experience, and improve the performance of health service organisations¹. For this reason, healthcare professionals must take into consideration patients' religious beliefs and lifestyles when prescribing and administering medicines.²

Many different medicines and vaccines, or specific formulations of a medicine such as tablets, capsules, creams or mixtures contain animal products or are animal derived. For example, gelatin is a partially hydrolysed collagen which is usually bovine (beef) or porcine (pig) in origin. Gelatin is used in making capsule shells and is one of many types of stabilisers added to pharmaceutical products such as vaccines.³ Heparin, an injectable anticoagulant, is prepared from a porcine source. Further examples of pharmaceutical products known to be of animal origin are listed in the appendices

Several of the world's most prominent religions have objected to the use of certain animal-derived products, including Muslim, Hindu, Christian, Jewish and Buddhist faiths (see table 1). A growing number of individuals are also increasingly restricting their consumption and use of animal-derived products for ethical reasons such as animal welfare and objections to the intentional killing of animals, environmental concerns and perceived health benefits, However, neither religious nor secular groups are homogeneous in their views on the use of

animal-derived products used in their care. Consequently, there is considerable diversity of opinion, and membership of a particular group does not necessarily dictate an individual's convictions⁴. However, informing patients about the origins of their proposed medication (if animal derived and no suitable synthetic alternative exists) will assist them in making informed decisions regarding their treatment.² There may be provisions within various religious groups to provide some form of dispensation, depending on the nature of the need for treatment.

NB All medicines must undergo testing in non-human animals before they can proceed to testing in humans in order to gain a product license¹³.

4 Religious restrictions

Table 1 Religious restrictions

Religion	Countries where widely practiced (relevant to Queensland)	Restrictions
Buddhism	Tibet, Bhutan, India, Nepal, Sri Lanka, Burma, Thailand, Laos, Cambodia, Malaysia, Vietnam, China, Bangladesh, Korea, Japan, Singapore, parts of Russia.	For some vegetarian Buddhists - all animal products prohibited however, no fixed rules.
Hinduism	India, Nepal, Bangladesh, Indonesia, Pakistan, Sri Lanka, Philippines, Fiji, UK, Mauritius, Bhutan, South Africa, Burma, Singapore	For majority who are vegetarian – all animal products including egg prohibited For those who are not vegetarian, restrictions still include bovine* and porcine products
Islam	Indonesia, India, Pakistan, Bangladesh, Egypt, Turkey, Iran, Nigeria, Ethiopia, Afghanistan, Sudan, Iraq, Malaysia, Tanzania, Somalia, Cote d'Ivoire, Congo, Philippines, Sierra Leone, Thailand, Eritrea, Lebanon	Porcine products prohibited All animal products not killed in the prescribed ritualistic way (halal) prohibited Products containing alcohol prohibited Please note gelatin is contentious**

Religion	Countries where widely practiced (relevant to Queensland)	Restrictions
<p>Jehovah's witnesses</p> <p>A 24 hours a day service for clinicians treating Jehovah's Witnesses is available. The number can be found via the 'Contacts' Button on their site</p>	<p>Australia, USA, Mexico, Brazil and many other countries (240 in total)</p>	<p>Abstain from blood products e.g. blood transfusions. [The use of fractions derived from the primary components of blood is not absolutely prohibited see – religious and ethical position medical therapy]</p> <p>Queensland Blood Management provide information on consent and refusal see: consent-refusal</p> <p>Many HHSs have procedures for refusal of blood products.</p>
<p>Judaism</p>	<p>USA, Israel, France, Canada, UK, Russia, Argentina, Ukraine, Brazil and South Africa</p>	<p>All porcine and shellfish products prohibited</p> <p>Other rules about animal products that can be ingested:</p> <ul style="list-style-type: none"> land animals must be mammals which chew their cud and have cloven hooves birds of prey are prohibited fish must have fins and scales non-fish seafood is prohibited e.g. shellfish meat and milk (any dairy) cannot be mixed <p>Observers only consume kosher products – complex set of rules</p>
<p>Seventh Day Adventist</p>	<p>Australia, USA, South America, some African countries</p>	<p>Some abstain from meat, but eggs are permissible.</p>
<p>Sikh</p>	<p>India, Pakistan, Malaysia, Singapore, Fiji, New Zealand, USA and UK</p>	<p>For some who are vegetarian – all animal products including egg prohibited</p> <p>For those who are not vegetarian, restrictions still include bovine and porcine products</p> <p>All animal products from halal sources prohibited</p> <p>Products containing alcohol prohibited.</p>

Adapted from Multicultural Clinical Support Resource Folder- Health and Religion available at https://www.health.qld.gov.au/_data/assets/pdf_file/0025/158740/8mcrs_hlth_relg_n.pdf accessed 03/08/2020

4.1 Organisations consulted:

- Buddhist Council of Queensland (President)
- Hindu Society of Queensland (President)
- Brisbane Sikh Temple (President)
- Seventh-day Adventist Church South Queensland (President)
- Jehovah's witnesses Hospital Information Services International Office
- The Islamic Council of Queensland (Secretary)
- Vegan Australia
- Queensland Jewish Board of Deputies Incorporated

5 Resources

A United Kingdom publication titled “Drugs of porcine origin and their clinical alternatives - An introductory guide”² (written in 2004, accessed 26/08/2020) gives further information on drugs of porcine origin and is available at: http://archive.mcb.org.uk/wp-content/uploads/2015/12/Drugs-Derived-From-Pigs-and-their-Clinical-Alternatives_Booklet.pdf

A Canadian question and answer document produced by the Alberta Health Services – Calgary provides healthcare professionals with an introduction to the religious and cultural issues associated with drugs of animal origin and the need for informed choice in a multicultural society.⁵ This document, titled “Medications derived from animals and culturally diverse patients” is available at: <https://www.albertahealthservices.ca/assets/programs/ps-1026227-health-care-religious-beliefs.pdf>

The Vegan society (England and Wales) has two blogs about medication:

Is my medication vegan? available at: <https://www.vegansociety.com/whats-new/blog/my-medication-vegan> and What vegans should know pre-operatively available at: <https://www.vegansociety.com/whats-new/blog/what-vegans-should-know-pre-operatively>

The manufacturer's Product Information (PI) gives details on the composition of the medicine (i.e. listing the active and inactive constituents/ingredients) and provides some form of description on how the medicine is produced (e.g. whether manufacture of the product included exposure to animal derived materials). Also, Consumer Medicine Information (CMI) leaflets are available for most prescription medicines which enable patients to check the medicine's ingredients. However, these leaflets are produced in English only, so further assistance may be needed.

There appears to be no consistently practical way of identifying whether the gelatin in products has come from beef or pork. This information is not always stated in manufacturers' PI or CMI leaflets but may be important for Jewish, Muslim and Hindu people who may want to avoid even traces of these particular animal products. If patients are concerned about whether the drug or excipients within their medicine are of animal origin,

they could seek the information from their pharmacist or doctor who can check the medicine's PI or CMI. Alternatively, patients can call the National Prescribing Services (NPS) Medicines Line (1300 888 763)⁶ or contact the Medical Information Department of the pharmaceutical company that makes the medicine⁷.

For further clarification, the patient could seek guidance from their religious organisation.

6 Appendices

Appendix A - Porcine (Pig) products

Product name	Generic name	Therapeutic class	Comment
Clexane	Enoxaparin	Anticoagulant, Antithrombotics	derived from porcine intestinal mucosa
Creon	Pancrelipase	Digestive supplements and cholelitholytics	Pancreatic extract (porcine)
Creon Micro Enteric coated granules	Pancrelipase	Digestive supplements and cholelitholytics	Pancreatic extract (porcine)
Curosurf	Poractant alfa	Respiratory agent	natural porcine lung surfactant
Ethical Nutrients Digestion plus		Herbal gastrointestinal preparations	pepsin (porcine)
Fragmin	Dalteparin	Anticoagulant	pig mucosa
Gamunex	Normal immunoglobulin (Human)	Immunoglobulin	porcine parvovirus (PPV) as a model for human parvovirus B19
Heparin sodium injection	Heparin sodium	Anticoagulant	Porcine mucous
Heparinised saline	Heparin sodium	Anticoagulant	Porcine mucous
Heparinised saline injection	Heparin sodium	Anticoagulant	Porcine mucous
Imogam Rabies Pasteurized	Rabies immune globulin (human)	Rabies immune globulin (human)	Porcine pseudorabies virus was selected to model hepatitis B virus and herpes virus
M-M-R II Powder for injection	Measles, mumps and rubella virus vaccine live	Vaccine	Porcine gelatin
Obizur	Susoctocog alfa	Haemostatic agent	Porcine sequence

Product name	Generic name	Therapeutic class	Comment
Orgaran	Danaparoid	Haemostatic agent	From animal mucosa (Porcine)
Panzytrat 25000	Amylase, Lipase, Pancrelipase, Protease	Digestive supplement	Pancreatic extract (porcine)
Prothrombinex-VF	Human prothrombin complex	Haemostatic agent	Heparin, porcine
ProQuad	Measles, Mumps, Rubella and Varicella Virus Vaccine Live	Vaccine	hydrolysed porcine gelatin
Rotarix	Human rotavirus live attenuated vaccine	Vaccine	Contains porcine circovirus type 1 (PCV-1)
RotaTeq	Rotavirus vaccine live oral pentavalent	Vaccine	porcine circoviruses (PCV) 1 and 2
Varivax Refrigerated Powder for injection	Live varicella vaccine.	Vaccine	hydrolysed porcine gelatin
Zostavax	Zoster virus vaccine live	Vaccine	hydrolysed porcine gelatin

Appendices A to G compiled from reference 9

Appendix B - Bovine (Cow) products

Product name	Generic name	Therapeutic class	Comment
Artiss	Aprotinin (synthetic), factor XIII, fibrinogen, thrombin and calcium chloride dihydrate	Surgical antiseptics and applications	Artiss contains synthetic aprotinin. As synthetic aprotinin is structurally identical to bovine aprotinin, the use of Artiss in patients with allergies to bovine proteins should be carefully evaluated
Benadryl Children's Cough 2 years +		Herbal respiratory preparation	lactoferrin - bovine (from cow's milk)
BioHeme		Iron – vitamin and mineral	bovine lactoferrin (derived from cow's milk)
Blackmores Immunodefence capsules		Immune supplement	Lactoferrin, bovine (dairy)
Blackmores Joint Formula, Joint Formula Advanced & Joint Formula Advanced with MSM Booster		Herbal analgesics and anti-inflammatories	Chondroitin sulfate bovine
ChondroCare Excel		Herbal analgesics and anti-inflammatories	Chondroitin sulfate bovine
ChondroPlex		Herbal analgesics and anti-inflammatories	Chondroitin sulfate bovine
Duro-Tuss Children's Cough Liquid		Herbal respiratory preparation	lactoferrin bovine
Ethical Nutrients Inner Health plus capsules	Lactobacillus acidophilus, Bovine colostrum	Digestive supplements	
Ethical nutrients inner health plus powder	Lactobacillus acidophilus, Bovine colostrum	Digestive supplements	

Product name	Generic name	Therapeutic class	Comment
Gelofusine	Gelatin succinylated	Plasma volume expander	Gelatin derived from bovine material
Haemaccel	Polygeline	Plasma volume expander	Bovine Lactoferrin Cow's milk protein
Immune-5		Digestive supplements and cholelitholytics	
Inner Health Plus capsules and Inner Health powder		Digestive supplements and cholelitholytics	Bovine colostrum
Jespect	Inactivated Japanese encephalitis vaccine	Vaccine	Should not be administered to individuals who have previously experienced a serious reaction to bovine serum albumin
Lactoferrin Enhanced & Lactoferrin Plus SB		Herbal and other complementary medicines	Lactoferrin (bovine)
Methylpred, Methylprednisolone Alphapharm & Solu-Medrol	Methylprednisolone sodium succinate	Adrenal steroid hormones	40 mg strength includes lactose from cow's milk
M-M-R II	Measles, mumps and rubella virus vaccine live	Vaccine	This product may contain residual foetal bovine serum
NovoSeven RT	Eptacog alfa (activated)	Haemostatic agents	contains trace amounts bovine IgG protein and other bovine proteins
ProQuad	Measles, Mumps, Rubella and Varicella (Oka/Merck) Virus Vaccine Live		contains residual components bovine serum albumin

Product name	Generic name	Therapeutic class	Comment
Quadracel	Pertussis vaccine acellular, diphtheria and tetanus toxoids (adsorbed), inactivated poliovirus types 1, 2 and 3		bovine serum albumin
Recombinate	Octocog alfa		contains trace amounts of mouse, hamster and bovine protein
Survanta	Beractant	pulmonary surfactant	bovine lung extract
Thyrogen	Thyrotropin alfa	Diagnostic Agents	Use with caution in patients previously treated with bovine TSH
Tisseel VH S/D Solution	Aprotinin - Factor XIII - Fibrinogen, Calcium chloride dihydrate - Thrombin	Haemostatic agent	Use with caution in patients with allergies to bovine proteins
Totally Natural Products Exit Pain		Herbal analgesics and anti-inflammatory	chondroitin sulfate (bovine)
Travelan	Bovine colostrum	Anti-diarrhoeal	
VAQTA & VAQTA Paediatric/adolescent	Hepatitis A virus		bovine albumin
Varivax	Varicella zoster vaccine, live	Vaccines	Inactive components include hydrolysed gelatin and traces of bovine serum.
Vivaxim	Hepatitis A vaccine; Salmonella typhi vaccine	Vaccines	Bovine serum albumin <10 ng (Inactive component)
Vivotif Oral	Oral Typhoid Vaccine Salmonella typhi strain Ty21a		gelatin (bovine derived)
Zostavax	Live varicella vaccine.		bovine calf serum

Bovine – Manufacture includes exposure to bovine materials “Bovine-Indirect

Product name	Generic name	Therapeutic class	Comment
Adacel	Pertussis vaccine, Diphtheria toxoid, Tetanus toxoid, Poliomyelitis vaccine	Vaccine	
Adacel Polio	Acellular pertussis, diphtheria, tetanus and poliovirus type 1, 2 and 3	Vaccines	
Avaxim	Hepatitis A vaccine	Vaccine	
Boostrix	Diphtheria toxoid, Tetanus toxoid, Pertussis vaccine	Vaccine	
Boostrix – IPV suspension for injection	Diphtheria toxoid, Tetanus toxoid, Pertussis vaccine, Poliomyelitis vaccine	Vaccine	
Engerix-B Adult and Paediatric	Hepatitis B vaccine	Vaccine	
Havrix 1440	Hepatitis A vaccine	Vaccine	
Havrix Junior	Hepatitis A vaccine	Vaccine	
Hexaxim	Diphtheria, tetanus, pertussis, hepatitis B, poliomyelitis and Haemophilus influenzae type b conjugate vaccine	Vaccine	
Hiberix	Haemophilus B conjugate vaccine	Vaccine	
Infanrix	Diphtheria, tetanus, acellular pertussis (DTPa) vaccine	Vaccine	
Infanrix-IPV	Diphtheria, tetanus, acellular pertussis (DTPa) and inactivated poliovirus vaccine	Vaccine	

Product name	Generic name	Therapeutic class	Comment
Ipol	Poliovirus (inactivated)	Vaccine	
Merieux inactivated rabies vaccine	Rabies vaccine	Vaccine	
M-M-R II	Measles, mumps and rubella virus vaccine live	Vaccine	This product may contain residual foetal bovine serum
NeisVac-C Vaccine	Meningococcal group C polysaccharide conjugate vaccine	Vaccines	
Pneumovax 23	Pneumococcal purified capsular polysaccharides	Vaccine	
Priorix	Measles, mumps & rubella vaccine	Vaccines	
Priorix-tetra	Varicella zoster vaccine, Rubella vaccine, Mumps vaccine, Measles vaccine	Vaccines	
ProQuad	Measles, Mumps, Rubella and Varicella (Oka/Merck) Virus Vaccine Live	Vaccines	contains residual components of bovine serum albumin
Quadracel	Pertussis vaccine acellular, diphtheria and tetanus toxoids (adsorbed), inactivated poliovirus types 1, 2 and 3	Vaccines	bovine serum albumin
Rabipur	Rabies vaccine	Vaccines	contraindicated in subjects with a known severe hypersensitivity to chicken eggs, chicken protein, bovine gelatin
Rotarix Oral Liquid	Human Rotavirus (live attenuated oral vaccine)	Vaccines	

Product name	Generic name	Therapeutic class	Comment
RotaTeq	Rotavirus vaccine	Vaccines	
Saizen & Saizen 3	Somatropin (rmc), recombinant human growth hormone	Pituitary hormones	prepared from genetically engineered mammalian cells (recombinant mouse cells - C127) transformed with a bovine papilloma virus vector
Stamaril	Yellow Fever Vaccine	Vaccines	
Tripacel	Pertussis vaccine- acellular, combined with diphtheria and tetanus toxoids	Vaccines	
Twinrix & Twinrix Junior	Combined hepatitis A and hepatitis B vaccine	Vaccines	
Typhim Vi	Salmonella typhi Vi polysaccharide vaccine	Vaccines	
Varilrix HSA-Free	Live varicella vaccine	Vaccines	
Varivax	Varicella zoster vaccine, live	Vaccines	Inactive components include hydrolysed gelatin and traces of bovine serum.
Fluarix	Influenza virus vaccine	Vaccine	
ADT Booster	Diphtheria toxoid	Vaccine	

Appendix C Chinese Hamster Ovary (CHO) cells

Product name	Generic name	Therapeutic class	Comment
Actemra	Tocilizumab	Immunomodifiers	contraindicated in patients with: known hypersensitivity to any CHO products
Adcetris	Brentuximab vedotin	Antineoplastic	
Advate	Octocog alfa	Haemostatic agent	
Adynovate	Rurioctocog alfa pegol	Haemostatic agent	derived from octocog alfa (Advate)
Ajovy	Fremanezumab	Antimigraine preparations	fully humanised monoclonal antibody produced in CHO cells
Aldurazyme	Laronidase	Enzyme replacement therapy	genetically engineered Chinese hamster ovary cell line
Aranesp	Darbepoietin	Haemopoietic agent	produced in CHO cells
Avastin	Bevacizumab	Antineoplastic	produced by recombinant DNA technology in a CHO mammalian cell expression system
Avonex	Interferon beta-1a	Immunomodifier	produced by mammalian (CHO) cells
Bavencio	Avelumab.	Antineoplastic	produced in CHO cells
Bemfola	Follitropin alfa (rch)	Pituitary hormone	produced by a CHO cell
BeneFIX	Nonacog alfa	Haemostatic agent	contraindicated in patients with previous allergy to hamster protein
Besponsa	Inotuzumab ozogamicin (rch)	Antineoplastic	
Blinicyto	Blinatumomab (rch)	Antineoplastic	
Brenzys	Etanercept.	Antirheumatoid agents	
Brineura	Cerliponase alfa.	Endocrine and metabolic agents	

Product name	Generic name	Therapeutic class	Comment
CellCept	Mycophenolate mofetil.	Immunomodifiers	Based on Chinese hamster inosine-5'-monophosphate dehydrogenase
Cerezyme	Imiglucerase	Enzyme replacement therapy	
Cosentyx	Secukinumab (rch)	Immunomodifier	
Darzalex	Daratumumab	Antineoplastic	
Dupixent	Dupilumab (rch)	Immunomodifier	
Elonva	Corifollitropin alfa	Pituitary hormones	
Emgality	Galcanezumab	Antimigraine	
Enbrel	Etanercept	Immunomodifier	
Entyvio	Vedolizumab	Immunomodifier	
Eporex	Epoietin-alfa	Haemopoietic agent	
Eylea	Aflibercept	Ophthalmic medication	
Fabrazyme	Agalsidase beta	Enzyme replacement therapy	
Fasenra	Benralizumab	Immunomodifier	
Gonal-f	Follitropin alfa	Pituitary hormone	
Granocyte	Lenograstim	Supportive therapy	expressed in a mammalian host cell system, (CHO) cells
Hemlibra	Emicizumab	Haemostatic agent	
Herceptin	Trastuzumab	Antineoplastic agent	contraindicated in patients with known hypersensitivity to CHO cell proteins
Hyqvia	Normal immunoglobulin (human) with vorhyaluronidase alfa	Immunoglobulin	The vorhyaluronidase alfa.is produced from CHO cells

Product name	Generic name	Therapeutic class	Comment
Ilumya	Tildrakizumab (rch)	Immunomodifier	
Kadcyla	Trastuzumab emtansine.	Antineoplastic agent	
Kanjinti	Trastuzumab	Antineoplastic agent	biosimilar to Herceptin.
Keytruda	Pembrolizumab (rch)	Antineoplastic agent	
Kogenate FS	Octocog alfa	Haemostatic agent	Trace amounts of mouse and hamster protein present
Lemtrada	Alemtuzumab (rch)	Immunomodifier	
Luveris 75 IU	Lutropin alfa	Pituitary hormone	
Mabcampath	Alemtuzumab	Antineoplastic agent	
Mabthera	Rituximab	Antineoplastic agent	
Metalyse	Tenecteplase	Fibrinolytic agent	
Mircera	Methoxy polyethylene glycol-epoetin beta	Haemopoietic agent	Recombinant DNA technology in CHO cells
MycoCept	Mycophenolate	Immunomodifiers	Based on Chinese hamster inosine-5'-monophosphate dehydrogenase
Myozyme	Alglucosidase alfa.	Endocrine and metabolic agents	
Naglazyme	Galsulfase (rch)	Endocrine and metabolic agent	
NeoRecormon	Epoetin beta	Haemopoietic agent	
Novicrit	Epoetin lambda	Haemopoietic agent	Purified from a CHO cell
NovoSeven RT	Eptacog alfa	Haemostatic agent	Baby hamster kidney cells
Nucala	Mepolizumab	Respiratory agent	
Obizur	Susoctocog alfa	Haemostatic agent	Baby hamster kidney cells

Product name	Generic name	Therapeutic class	Comment
Ogivri	Trastuzumab.	Antineoplastic agent	contraindicated in patients with hypersensitivity Chinese hamster ovary cell proteins
Ontruzant	Trastuzumab.	Antineoplastic agent	biosimilar medicine to Herceptin
Opdivo	Nivolumab	Antineoplastic agent	
Orencia	Abatacept	Immunomodifier	Recombinant DNA technology in CHO cells
Ovidrel	Choriogonadotropin alfa	Pituitary hormone	
Pergoveris	Follitropin alfa (rch)/lutropin alfa (rch)	Pituitary hormone	
Perjeta	Pertuzumab	Antineoplastic agent	contraindicated in patients with hypersensitivity to Chinese hamster ovary cell proteins
Praluent	Alirocumab (rch)	Hypolipidaemic agent	
Prolia	Denosumab	Affects calcium and bone metabolism	
Pulmozyme	Dornase alfa	Respiratory agent	contraindicated in patients who have hypersensitivity to Chinese hamster ovary cell
Puregon	Follitropin beta	Pituitary hormone	
Rebif	Interferon beta-1a	Immunomodifier	
Recombinate	Recombinate antihaemophilic factor	Haemostatic agent	
Rekovelte	Follitropin delta	Pituitary hormone	
Repatha	Evolocumab	Hypolipidaemic agent	
Rixubis	Recombinant Coagulation Factor IX (rFIX), Nonacog gamma (rch)	Haemostatic agent	contraindicated in patients with known hypersensitivity hamster protein

Product name	Generic name	Therapeutic class	Comment
Strensiq	Asfotase alfa rch	Endocrine and metabolic agent	
Sylvant	siltuximab (rmc)	Antineoplastic agent	
Thyrogen	Thyrotrophin alfa	Diagnostic agent	
Trazimera	Trastuzumab	Antineoplastic agents	biosimilar to Herceptin
Vectibix	Panitumumab	Antineoplastic agents	Recombinant DNA technology in CHO cells
Vimizim	Elosulfase alfa (rch)	Endocrine and metabolic agent	
Xgeva	Denosumab	Antineoplastic agent	
Xolair	Omalizumab	Respiratory agent	
Xyntha	Moroctocog alfa	Haemostatic agent	contraindicated in patients with a known history of hypersensitivity to hamster proteins
Yervoy	Ipilimumab	Antineoplastic agent	
Zinplava	Bezlotoxumab	Antibiotics and anti-infective	

Appendix D - Murine (mouse)

Product name	Generic name	Therapeutic class	Comment
Advate	Octocog alfa	Haemostatic agent	contains trace amounts of mouse immunoglobulin G Contraindicated in known hypersensitivity to mouse proteins
Adynovate	Rurioctocog alfa pegol	Haemostatic agent	derived from octocog alfa (Advate)
Arzerra	Ofatumumab	Antineoplastic agent	produced in a recombinant murine cell line
Avastin	Bevacizumab	Antineoplastic agent	Humanised murine antibody

Product name	Generic name	Therapeutic class	Comment
Ceprocin	Protein C	Anticoagulant, antithrombotic	may contain traces of mouse protein
Cyramza	Ramucirumab	Antineoplastic agent	produced in murine (NS0) cells
Empliciti	Elotuzumab	Antineoplastic agent	consists of regions of mouse antibody grafted onto human IgG1
Erbix	Cetuximab	Antineoplastic agent	produced in mammalian cell culture by mouse myeloma cells (Sp2/0)
Gazyva	Obinutuzumab	Antineoplastic agent	contraindicated in patients with known hypersensitivity to murine proteins
Herceptin	Trastuzumab	Antineoplastic agent	Murine anti-p185 HER2 antibody
Inflectra	Infliximab	Immunomodifier	biosimilar to Remicade should not be given to patients with a history of hypersensitivity to murine proteins
Kanjinti	Trastuzumab	Antineoplastic agent	Biosimilar to Herceptin
Kogenate	Octocog alfa	Haemostatic agent	Trace amounts of mouse protein are present
Kymriah	Tisagenlecleucel	Antineoplastic agent	contains a murine single chain antibody fragment
Lemtrada	Alemtuzumab	Immunomodifier	humanised monoclonal antibody with regions from a murine monoclonal antibody
Lucentis	Ranibizumab	Ophthalmic medication	Immunoglobulin G1, with human-mouse monoclonal rhuFab V2 κ -chain
MabCampath	Alemtuzumab	Immunomodifier	contraindicated in patients with a known hypersensitivity to murine proteins

Product name	Generic name	Therapeutic class	Comment
Mabthera	Rituximab	Antineoplastic agent	Genetically engineered chimeric murine/human monoclonal antibody
NovoSeven RT	Eptacog alfa	Haemostatic agent	contains trace amounts of mouse IgG protein
Ogivri	Trastuzumab	Antineoplastic agent	Biosimilar to Herceptin
Ontruzant	Trastuzumab	Antineoplastic agent	Biosimilar to Herceptin
Praxbind	Idarucizumab	Detoxifying agent, antidote	humanised monoclonal antibody derived from murine IgG1 isotype antibody molecule
Recombinate	Octocog alfa	Haemostatic agent	contains trace amounts of mouse protein
Remicade	Infliximab	Immunomodifier	Monoclonal antibody composed of human constant and murine variable regions
Renflexis	Infliximab	Immunomodifier	biosimilar medicine to Remicade
Riximyo	Rituximab	Antineoplastic agent	biosimilar medicine to Mabthera
Saizen	Somatropin	Pituitary hormone	prepared from genetically engineered mammalian cells (recombinant mouse cells)
Simponi prefilled syringe solution	Golimumab	Antirheumatoid agent	Murine hybridoma cell line with recombinant DNA technology
Simulect	Basiliximab	Immunomodifier	Murine/human chimeric monoclonal antibody
Soliris	Eculizumab	Immunomodifier	Human/murine hybrid monoclonal antibody produced by murine myeloma cell culture
Sylvant	siltuximab	Antineoplastic agent	chimeric human murine monoclonal antibody

Product name	Generic name	Therapeutic class	Comment
Synagis	Palivizumab	Immunomodifier	5% murine amino acid sequences
Trazimera	Trastuzumab	Antineoplastic agent	Biosimilar to Herceptin
Tysabri	Natalizumab	Immunomodifier	Human/murine hybrid monoclonal antibody produced in murine myeloma cells
Xolair	Omalizumab	Respiratory agent	recombinant monoclonal antibody that contains regions of a humanised murine antibody
Yescarta	axicabtagene ciloleucel	Antineoplastic agent	patient's own T cells are harvested and genetically modified ex vivo by retroviral transduction to express a chimeric antigen receptor (CAR) comprising a murine anti-CD19 single chain variable fragment

Appendix E - Equine (Horse)

Product name	Generic name	Therapeutic class	Comment
ATGAM	Equine Antithymocyte globulin	Immunomodifier	
Black snake antivenom	Black snake antivenom	Antivenom	
Brown snake antivenom	Brown snake antivenom	Antivenom	
Death adder antivenom	Death adder antivenom	Antivenom	
Duavive	Conjugated estrogens/bazedoxifene.	Gonadal hormone	
Polyvalent snake antivenom	Brown snake antivenom, Death adder antivenom, King brown snake antivenom, Taipan antivenom, Tiger snake antivenom	Antivenom	
Premarin tablets	Oestrogens, Conjugated	Gonadal hormone	
Red back spider antivenom	Red back spider antivenom	Antivenom	
Sea snake antivenom	Sea snake antivenom	Antivenom	
Stonefish antivenom	Stonefish antivenom	Antivenom	
TachoSil	Human fibrinogen and human thrombin	Surgical Preparation	equine collagen
Taipan antivenom	Taipan antivenom	Antivenom	
Tiger snake antivenom	Tiger snake antivenom	Antivenom	

Appendix F - Egg/Chicken

Product name	Generic name	Therapeutic use	Comment
Afluria Quad	quadrivalent influenza vaccine	Vaccine	manufactured in eggs. trace amounts of ovalbumin (< 1 microgram/0.5 mL dose), may be present
Agrippal	Influenza virus vaccine	Vaccine	vaccine may contain egg, chicken
Cleviprex	Clevidipine	Antihypertensive agent	Contraindicated in patients with known allergies to eggs or egg products as contains egg lecithin
ClinOleic 20%	Olive oil and soya oil	Parenteral vitamins, minerals and nutrition	Contraindicated in patients with known hypersensitivity to egg as contains egg lecithin
Diprivan	Propofol	Anaesthetics	Contains egg lecithin
Fluarix	Influenza virus vaccine	Vaccine	prepared using whole virus cultivated in embryonated hen eggs
Fluad	Influenza virus vaccine	Vaccine	grown in hens' eggs May also contain chicken proteins (such as ovalbumin)
Fluad Quad	quadrivalent influenza vaccine	Vaccine	grown in hens' eggs
FluQuadri	Quadrivalent Influenza Vaccine	Vaccine	propagated in chicken eggs
Fluzone High-Dose	trivalent influenza vaccine	Vaccine	propagated in chicken eggs
Fresofol 1% Injection & Fresofol 1% MCT/LCT	Propofol	Anaesthetics	Contains egg lecithin
Influvac	Influenza virus vaccine	Vaccine	prepared from virus grown in the allantoic cavity of embryonated eggs

Product name	Generic name	Therapeutic use	Comment
Intralipid	Soya oil	Parenteral vitamins, minerals and nutrition	Contains egg lecithin
Kabiven G11% & Kabiven G19%		Parenteral vitamins, minerals and nutrition	Contains egg lecithin
Kanuma	Sebelipase alfa	endocrine and metabolic agent	Contraindicated in patients with hypersensitivity to egg as produced in egg white
M-M-R II	Measles, mumps and rubella virus vaccine I	Vaccine	produced in chick embryo cell culture
Olimel, PeriOlimel		Parenteral vitamins, minerals and nutrition	contains egg lecithin
Priorix	Measles, mumps and rubella virus vaccine	Vaccine	produced in chick embryo cell culture, may contain traces of egg protein
Priorix-Tetra & ProQuad	Measles, mumps, rubella and varicella vaccine	Vaccine	produced in chick embryo cell culture, may contain traces of egg protein
Propofol Sandoz Propofol-Lipuro 1%/2% Provive 1% and Provive MCT-LCT 1%	Propofol	Anaesthetics	Contains egg lecithin
Q-Vax & Q-Vax Skin Test	Coxiella burnetii vaccine	Vaccine	grown in the yolk sacs of embryonated eggs. Trace amounts of ovalbumin may also be present
Rabipur	Rabies vaccine	Vaccine	Made from purified chick embryo cell
Rixadone	Risperidone	Antipsychotic agent	Contains Egg products
Stamaril	Yellow Fever Vaccine	Vaccine	propagated in chick embryos
SmofKabiven Electrolyte Free & SmofKabiven		Parenteral vitamins, minerals and nutrition	Contains egg phospholipids and Fish oil

Product name	Generic name	Therapeutic use	Comment
SMOFlipid		Parenteral vitamins, minerals and nutrition	Contains egg lecithin and fish oil
Vaxigrip	Influenza virus vaccine	Vaccine	prepared from virus grown in the allantoic cavity of embryonated eggs
Visudyne	Verteporfin	ophthalmic medication	Contains egg phosphatidylglycerol sodium
Vitalipid N		Parenteral vitamins, minerals and nutrition	Contains egg lecithin

Appendix G – Other Animals

Product name	Generic name	Therapeutic uses	Comment
Acarizax	house dust mite extract	Antiallergy preparation	Contains gelatin (fish)
Box Jellyfish Antivenom	Box Jellyfish Antivenom	antivenom	from the plasma of sheep
Chondroitin	Chondroitin	Complementary osteoarthritis	From bovine or shark cartilage
DigiFab	Digoxin binding antibody Digoxin-specific antibody fragment	Antidote	From sheep
Fluad	Inactivated influenza vaccine	Vaccine	contains the oil squalene which is obtained from shark liver
Funnel Web Spider Antivenom	Funnel web spider antivenom (rabbit)	antivenom	prepared from the plasma of rabbits
Glucosamine	Glucosamine	Complementary osteoarthritis	From shellfish
Grazax	Phleum pratense.	Antiallergy preparation	contains gelatine (fish)
Human Insulin (rys) Protaphane Mixtard 30/70. Mixtard 50/50	Insulin	Insulin preparation	Contain protamine sulfate (a fish product)
Humira	Adalimumab	Immunomodifier	Mammalian cells (Not specified)
Mono-plus mononucleosis test		Diagnostic	Guinea pig, horse
Novoseven	Eptacog alfa	Haemostatic agent	Baby hamster kidney (BHK) cells
Omacor	Eicosapentaenoic acid (EPA) ethyl ester, docosahexaenoic acid (DHA) ethyl ester.	cardiovascular agent	obtained by the transesterification of the body oil of fat fish species

Product name	Generic name	Therapeutic uses	Comment
Protamine Sulfate Injection		Haemostatic agent	Caution in patients allergic to fish
SMOFlipid		Parenteral vitamins, minerals and nutrition	Contains egg lecithin and fish oil
Thymoglobuline	Antithymocyte globulin (rabbit)	Immunomodifier	Rabbit

Compiled from reference 9

Appendix H - Excipients that may be of animal origin

Product	Source
Bee pollen	Gathered by bees and collected from legs of bees
Chitin	From the exoskeletons of arthropods and crustacean
Chymotrypsin Cochineal/Carmine/Carminic acid	Ox pancreas
Cochineal/carmine/carminic acid	Red pigment from crushed cochineal insects
Disodium inosinate	From meat extract
Gelatin	From pig skin, bovine hide and pork and cattle bones. Used for many capsules
Glycerol	May be derived from animal fats
Lactose	From cows' milk (by-product of dairy industry). Usually made synthetically (Common filler in tablets)
Lanolin	Fat extracted from sheep's wool
Oleic oil and oleostearin	From pressed tallow
Propolis	Bee glue
Shellac	Insect secretion
Stearic acid	Fat from cows, sheep, dogs or cats. Can be obtained from vegetable sources
Trypsin	Enzyme from pork pancreas

Compiled from references 11, 12

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8 Approval

Approving Officer:

Justin Lee

Director

Medication Services Queensland

2020

9 Version Control

Version	Amendments	Author/s	Approved
2.0	Supersedes original version published in 2007	A Jagels	November 2013
2.1	Fixed broken link to booklet on porcine medicines. Updated organisational details	A Jagels	April 2019
3.0	Review	J Quin A Jagels	November 2020