

AUSTRALIAN PRODUCT INFORMATION

PRIORIX (measles, mumps and rubella) vaccine, live, powder for injection

1 NAME OF THE MEDICINE

Measles virus, mumps virus, rubella virus

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

PRIORIX is a live virus vaccine for immunisation against measles, mumps and rubella.

PRIORIX is a sterile lyophilised mixed preparation containing the attenuated Schwarz measles virus strain, the RIT 4385 strain of mumps virus (derived from the Jeryl Lynn strain) and the Wistar RA 27/3 rubella virus strain. Each virus strain is separately obtained by propagation in either chick embryo tissue cultures (mumps and measles) or MRC5 human diploid cells (rubella).

Each 0.5 mL dose of the reconstituted vaccine contains not less than $10^{3.0}$ CCID₅₀ (cell culture infectious dose 50%) of the Schwarz measles, not less than $10^{3.7}$ CCID₅₀ of the RIT 4385 mumps and not less than $10^{3.0}$ CCID₅₀ of the Wistar RA 27/3 rubella virus strains. The three virus strains are mixed prior to lyophilisation

The manufacture of this product includes exposure to bovine derived materials. No evidence exists that any case of vCJD (considered to be the human form of bovine spongiform encephalopathy) has resulted from the administration of any vaccine product.

PRIORIX meets the World Health Organisation requirements for manufacture of biological substances and for measles, mumps and rubella vaccines and combined vaccines (live).

For the full list of excipients, see Section 6.1 LIST OF EXCIPIENTS.

3 PHARMACEUTICAL FORM

Powder and diluent for solution for injection.

PRIORIX is presented as a whitish to slightly pink powder. The sterile water diluent is clear and colourless. The reconstituted vaccine may vary in colour from clear peach to fuchsia pink, without deterioration of the vaccine potency.

4 CLINICAL PARTICULARS

4.1 THERAPEUTIC INDICATIONS

PRIORIX is indicated for active immunisation against measles, mumps and rubella from 12 months of age.

4.2 DOSE AND METHOD OF ADMINISTRATION

All parenteral drug and vaccine products should be inspected visually for any particulate matter and/or variation of physical aspects prior to administration.

The vaccine must be reconstituted by adding 0.5 mL of sterile water diluent to the vial containing the powder of lyophilised vaccine. After the addition of the diluent to the powder, the mixture should be well shaken until the powder is completely dissolved in the diluent.

The vaccine should be injected as soon as possible after reconstitution. The reconstituted vaccine can be stored between 2 and 8°C, for up to 8 hrs before use.

Dosage (dose and interval)

A reconstituted dose of 0.5 mL is recommended for children and adults.

Children:

Two doses are usually given. The first dose is usually given at 12 months of age, followed by a booster dose at 4 - 6 years of age (see Section 4.1 THERAPEUTIC INDICATIONS).

Adults:

A single dose may be given to adults who do not have immunity.

Method of administration

PRIORIX is administered by subcutaneous or intramuscular injection, in the deltoid region or in the anterolateral area of the thigh. THE VACCINE SHOULD NEVER BE ADMINISTERED INTRAVASCULARLY.

The vaccine should be administered subcutaneously in subjects with bleeding disorders (e.g. thrombocytopenia or any coagulation disorder).

Further guidance regarding the use of vaccines is found in the Australian Immunisation Handbook.

4.3 CONTRAINDICATIONS

PRIORIX is contraindicated in pregnant women. If vaccination of postpubertal women occurs, pregnancy should be avoided for one month (see Section 4.6 FERTILITY, PREGNANCY AND LACTATION, Use in Pregnancy).

PRIORIX should not be administered to children and adults with known hypersensitivity to any components of the vaccine (for egg allergy see Section 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE). Vaccination is contraindicated in children and adults who are allergic to neomycin, although a history of contact dermatitis to neomycin is not a contraindication.

PRIORIX is contraindicated in children and adults having shown signs of hypersensitivity after previous administration of measles, mumps and/or rubella vaccines.

As with other vaccines, the administration of PRIORIX should be postponed in children and adults suffering from acute severe febrile illness. The presence of a minor infection, however, is not a contraindication.

PRIORIX is contraindicated in patients with severe humoral or cellular (primary or acquired) immunodeficiency e.g. symptomatic HIV infection (see Section 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE), those receiving high dose steroids (further guidance is found in the Australian Immunisation Handbook).

4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE

PRIORIX must not be administered intravascularly.

As with all injectable vaccines, appropriate medical treatment (i.e. adrenaline) and supervision should always be readily available in case of anaphylactic reactions following the administration of the vaccine.

Syncope (fainting) can occur following, or even before, any vaccination as a psychogenic response to the needle injection. It is important that procedures are in place to avoid injury from faints.

Alcohol and other disinfecting agents must be allowed to evaporate from the skin before injection of the vaccine as they can inactivate the attenuated viruses in the vaccine.

Infants below 12 months of age may not respond sufficiently to the measles component of the vaccine due to the possible persistence of maternal measles antibodies. This should not preclude the use of the vaccine in younger infants (< 12 months) as vaccination may be indicated in certain situation such as high risk areas (see Section 4.1 THERAPEUTIC INDICATIONS). In these circumstances revaccination at or after 12 months should be considered.

Limited protection against measles may be obtained by vaccination up to 72 hours after exposure to natural measles. If the vaccination status of the child is in doubt, the vaccine should be given as there are no ill effects of vaccinating individuals who are already immune. The antibody response to the rubella and mumps components is too slow for effective post-exposure prophylaxis.

Transmission of measles and mumps virus from vaccinees to susceptible contacts has never been documented. Pharyngeal excretion of the rubella virus is known to occur about 7 to 28 days after vaccination with peak excretion around the 11th day. However there is no evidence of transmission of this excreted virus to susceptible contacts.

PRIORIX should be given with caution to persons with a history or family history of allergic disease or those with a history or family history of convulsions.

The measles and mumps components of the vaccine are produced in chick embryo cell culture and may therefore contain traces of egg protein. Persons with a history of anaphylactic, anaphylactoid, or other immediate reactions (e.g., hives, swelling of the mouth and throat, difficulty breathing, hypotension, or shock) subsequent to egg ingestion should not be vaccinated with PRIORIX.

It appears that persons are not at increased risk if they have egg allergies that are not anaphylactic or anaphylactoid in nature. Such persons may be vaccinated in the usual manner. There is no evidence to indicate that persons with allergies to chickens or feathers are at increased risk of reaction to the vaccine.

As for any vaccine, immunisation with measles, mumps, rubella vaccine may not result in seroconversion in 100% of susceptible persons given the vaccine.

Cases of worsening thrombocytopenia and recurrence of thrombocytopenia in children and adults who suffered thrombocytopenia after the first dose have been reported following vaccination with live measles, mumps and rubella vaccines. In such cases, the risk-benefit of immunising with PRIORIX should be carefully evaluated.

There is limited data on the use of PRIORIX in immunocompromised patients, therefore vaccination should be considered with caution and only when, in the opinion of the physician, the benefits outweigh the risks (e.g. asymptomatic HIV subjects) further guidance is found in the Australian Immunisation Handbook.

Immunocompromised patients who have no contraindication for this vaccination (see Section 4.3 CONTRAINDICATIONS) may not respond as well as immunocompetent children and adults, therefore some of these patients may acquire measles, mumps or rubella despite appropriate vaccine administration. Immunocompromised patients should be monitored carefully for signs of measles, mumps and rubella.

Use in the elderly

No data available.

Paediatric use

See Section 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE

Effects on laboratory tests

No data available.

4.5 INTERACTIONS WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTIONS

Clinical studies have demonstrated that PRIORIX can be given simultaneously with any of the following monovalent or combination vaccines: hexavalent vaccine (DTPa-HBV-IPV/Hib), diphtheria-tetanus-acellular pertussis vaccine (DTPa), reduced antigen diphtheria-tetanus-acellular pertussis vaccine (dTpa), *Haemophilus influenzae* type b vaccine (Hib), inactivated polio vaccine (IPV), hepatitis B vaccine (HBV), hepatitis A vaccine (HAV), meningococcal serogroup B vaccine (MenB), meningococcal serogroup C conjugate vaccine (MenC), meningococcal serogroups A, C, W-135 and Y conjugate vaccine (MenACWY), varicella vaccine and pneumococcal conjugate vaccine (PCV).

In addition, it is generally accepted that combined measles, mumps and rubella vaccines may be given at the same time as oral polio vaccine (OPV) or the combined diphtheria-tetanus and whole cell pertussis vaccines (DTPw)

If PRIORIX is to be given at the same time as another injectable vaccine, the vaccines should always be administered at different injection sites.

If PRIORIX cannot be given at the same time as another live attenuated vaccine, an interval of at least 1 month should be left between the two vaccinations.

If tuberculin (Mantoux) testing is needed, it should be carried out before, or simultaneously with measles, mumps and rubella vaccination. It has been reported that live measles (and possibly mumps) vaccine may cause a temporary depression of tuberculin skin sensitivity which could last 4 to 6 weeks. Tuberculin testing is therefore unreliable (false negative) for 4 to 6 weeks after administration of measles, mumps, rubella vaccine.

In children and adults who have received human gammaglobulins or blood transfusions, vaccination should be delayed for at least 3 months because of the possibility of vaccine failure due to passively acquired measles, mumps and rubella antibodies.

PRIORIX should not be mixed with other vaccines in the same syringe.

PRIORIX can be used as a booster dose in children and adults who have previously been vaccinated with PRIORIX or another measles, mumps and rubella combined vaccine.

4.6 FERTILITY, PREGNANCY AND LACTATION

Effects on fertility

No data available.

Use in pregnancy

(Pregnancy Category B2)

Pregnant women must not be vaccinated with PRIORIX.

However, foetal damage has not been documented when measles, mumps or rubella vaccines have been given to pregnant women.

Even if a theoretical risk cannot be excluded, no cases of congenital rubella syndrome have been reported in more than 3500 susceptible women who were unknowingly in early stages of pregnancy when vaccinated with rubella containing vaccines. Therefore, inadvertent vaccination of unknowingly pregnant women with measles, mumps and rubella containing vaccines should not be a reason for termination of pregnancy.

Women of child bearing age should be tested for rubella antibodies prior to pregnancy. All seronegative women, provided they are not pregnant, should be offered rubella vaccine.

Pregnancy should be avoided for one month after vaccination. Women who intend to become pregnant should be advised to delay pregnancy.

Use in lactation

There is little human data regarding use in breastfeeding women. Persons can be vaccinated where the benefit outweighs the risk.

4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES

The effects of this medicine on a person's ability to drive and use machines were not assessed as part of its registration.

4.8 ADVERSE EFFECTS (UNDESIRABLE EFFECTS)

Clinical Trial Experience

Primary Immunisation:

A total of approximately 12,000 subjects were administered PRIORIX in clinical trials. During controlled clinical studies, the signs and symptoms were actively monitored during a 42 day follow-up. The vaccinees were also requested to report any other clinical events which manifested during the study period. Table 1 lists the pooled incidence of solicited symptoms from 9 comparative studies for children vaccinated with PRIORIX according to protocol. (The results for the comparator vaccine are based on 8 studies, n=1074).

Table 1: Pooled incidence of solicited symptoms from 9 comparative studies for children vaccinated with PRIORIX according to protocol.

Solicited Symptom	PRIORIX (% incidence)	Comparator vaccine (% incidence)
Local redness	7.2	16.3
Rash*	7.1	9.8
Fever (>39.5°C)*	6.4	11.9
Local pain	3.1	8.6
Local swelling	2.6	7.4
Parotid swelling	0.7	0.5
Febrile convulsions	0.1	0.1

* Daily incidence in two studies not recorded

Other events:

The safety profile presented below is based on a total of approximately 12,000 subjects administered PRIORIX in clinical trials. Causality has not been established. The incidence of adverse reactions described below were similar to the comparator MMR vaccine.

The events are listed within body systems and categorised by frequency according to the following definitions:

Very common: ≥ 10%

Common:	≥ 1% and < 10%
Uncommon:	≥ 0.1% and < 1%
Rare:	≥ 0.01% and < 0.1%
Very rare:	< 0.01%

Body as a whole

Very common: redness at the injection site, fever ≥ 38°C (rectal) or ≥ 37.5°C (axillary/oral)

Common: pain and swelling at the injection site, fever > 39.5°C (rectal) or >39°C (axillary/oral), viral infection

Uncommon: injury, infection, allergy, abnormal crying, fatigue, infection bacterial, infection fungal

Skin and appendages

Common: rash

Uncommon: dermatitis, eczema, pruritis, herpes simplex, herpes zoster

Respiratory

Common: pharyngitis, bronchitis, coughing, respiratory disorder, other upper respiratory tract infection, rhinitis

Uncommon: pneumonia, laryngitis, stridor

Gastrointestinal

Common: diarrhoea

Uncommon: anorexia, gastrointestinal disorder, parotid gland enlargement, toothache, vomiting, enteritis, gastroenteritis, stomatitis, stomatitis aphthous

Central Nervous System

Common: nervousness

Uncommon: insomnia

Rare: febrile convulsions

Special Senses

Common: otitis media

Uncommon: conjunctivitis

Haematologic/ Lymphatic

Uncommon: anaemia, lymphadenopathy

Five adverse events experienced by three subjects were considered by the investigators to be serious and related or possibly related. These events were: granulocytopenia, fever, exanthema, vomiting and epididymitis.

Booster Immunisation:

In a study examining booster doses of PRIORIX administered to children aged 4-6 years, the following solicited symptoms in Table 2 were reported:

Table 2: Solicited symptoms reported in a study examining booster doses of PRIORIX administered to children aged 4-6 years

Solicited symptom	PRIORIX (n=38) % incidence	Comparator vaccine (n=37) % incidence
Pain (burning/stinging)*	13.2	32.4
Pain	10.5	18.9
Redness	10.5	8.1
Swelling	2.6	0.0
Fever > 39.5°C	5.3	0.0
Parotid gland swelling	0.0	0.0

* pain at the time of injection (burning/stinging) or within 30mins of injection

In a study examining booster doses of PRIORIX administered to children aged 11-12 years of age, the following solicited symptoms in Table 3 were reported:

Table 3: Solicited symptoms reported in a study examining booster doses of PRIORIX administered to children aged 11-12 years

Solicited symptom	PRIORIX (n=149) % incidence	Comparator vaccine (n=150) % incidence
Pain	20.1	33.3
Redness	25.5	25.3
Swelling	13.4	12.7
Fever > 39.5°C	1.3	0.7
Skin rash	0.7	1.3
Parotid gland swelling	1.3	0.7

Other events

All unsolicited events reported in this booster study, are listed below. The events are listed within body systems and categorised by frequency according to the following definitions:

Very common: ≥ 10%
Common: ≥ 1% and < 10%
Uncommon: ≥ 0.1% and < 1%
Rare: ≥ 0.01% and < 0.1%
Very rare: < 0.01%

Causality has not been established.

Booster in 4-6 year old children:

Body as a whole

Very common: pain and redness at the injection site, fever $\geq 38^{\circ}\text{C}$ (rectal) or $\geq 37.5^{\circ}\text{C}$ (axillary/oral)

Common: swelling at the injection site, fever $> 39.5^{\circ}\text{C}$ (rectal) or $>39^{\circ}\text{C}$ (axillary/oral), allergy

Respiratory

Common: bronchitis, coughing, pharyngitis, rhinitis

Uncommon: asthma, epistaxis, sinusitis

Gastrointestinal

Common: diarrhoea, vomiting

Uncommon: colitis, gastroenteritis, parotid gland enlargement

Central Nervous System

Common: headache

Uncommon: dysphonia

Skin and appendages disorder

Common: rash, eczema

Uncommon: dermatitis, urticaria

Vision disorders

Uncommon: conjunctivitis

Resistance mechanism disorders

Common: upper respiratory tract infection, otitis media, herpes zoster (varicella)

Uncommon: herpes simplex, infection viral

Booster in 11-12 year old children

Body as a whole

Uncommon: viral infection, lymphadenopathy

Respiratory

Common: upper respiratory tract infection, rhinitis, pharyngitis, asthma

Uncommon: coughing, epistaxis

Gastrointestinal

Uncommon: abdominal pain, gastroenteritis, diarrhoea

Central Nervous System

Common: headache

Uncommon: dizziness

Skin and appendages disorder

Uncommon: pruritis, skin exfoliation, nail disorder, injection site reaction, urticaria

Post-marketing data

During post-marketing surveillance, the following reactions have been reported additionally in temporal association with PRIORIX vaccination:

Infections and infestations

Rare: meningitis, measles-like syndrome, mumps-like syndrome (including orchitis, epididymitis and parotitis)

Blood and Lymphatic system disorders

Rare: thrombocytopenia, thrombocytopenic purpura

Immune system disorders

Rare: anaphylactic reactions

Nervous system disorders

Rare: encephalitis, cerebellitis, cerebellitis like symptoms (including transient gait disturbance and transient ataxia), Guillain Barré syndrome, transverse myelitis, peripheral neuritis

Vascular disorders

Rare: vasculitis (including Henoch Schonlein purpura and Kawasaki syndrome)

Skin and subcutaneous tissue disorders

Rare: erythema multiforme

Musculoskeletal and connective tissue disorders

Rare: arthralgia, arthritis

As in natural rubella infection, myalgia may occur 2 to 4 weeks after administration of live rubella vaccines.

Accidental intravascular administration may give rise to severe reactions or even shock. Immediate measures depend on the severity of the reaction. (see Section 4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE).

Reporting suspected adverse effects

Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at www.tga.gov.au/reporting-problems.

4.9 OVERDOSE

Cases of overdose (up to 2 times the recommended dose) have been reported during post-marketing surveillance. Adverse events reported following overdosage were similar to those reported with normal vaccine administration.

For information on the management of overdose, contact the Poisons Information Centre on 13 11 26 (Australia).

5 PHARMACOLOGICAL PROPERTIES

5.1 PHARMACODYNAMIC PROPERTIES

Mechanism of action

PRIORIX induces antibodies against all vaccine components.

Clinical trials

Seroconversion has been shown to equate with protection against each of the measles, mumps and rubella viruses.

Primary Immunisation:

In clinical studies, PRIORIX has been demonstrated to be highly immunogenic.

In previously seronegative vaccinees, antibodies were detected in 98.0%, 96.1% and 99.3% of subjects against measles, mumps and rubella respectively.

In a pooled analysis of comparative studies of over 1400 children, antibodies against measles, mumps and rubella were detected in 98.7%, 95.5% and 99.5% of previously seronegative subjects (n=1094) who received PRIORIX. Antibodies against measles, mumps and rubella were detected in 96.9%, 96.9% and 99.5% of subjects (n=388) respectively, who had received a commercially available combined MMR vaccine.

Similar seroconversion rates were seen in subjects who received PRIORIX by the intramuscular route.

Seroconversion rates in a limited number of subjects (n=60) aged 9-11 months were also measured. 100% of these subjects developed antibodies against mumps and rubella. 96.6% of the subjects developed anti-measles antibodies.

Antibody levels of participants in the pooled studies have been monitored for up to 12 months following vaccination. All subjects remained seropositive for anti-measles and anti-rubella antibodies. Anti-mumps antibodies were detected in 88.4% of subjects. A similar result was observed with a commercially available MMR vaccine.

In a more recent study comparing the current formulation of PRIORIX (albumin-free) with the previous formulation containing albumin, antibodies against measles, mumps and rubella were detected in 98.4, 94.8 and 100% of previously seronegative subjects (n=191) who received the current formulation. Antibodies against measles, mumps and rubella were detected in 99.5, 94.7 and 100% of subjects (n=190) respectively, who had received the formulation used in the earlier studies containing albumin. There were no significant differences in immunogenicity between the current formulation of PRIORIX (albumin-free) and the formulation containing albumin used in the earlier studies.

Booster Immunisation:

A booster dose of PRIORIX was administered to children aged 4 - 6 years or 11-12 years, who had been primed with a different MMR vaccine. All subjects aged 4-6 years who were

seronegative at the time of booster, subsequently seroconverted. In subjects aged 11 -12 years who were seronegative at the time of booster, seroconversion rates of 85.7%, 93.5% and 100% were observed for measles, mumps and rubella respectively.

5.2 PHARMACOKINETIC PROPERTIES

Not relevant to vaccines.

5.3 PRECLINICAL SAFETY DATA

Genotoxicity

No data available.

Carcinogenicity

No data available.

6 PHARMACEUTICAL PARTICULARS

6.1 LIST OF EXCIPIENTS

The lyophilised vaccine contains lactose monohydrate, amino acids and sorbitol and mannitol as stabilisers. Neomycin sulphate is present as a residual from the manufacturing process.

6.2 INCOMPATIBILITIES

Incompatibilities were either not assessed or not identified as part of the registration of this medicine.

6.3 SHELF LIFE

In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG). The expiry date can be found on the packaging.

6.4 SPECIAL PRECAUTIONS FOR STORAGE

The vaccine should be stored between 2°C and 8°C in a refrigerator.

6.5 NATURE AND CONTENTS OF CONTAINER

The powder is presented in a glass vial. The diluent is presented in a glass prefilled syringe or ampoule.

PRIORIX is available in pack sizes of 1 or 10.

The vials and prefilled syringes are made of neutral glass type I, which conforms to European Pharmacopoeia Requirements.

Not all pack sizes and container types may be distributed in Australia.

6.6 SPECIAL PRECAUTIONS FOR DISPOSAL

In Australia, any unused medicine or waste material should be disposed of by taking to your local pharmacy.

6.7 PHYSICOCHEMICAL PROPERTIES

Not relevant to vaccines

7 MEDICINE SCHEDULE (POISONS STANDARD)

Schedule 4 – Prescription Only Medicine

8 SPONSOR

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9 DATE OF FIRST APPROVAL

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10 DATE OF REVISION

27 September 2018

SUMMARY TABLE OF CHANGES

Section Changed	Summary of new information
All	Reformat and minor editorial updates
4.5	Addition of information on interactions with other vaccines
4.2	Addition of preferred injection sites

Version 8.0

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