

Immunising children and infants

Guidebook



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Melbourne Vaccine Education Centre

The Melbourne Vaccine Education Centre (MVEC) is an educational website, developed with the aim of providing up-to-date immunisation information for both healthcare professionals and members of the public.

We are based at Murdoch Children's Research Institute (MCRI), a research organisation, and are affiliated with SAEFVIC (Surveillance of Adverse Events Following Vaccination in the Community), the Victorian Vaccine Safety Service.

The content of MVEC reflects a collaboration of information prepared by immunisation paediatricians and adult physicians, immunisation nurses, infectious disease specialists, allergy specialists and infection control teams. All information is reviewed and updated on a regular basis.

MVEC is a proud member of the World Health Organisation's Vaccine Safety Net. All Vaccine Safety Net members are verified by the World Health Organisation as a source of reliable and credible vaccine safety information.

Welcome

Introduction

Children should not be considered smaller versions of adults. Caring for children demands a different style of communication, patience and creativity. It also includes, by extension, providing support and guidance for parents, carers, grandparents and siblings. Allowing this extended network to be involved in the immunisation experience (a family-centred care approach) is crucial for the effective delivery of vaccines to children. This is particularly important when immunising those with anxiety, needle phobia or sensory issues.

Specific paediatric training, both theoretical and practical, is crucial for a safe and competent delivery of vaccines. Adequate training for the provider will ensure confidence in practice and lead to parental trust and vaccine acceptance. A calm and confident parent will lead to a calm and confident child, allowing for a positive immunisation experience for all involved. Every immunisation experience for a child can set them up for how they will respond in the future to further vaccination experiences and other medical procedures.

Project aims

With the COVID-19 vaccine rollout for ages 5-11 years scheduled to begin in early 2022, and vaccine clinical trials currently underway for children aged less than 5 years, it is important to upskill Victoria's COVID-19 vaccine hub workforce. This specialised workforce has an established knowledge base on the fundamentals of immunisation, however to date experience has been limited to delivering vaccines to the adult population (> 12 years).

As a *hub champion*, you have been selected by your employer to be a leader in paediatric immunisation within your COVID-19 vaccination hub. Attendance at MVEC's live webinar *Immunising children and infants* is essential and will form the basis of your theoretical training. The content of this comprehensive guidebook will complement this webinar. You will then be eligible to consolidate your theoretical knowledge and attend a practical component of training for hands-on experience. These sessions will be held through Victoria's local council immunisation sessions where you will participate in delivering routine National Immunisation Program (NIP) vaccines to children across all age groups. Following recognition of your competence to deliver vaccines to children < 12 years of age, MVEC expects that you will lead the paediatric immunisation education of colleagues within your hub according to the competency tools set out by Victoria's Department of Health to expand the workforce dedicated in delivering COVID-19 vaccines to younger age groups.

Learning objectives

At the completion of your practical training, it is expected that you will be competent in the following areas:

- recognising the importance of setting up an immunisation space appropriately
- can identify the equipment required to deliver vaccines to children

- can demonstrate the ability to perform pre-vaccination screening and can address contraindications and precautions
- explaining the vaccination process and obtaining consent from a parent/guardian
- can effectively explain and provide guidance to parents/guardians on how to position a child for safe immunisation
- can discuss and demonstrate the effective use of age-appropriate distraction techniques
- can demonstrate an understanding of the importance of maintaining the cold chain and infection control processes
- can identify the correct anatomical landmarks and appropriate injection site for infants and children of all ages, and demonstrate effective and safe injection technique
- recognise the importance of post-vaccination observation, and have a clear understanding of immediate adverse events following immunisation (AEFI) and recognise how AEFI might present differently in children compared with adults
- provide advice to parents/guardians on the management of minor, common and expected AEFIs or what to do in case of a serious AEFI
- describing the process for managing an unintended vaccine experience, eg. vaccine administration error, loss of vaccine, inability to complete vaccination due to anxiety or distress
- recognise the requirements for appropriately recording vaccine administration for the paediatric population.

It is expected that you will complete a minimum of five supervised paediatric vaccinations during your allocated council session. If the opportunity for 5 supervised vaccinations is not possible (ie. due to a limited number of children presenting to a session) but the hub champion has demonstrated safe, effective and correct administration of vaccines to the paediatric population in the opportunities presented, mentors can provide sign off at their own discretion.

Pre-vaccination

Setting up an immunisation space

Considering the environment in which we welcome children and families to be vaccinated in is such an important component of preparing to deliver vaccines to children.

Where possible the space should feel warm, inviting and non-clinical. Unfamiliar smells, lighting and noise can be scary for children and this can lead to increased anxiety and distress. The space should not be overcrowded as this can impede the safe delivery of vaccines, contribute to the risks of needle stick injuries or compromise infection control practices.

To maintain a family-centred care approach, there should be ample space for prams, siblings, grandparents etc. A changing area for babies and a feeding room with privacy in the venue is important for those families who are also juggling the needs of younger siblings.

Ensuring that there is engaging entertainment or activities available that is suited to children across all age groups will lead to a more positive experience when waiting for both the vaccine to be administered and during the 15 minute observation period following the vaccination. This entertainment will also provide distraction for both children and their families who may be anxious about the procedure.

Preparing to vaccinate

Having the essential equipment readily available ensures a safe and seamless delivery of vaccines. The key equipment to consider includes:

- equipment for vaccination: sharps container, vaccines, syringes, drawing up needles, injecting needles, cotton wools balls and tape
- anaphylaxis response kit (including doses of intramuscular 1:1000 adrenaline)
- vaccine storage and temperature monitoring equipment
- appropriate PPE and infection control equipment
- means for checking immunisation records and completing documentation
- distraction tools

Distraction tools

Providing age-appropriate distraction throughout the vaccination process can assist in reducing any pain or anxiety experienced by the individual being immunised. Vaccination hubs and clinics are encouraged to keep a supply of distraction tools appropriate for different age groups readily available.

By reducing distress, distraction tools can contribute to a positive immunisation experience for the child and their parent/guardian and encourage greater acceptance of future vaccines. This is especially important to consider when immunising those suffering needle phobia and those who have intellectual disability or autism spectrum disorder (ASD).

For young children or those with intellectual disabilities, the following distractions can help:

- bubbles upon entering the room and before and after vaccination
- musical toys
- having one person blowing bubbles or creating noise with toy intermittently to maintain attention of child
- finding books
- devices such as cool sense or buzzy bee
- TV/iPad/phone featuring their favourite show
- offering breast/bottle feeds to infants for comfort during or after immunisation



For older children, adolescents or adults, the following distractions can help:

- phone/iPad with headphones watching their favourite show or music (give them time to settle into watching it)
- devices such as cool sense or buzzy bee
- make conversation eg. sport, upcoming holidays
- countdown so they know when to be ready
- strongly encourage them to look away



Needle phobia

Many people may find the experience of having a needle an unpleasant one. However, for some people, the experience is much more difficult, presenting as a real phobia characterised by both severe and persistent anxiety and fear. As a result, this patient group often avoid needle-related experiences. This needle avoidance extends to the area of immunisation, resulting in the individual being left susceptible to vaccine preventable diseases. This can result in further procedures involving needles should they become unwell.

Generally speaking, it is recommended that children and adults with anxiety, intellectual disabilities and needle phobia's avoid attending large scale vaccination sites for immunisation. These sites are loud and busy and can increase distress. Smaller settings such as a GP clinic or pharmacy may be preferred.

Strategies to assist immunisation providers with the vaccination of patients suffering needle phobia include:

Children and adolescents:

- encourage parents not to over discuss the vaccine/needle with the children prior to arrival as this can build up their fear
- have a plan in place with the parent/guardian prior to their arrival at the clinic (in known phobic children)
- carry out pre-immunisation checks and side effect explanation with parents when the child is out of the room or prior to arrival
- minimise discussions in front of the child as this can increase distress
- an individualised approach is more likely to lead to success
- do not rush or attempt to force children to be vaccinated, this is likely to result in failure to vaccinate
- take your time with clearly distressed patients, calmly talk them through the procedure and tips to manage their anxiety (deep breathing, looking away or counting)

Individuals with autism spectrum disorder:

- discuss the individual's communication style and capabilities with their parent/guardian
- explain everything you are going to do using clear, simple language
- involve the individual as much as possible by considering their likes/dislikes
- provide support and positive reassurance
- remove distracting/disturbing stimuli
- try not to stop any stimming behaviours (eg. rocking, flapping) as it may actually be helping the individual deal with distress
- do not attempt to restrain as this can result in injury to the child, immunisation provider or parent/guardian
- have a low threshold to refer to a specialist immunisation provider for sedation

Vaccination tips for the immunisation provider:

- prepare the vaccine out of view of the child or before they come into the room
- avoid showing the child the prepared vaccination prior to administration
 - place the tray containing vaccines out of sight
 - hold the vaccine to your side or behind you back until about to inject
 - encourage the individual to close their eyes, look away or focus on the distraction method
- don't over discuss the needle or vaccine
 - do necessary pre-vaccination checks and side effects only

- make the process as quick as possible to give the child minimal time to over-think the vaccine

Pre-immunisation screening

Prior to administering a COVID-19 vaccine to an individual of any age it is important to complete pre-immunisation screening of the person who wants to be vaccinated. It is important to include parent/guardians in this discussion to gain an accurate understanding of a child's suitability to receive a vaccine. This includes completing the pre-immunisation checklist and assessing their vaccine history. This must at every immunisation encounter.

You must assess:

- whether there are any *contraindications* or *precautions* relating to the vaccine to be administered
- that the person is *the right age* for the vaccine they are receiving (ie. aged between 5-11 years for the paediatric formulation)
- check that the correct time interval has passed since the child's last dose of COVID-19 vaccine

If any contraindications or precautions are identified during this screening process it is important to pause and consider what this means. In certain circumstances it may mean that a child is not suitable for vaccination during that specific visit and may require medical assessment by a GP or immunisation specialist prior to vaccination.

VicSIS (Victorian Specialist Immunisation Service) is a team of vaccine experts, including infectious diseases specialists, immunologists, allergists, paediatricians and nurse practitioners. It provides specialist vaccination services for children (and adults) from ≥ 5 years of age who *have experienced* an AEFI with a COVID-19 vaccine, or for those who are identified as *at-risk* of experiencing an AEFI.

VicSIS clinicians provide comprehensive consultations and individualised advice, both pre- and post-vaccination either face-to-face or via telehealth appointments. Vaccination under supervision in a hospital setting can be facilitated where deemed necessary.

Consent

Before any vaccine can be administered to a child, it is a legal obligation to gain consent on behalf of that child from a parent/guardian.

When gaining consent for vaccination, it is important to ensure that immunisation providers take the time to answer any questions that a parent/guardian may have. This will alleviate any parental anxiety which is often transferred to the child who is to be vaccinated and allow for a more positive vaccine experience for all involved. It is important for a parent to feel confident in what they are consenting to and have a clear understanding of the risks and benefits of vaccination, in particular the expected side effects and how to manage them.

Where possible written resources should be provided to parents/guardians as part of the consent process. These resources should be provided in a language that the person providing consent can understand. Involving an interpreter or cultural support person may be recommended during some immunisation encounters.

During vaccination

Positioning

It is important that children remain still during a vaccination to ensure that the vaccine can be administered correctly, as well as reduce the risk of any unintended injury (eg. needle stick injury). Some children may feel comfortable and confident to sit by themselves, whereas others (particularly younger children) may need additional support from a parent/guardian. It is important to involve both the child and parent/guardian in discussions when deciding if a child can sit independently or requires support.

When positioning a child for vaccination it is important to ensure that they are comfortable and the mobile joints of the limb receiving the vaccine is stable. The immunisation provider must be able to adequately visualise the anatomical landmarks and correct sites for injection (deltoid or anterolateral thigh).



Administering vaccines to children

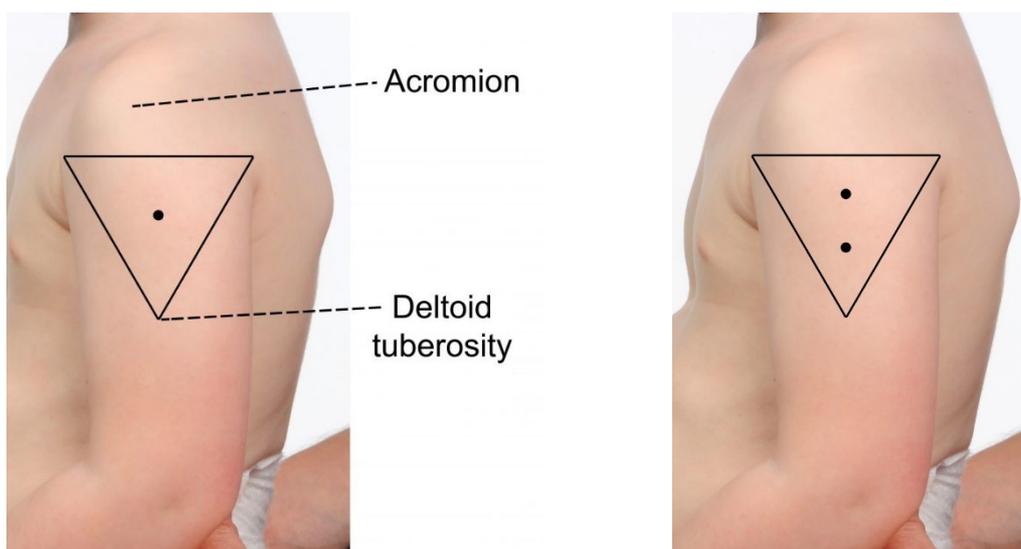
Correct injection technique is of paramount importance when administering vaccines to ensure

optimal immune response, minimise side effects and to reduce the risk of injury to the child. The skin at the injection site should be visibly clean prior to administering a vaccine. The swabbing of clean skin before giving an injection is not necessary. If the skin is visibly dirty, clean the site with alcohol wash/single use alcohol swab and allow the site to dry completely before administering the injection. If active/infected eczema is present at the recommended site, consider an alternate site to minimise the risk of injection site abscess. If there is no alternate site suitable, consider cleaning the site with an alcohol-based wash/single use alcohol swab and allowing the site to dry completely before injecting.

For children aged ≥ 12 months of age the recommended site for injection is the deltoid (upper arm).

To locate the correct anatomical site for injection:

- expose the arm completely from the top of the shoulder to the elbow; remove shirt or clothing if needed
- locate the upper and lower anatomical landmarks- acromion (shoulder tip) and the muscle insertion of the deltoid (deltoid tuberosity)
- draw an imaginary inverted triangle below the shoulder tip, using the identified landmarks (see images below)
- the site for injection is halfway between the acromion and the deltoid tuberosity, in the middle of the deltoid muscle (triangle)



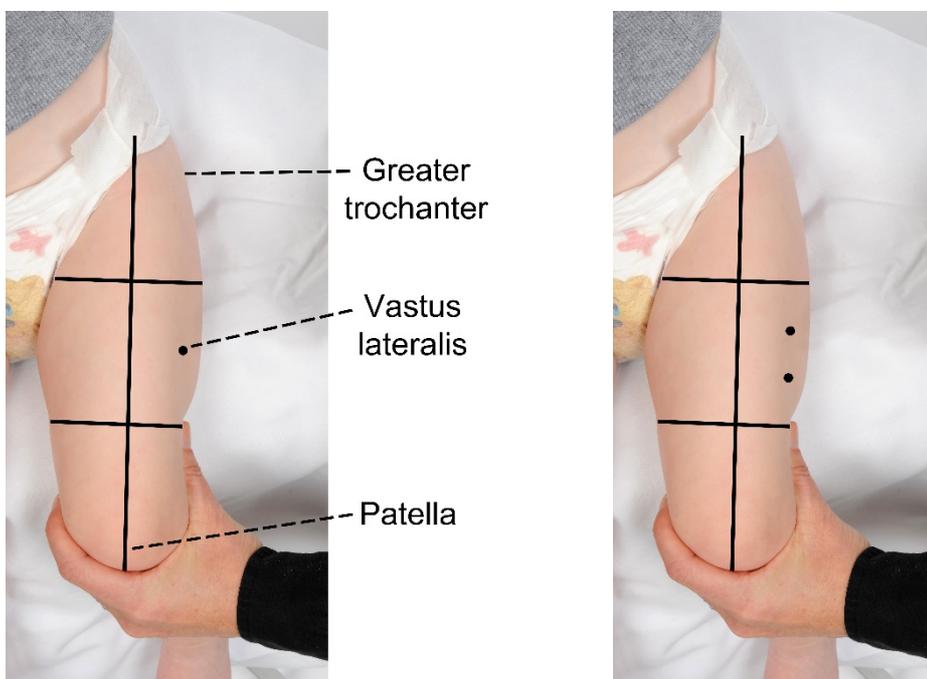
More than one vaccine can be given into the deltoid muscle ensuring each vaccine is separated by 2.5cm.

In some circumstances the anterolateral aspect of the thigh may be used as an alternate site for vaccine administration (see below).

For children aged <12 months of age the recommended injection site is the middle third of the vastus lateralis (anterolateral thigh).

To locate the correct anatomical site for injection:

- ensure the infant's leg is completely exposed
- locate the upper and lower anatomical landmarks- greater trochanter of femur and patella
- draw an imaginary line between the 2 landmarks down the front of the thigh
- then imagine the thigh is divided into thirds
- the correct injection site is located in the middle third and on the outer aspect of the imaginary line



Post-vaccination

Rewards

Regardless of how a child has responded to vaccination, it is important to provide praise to both the child and the parent/guardian for their support in facilitating the administration. Rewards will continue to distract the child from focussing on the vaccine they have just received and look ahead to the rest of their day. Encouraging words or even a high-five can help a child be proud of what they have just achieved. Bubbles, stickers or a lollipop/chocolate (parent/guardian approved) are always well received. Including siblings in any reward system will also set the tone for how they themselves would feel about their own future immunisation experience.

Documentation

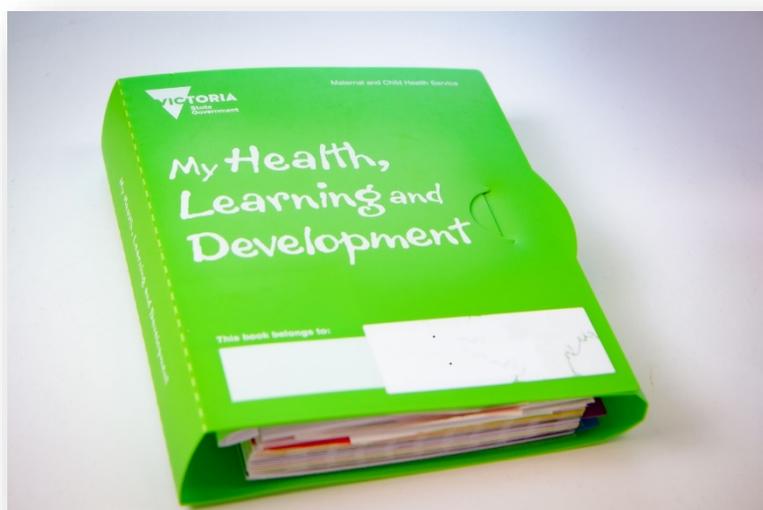
As with vaccine administration for any age group, correct documentation is mandatory in the paediatric population. This must be completed in a variety of places, including, but not limited to:

- Clinic records (CVMS)
- Australian Immunisation Register (AIR)
- Personal records (eg. green book)

It is important to note that any vaccine doses administered overseas can still be recorded onto AIR. With the opening of Australia's borders this may be relevant in circumstances where a child has completed their first dose of COVID-19 vaccine overseas and have presented to you for their second dose. If the immunisation provider has sighted official international documentation of a first dose being administered, they should report this encounter to AIR for completeness.

In circumstances where an incorrect dose or brand of vaccine is inadvertently administered, this dose/brand should still be reported to AIR. This is particularly important for follow up and management of administration errors and adverse events, as recollections of events may not always be accurate.

Subsequent doses should be discussed and appointments arranged if required following any vaccine administration. This can also be documented in the child's personal records or on an appointment card. Alternatively, parents/guardians should be advised how to make appointments for future doses.



Post-vaccination observation

The child must remain within the immunisation clinic for observation for a minimum of 15 minutes following vaccination. This ensures that an immunisation provider is on hand should assistance be required to treat any immediate adverse event following immunising (AEFI).

Rare immediate AEFI with COVID-19 vaccines experienced by children can include, but not be limited to:

- anaphylaxis
- vasovagal episodes and acute stress responses

Anaphylaxis is a medical emergency and involves the sudden onset and rapid progression of symptoms involving the skin, respiratory, gastrointestinal, neurological and/or cardiovascular systems. These can include stridor or difficulty breathing, rash or welts, swelling of the tongue, lips, face and throat, difficulty speaking or a hoarse voice, wheeze, cough, racing heart rate or weak pulse, dizziness or collapse. Young children may appear pale or floppy. Treatment of anaphylaxis involves prompt recognition and the administration of adrenaline. In children, the dose of adrenaline is weight dependant. A copy of the below table should be kept on hand within a hub or clinic's anaphylaxis response kit for ease of reference.

Doses of intramuscular 1:1000 adrenaline for anaphylaxis:

| Approximate age and weight | Adrenaline dose |
|---|-----------------|
| <1 year (approx. 5-10 kg) | 0.05-0.1 mL |
| 1-2 years (approx. 10 kg) | 0.10 mL |
| 2-3 years (approx. 15 kg) | 0.15 mL |
| 4-6 years (approx. 20 kg) | 0.20 mL |
| 7-10 years (approx. 30 kg) | 0.30 mL |
| 10-12 years (approx. 40 kg) | 0.40 mL |
| >12 years and adults, including pregnant women (over 50 kg) | 0.50 mL |

Vasovagal episodes and acute stress responses are more likely to occur in the older child. Symptoms can mimic anaphylaxis however they are usually transient and are not life threatening. As part of pre-vaccination screening, it is important to assess whether a child has experienced this type of response to a vaccination or medical procedure before.

Acute stress responses are often influenced by a child's understanding of the procedure and level of control, previous experiences and other environmental factors. Acute stress responses may occur before, during or within minutes of vaccination. Symptoms can be managed with reassurance, a cool compress to the face or a drink of water. A vasovagal or fainting episode can be the result of reduced blood flow to the brain. This is caused by a drop in heart rate and or blood pressure that is often triggered by stress or pain. Lying down for 15 minutes prior to vaccination, during vaccination and for 15 minutes following vaccination can prevent a vasovagal episode from occurring.

Immunisation providers must remain calm in any emergency situation. It is important to always ensure that in addition to providing emergency care to the child, a staff member is tasked with taking care of any family members present. This can be a member of the clinical team or even administrative or support staff. Following the event, the family must be provided with an opportunity to debrief and ask any questions.

Common AEFI with COVID-19 vaccines experienced by children more commonly include:

- injection site pain
- fever
- headache
- muscle pain.

Common AEFI can present differently in children due to limitations in communication. It is particularly important to be mindful of this in children with disability. Following immunisation, children and babies often present as irritable, unsettled or sleepy. Parents should be advised to encourage fluids (breast/bottle feeds in infants) and may offer over the counter analgesia or a cool compress over the injection site.

Any significant AEFI must be reported to SAEFVIC for follow up. An appointment with a vaccine specialist (VicSIS) may be warranted in some circumstances in order to provide the family with recommendations and reassurance regarding the administration of further doses. Appropriate management of AEFI ensures trust in the vaccination program and acceptance of subsequent doses.

Resources

[MVEC: Allergy and immunisation](#)

[MVEC: COVID-19 vaccines and allergy](#)

[MVEC: Victorian Specialist Immunisation Services \(VicSIS\)](#)

[MVEC: Needle phobia](#)

[MVEC: SAEFVIC](#)

[MVEC: Administration of injected vaccines: correct technique](#)

[MVEC: Adverse events following COVID-19 immunisation](#)

[MVEC: Australian Immunisation Register](#)

[MVEC: COVID-19 vaccination in children](#)

[MVEC: COVID-19 FAQs: allergies, pre-existing conditions and children](#)

[MVEC: Eczema and immunisations](#)

[MVEC: Identifying AEFI in diverse skin colours](#)

[MVEC: Injection site reactions](#)

[MVEC: Shoulder injury related to vaccine administration](#)

[MVEC: Vaccine confidence](#)

[MVEC: Immunising children and infants webinar](#)

[MVEC: The Victorian COVID-19 eLearning Competency](#)

[MVEC: Vaccination Procedures](#)

[Australian Immunisation Handbook: Table. Doses of intramuscular 1:1000 adrenaline for anaphylaxis](#)

[Australian Immunisation Handbook: preparing for vaccination](#)

[Australian Immunisation handbook: administration of vaccines](#)

[Australian Immunisation handbook: after vaccination](#)