Clinical Guidance for COVID-19 Vaccination

Comirnaty® (Pfizer BioNTech)
Spikevax® (Moderna)
Jcovden ® (Janssen)

Comirnaty® 10 mcg/dose for children 5-11 years (Pfizer BioNTech)
Nuvaxovid® (Novavax)

Version 41 12/08/2022

This document has been created and updated by the HSE National Immunisation Office
<table>
<thead>
<tr>
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<tr>
<td>Update</td>
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<td>• Document updated throughout: Booster recommendations amended in line with NIAC guidelines</td>
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<td>• Co-administration of other vaccines with COVID-19 vaccine</td>
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This guidance is intended for vaccinators administering COVID-19 vaccine.

It is intended for vaccinators who are trained and competent in immunisation practice. Vaccinators should have undergone training in the administration of COVID-19 vaccine(s), recognition and management of anaphylaxis, and basic life support and intramuscular injection technique. They should also be familiar with the anaphylaxis protocol outlined in the Immunisation Guidelines for Ireland (see useful links section).

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In some circumstances, advice in these guidelines may differ from that in the Summary of Product Characteristics (SmPC) of the vaccines. When this occurs, the recommendations in these guidelines, which are based on current expert advice from the National Immunisation Advisory Committee should be followed.

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1. Introduction

The objective of the vaccination programme for SARS CoV-2 is to ensure equitable access to a safe and effective vaccine with the goals of limiting mortality and morbidity from COVID-19, protecting healthcare capacity and enabling social and economic activity.

Purpose of the document

This document has been prepared as a means of providing clinical guidance to all clinicians implementing the COVID-19 vaccination programme.

Indemnity for vaccinators

Claims management in relation to claims and litigation initiated in connection with COVID-19 vaccination is to be delegated to the State Claims Agency by means of Government Order.

Registered medical practitioners (including GPs), nurses, pharmacists, physiotherapists, dentists, dental hygienists, optometrists, radiographers and radiation therapists, paramedics, advanced paramedics, emergency medical technicians and relevant healthcare students (as per the Statutory Instruments for the administration of COVID-19 vaccines), in receipt of relevant training with regard to administration of the vaccines, who are administering vaccines on the direction of, or on behalf of, the HSE will be indemnified with regard to any adverse product liability-related events arising from their administration of the vaccine. Vaccinators working in GP surgeries and retail pharmacies however, will not be indemnified in respect of malpractice events occurring during the administration of the vaccine. Such malpractice events will be indemnified by their professional insurers.
2. Vaccine recommendations

Recommendations for primary and booster vaccination are summarized in the table below. In July 2022, the National Immunisation Advisory Committee published updated guidance in relation to booster vaccination. Note NIAC recommends that 3rd booster doses as well as 2nd booster doses for healthcare workers should be administered with the seasonal influenza vaccine where practicable.

Table 1: NIAC recommendations for COVID-19 vaccines by age and immune status July 2022

<table>
<thead>
<tr>
<th>Group</th>
<th>Primary course*</th>
<th>Additional dose</th>
<th>1st booster</th>
<th>2nd booster</th>
<th>3rd booster</th>
</tr>
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<tbody>
<tr>
<td>65 years and older</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>50-64 years</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>12-49 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underlying medical conditions</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Residents of long term care facilities</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Healthcare workers</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Others</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>5-11 years</td>
<td>✓ ✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 years and older</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunocompromise associated with a suboptimal response to vaccines</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5-11 years</td>
<td></td>
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</tbody>
</table>

*two dose primary course (one dose if COVID-19 vaccine Janssen)

**at 16 weeks gestation or later if not already boosted in this pregnancy

2.1 Medical conditions at very high risk and high-risk of severe COVID-19 disease

Conditions at high risk or very high risk of severe COVID-19 disease are detailed in the table on page 10.

Those with conditions in the blue shaded areas are immunocompromising conditions that may be associated with a suboptimal response to vaccines. People with these conditions at the time of vaccination require an additional dose of vaccine for their primary vaccination course (see Section 7.8) as well as a number of booster vaccine doses as outlined in Table 1.
<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Very high risk</th>
<th>High risk</th>
</tr>
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<tr>
<td>Cancer</td>
<td>Receiving or within 6 weeks of receiving systemic cytotoxic chemotherapy, targeted therapy, monoclonal antibodies or immunotherapies Receiving treatment or pending treatment for a haematological cancer Undergoing or within 6 weeks of surgery or radical radiotherapy for lung or head and neck cancer Advanced/ metastatic cancer</td>
<td>Haematological(^1) - within 5 years of treatment Non haematological cancer within 1 year following immunomodulating treatment All other cancers being treated (excluding hormonal treatment)</td>
</tr>
<tr>
<td>Chronic heart (and vascular) disease</td>
<td>e.g. heart failure, hypertensive cardiac disease</td>
<td></td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>On dialysis, or eGFR &lt;15 ml/min With eGFR &lt;30ml/min</td>
<td></td>
</tr>
<tr>
<td>Chronic liver disease</td>
<td>e.g. cirrhosis or fibrosis</td>
<td></td>
</tr>
<tr>
<td>Chronic neurological disease or condition</td>
<td>With evolving ventilatory failure (requiring non-invasive ventilation) e.g. motor neurone disease, spinal muscular atrophy Significantly compromising respiratory function and/or the ability to clear secretions e.g. Parkinson’s disease, cerebral palsy</td>
<td></td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>Severe e.g. severe cystic fibrosis, severe COPD, severe pulmonary fibrosis Other e.g. stable cystic fibrosis, severe asthma (continuous or repeated use of systemic corticosteroids), moderate COPD</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>HbA1c ≥58mmol/mol</td>
<td>All other diabetes (Type 1 and 2)</td>
</tr>
<tr>
<td>Immunocompromise due to disease or treatment</td>
<td>Severe e.g. Transplantation: - Listed for solid organ or haematopoietic stem cell transplant (HSCT) - Post solid organ transplant at any time - Post HSCT within 12 months Genetic diseases: - APECED(^2) - Inborn errors in the interferon pathway Treatment: - included but not limited to Cyclophosphamide, Rituximab, Alemtuzumab, Cladribine or Ocrelizumab in the last 6 months</td>
<td>Other e.g. High dose systemic steroids(^3) HIV, not on treatment or CD4 count &lt;200 x10(^9)L for adults</td>
</tr>
<tr>
<td>Inherited metabolic diseases(^3)</td>
<td>Disorders of intermediary metabolism/at risk of acute decompensation e.g. Maple Syrup Urine Disease</td>
<td>Disorders of intermediary metabolism not fulfilling criteria for very high risk</td>
</tr>
<tr>
<td>Intellectual disability(^3)</td>
<td>Down syndrome</td>
<td>Intellectual disability excluding Down syndrome</td>
</tr>
<tr>
<td>Obesity</td>
<td>BMI &gt;40 kg/m2</td>
<td>BMI &gt;35 kg/m2</td>
</tr>
<tr>
<td>Severe mental illness(^3)</td>
<td>e.g. Schizophrenia, bipolar disorder, severe depression</td>
<td></td>
</tr>
<tr>
<td>Sickle cell disease</td>
<td>Sickle cell disease</td>
<td></td>
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\(^1\) Includes e.g., leukaemia, lymphomas, blood dyscrasias or other malignant neoplasms affecting the bone marrow or lymphatic systems

\(^2\) APECED - autoimmune polyendocrinopathy candidiasis ecto-dermal dystrophy

\(^3\) The following doses of prednisolone (or equivalent dose of other glucocorticoid) are likely to be immunosuppressive:
- Adults and children 10kg: >40mg/day for more than 1 week, or ≥20mg/day for 2 weeks or longer
- Children <10 kg: 2mg/kg/day for 2 weeks or longer
3. COVID-19 vaccines

There are currently a number of COVID-19 Vaccines authorised for use in Ireland.

mRNA Vaccines


- **Comirnaty® 30** micrograms/dose is authorised by the EMA for use as a booster dose in those aged 12 and over.

- **Comirnaty® 10** micrograms/dose is licenced by the EMA for active immunisation to prevent COVID-19 in children aged 5-11 years.


- **Spikevax® vaccine** is authorised by the EMA for use as a booster dose. The booster dose is 0.25mls which is half the dose used for the primary series. NIAC recommends a booster dose of Spikevax® only for people aged 30 years and older.

Both Comirnaty® and Spikevax® are authorized by the EMA for use as an extra dose for people with severely weakened immune systems, as an extension of the primary vaccination course. The NIAC recommends that an extended primary vaccination course should be given to those aged 12 years and older with immunocompromise associated with a suboptimal response to vaccines at the time of vaccination, who have completed their primary course.

Spikevax® is recommended for people aged 30 years and older only (people aged less than 30 years should receive Comirnaty®).

Viral Vector Vaccines

This vaccine is licensed for active immunisation to prevent COVID-19 in individuals 18 years of age and older.

This vaccine is currently used in the COVID-19 vaccination programme only for individuals aged 18 years and older who cannot receive an mRNA vaccine or Novavax, as a primary course, booster dose or additional dose for immunocompromised.

Protein sub-unit vaccines
Nuvaxovid® (Novavax) is licensed by the EMA for active immunisation to prevent COVID-19 in people aged 12 years and older.

This vaccine is used in the COVID-19 vaccination programme only for individuals aged 12 years and older who cannot receive an mRNA vaccine, or for individuals who have declined other COVID-19 vaccines. https://www.ema.europa.eu/en/medicines/human/EPAR/nuvaxovid#product-information-section

Please refer to the NIAC guidelines for details of recommendations

Vaxzevria® (AstraZeneca) is licensed for active immunisation to prevent COVID-19 in individuals 18 years of age and older.

There is no remaining stock of Vaxzevria® in Ireland and the vaccine is therefore no longer used in the COVID-19 vaccination programme in Ireland.
4. Infection Prevention and Control for the administration of COVID-19 vaccines

- Prior to preparation and administration of COVID-19 vaccines, hand hygiene should be performed as per the “WHO five moments of hand hygiene” with emphasis on:
  - Before vaccine preparation
  - Before drawing up and administering the vaccine
  - Before and after each recipient contact

Check HPSC website for latest guidance on infection prevention and control for healthcare workers: [https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/](https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/)

- PPE should be worn as per HPSC guidance for healthcare staff.

- It is not necessary to use a skin disinfectant prior to injection. If the skin at the injection site is visibly dirty, clean with soap and water. If an alcohol swab is used, delay injection for ≥30 seconds, to ensure the alcohol has evaporated.

- There is no need to routinely check temperature either at registration or before vaccination.

5. Vaccine details, storage and instructions for preparation and administration.

Vaccines undergo rigorous checks and quality steps prior to final release from the manufacturer.

SmPCs usually state: "The vaccine should be inspected visually for particulate matter and discolouration prior to administration. Discard the vial if the suspension is discoloured or visible particles are observed."

When a vaccinator is concerned regarding a vial the following steps should be followed:

- The vaccinator should contact another healthcare professional (HCP) who has experience in using this product and ask for a second opinion
- The affected vial should be returned to the fridge and kept there in Quarantine (between +2°C and +8°C)
- The vial in quarantine should be placed in a clearly marked area in the fridge "Quarantine - do not use"
- The vaccinator and senior experienced HCP should check the other vials in this batch in their fridge by removing one vial at a time and ensuring that the duration out of the fridge is kept to a minimum (less than 2 minutes).
- If more vials are considered defective, they should calculate the impact of placing vials into quarantine and arrange for additional deliveries if required.
- The HPRA, manufacturer and National Immunisation Office (NIO) should be emailed with details of the issue and with a photograph of vial identifying the defect (if possible).
- The NIO will follow up and contact other locations where this batch has been delivered if necessary.

Please ensure vaccines are stored between +2°C and +8°C.

Should vaccines be exposed to temperatures outside of these parameters please contact the NIO immediately.

Contacts for National Immunisation Office Pharmacists include:
Cliona Kiersey: mobile 087 9915452
Achal Gupta: mobile 087 4064810
Email the immunisation inbox

Pre-drawn syringes of COVID-19 vaccines from multi-dose vials that are prepared within designated vaccine preparation areas may be available within the HSE centralised vaccination clinics (CVCs).
National clinical guidance specific to CVC settings on this matter should be adhered to.
5.1 Comirnaty® 30 micrograms (Pfizer BioNTech) for those aged 12 years and older

mRNA vaccines are fragile vaccines. Correct storage is essential to ensure the stability of the vaccine. Store vials upright. DO NOT store on their side.

Table 2: Details of Comirnaty® (Pfizer BioNTech) for the primary vaccination course for those aged 12 years and older

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing process</td>
<td>mRNA</td>
</tr>
<tr>
<td>Name of vaccine</td>
<td>Comirnaty® (Pfizer BioNTech)</td>
</tr>
<tr>
<td>Constituents</td>
<td>Polyethylene glycol/macrogol (PEG) as part of ALC-0159. ALC-0315 = (4-hydroxybutyl) azanediy]bis (hexane-6,1-diy] bis (2-hexy]decanoate), ALC-0159 = 2-[(polyethylene glycol)-2000]-N,N-ditetracyclacetamide 1,2-Distearoyl-sn-glycero-3-phosphocholine Cholesterol Potassium chloride Potassium dihydrogen phosphate Sodium chloride Disodium hydrogen phosphate dihydrate Sucrose Water for injections</td>
</tr>
<tr>
<td>Presentation</td>
<td>Concentrated solution of vaccine is contained in a multidose clear glass vial.</td>
</tr>
<tr>
<td>Number of doses in each vial</td>
<td>Post dilution 6 doses. If a seventh dose of 0.3ml can be safely and accurately withdrawn from a diluted vial, it is a valid dose. No more than 7 valid doses are available.</td>
</tr>
<tr>
<td>Dilution</td>
<td>Yes with 0.9% Sodium Chloride (supplied separately)</td>
</tr>
<tr>
<td>Latex</td>
<td>No. The vial has a synthetic rubber (bromobutyl) stopper– the vial stopper does not contain latex.</td>
</tr>
<tr>
<td>Preservatives</td>
<td>No</td>
</tr>
<tr>
<td>Dosage</td>
<td>0.3ml</td>
</tr>
<tr>
<td>Number of doses required</td>
<td>2</td>
</tr>
<tr>
<td>Interval between doses</td>
<td>The recommended interval between doses is 21 to 28 days The minimum interval between doses is 17 days.</td>
</tr>
</tbody>
</table>

Comirnaty® (Pfizer BioNTech) storage
- The vaccine is delivered from the manufacturer to the HSE National Cold Chain Service (NCCS) at -90°C to -60°C and this storage condition is continued as the vaccine is stored in an ultra-cold temperature (ULT) freezer at -90°C to -60°C.
Clinical Guidance for COVID-19 Vaccination | HSE National Immunisation Office

- The vaccine is supplied to sites/clinics by the HSE NCCS at +2 to +8°C with a shelf life of 1 month (31 days). This new “use before” time and date is labelled by NCCS once vials are removed from ULT.
- The vaccine in each multi-dose vial requires dilution with 1.8ml of 0.9% sodium chloride.
- 0.9% sodium chloride is supplied separately to the vaccine and should be stored at room temperature.
- Undiluted vials of Comirnaty® (Pfizer/BioNTech) have a shelf life of 1 month (31 days) when stored at +2 to +8°C (labelled “use before” time and date)
- Prior to use, the unopened vial can be stored for up to 2 hours at temperatures up to 30 °C.
- After dilution, the vaccine must be kept at +2°C to +30°C and used within 6 hours after which the vial must be discarded.

Table 3: Definitions of terms for expiry date and usage times of Comirnaty30® (Pfizer BioNTech)

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expiry date</td>
<td>The date the vaccine expires when stored in an ultra-cold temperature (ULT) freezer at -90°C to -60°C. This is 9 months from the date of manufacturer. The batch number on the side of each vial is recorded in the patient record. This is linked to the expiry date.</td>
</tr>
<tr>
<td>“Use before” date and time</td>
<td>USE BEFORE date and time = 1 month (31 days) from the time vials are removed by HSE National Cold Chain from ULT and stored at +2°C to +8°C (must be recorded on patient’s notes). This time and date will be labelled on the box by NCCS. Before the 1 month (31 days) has passed, vials must be removed from fridge.</td>
</tr>
<tr>
<td>Maximum time from removal from ultra-low temperature (ULT) freezer to expiry</td>
<td>Once the vaccine is removed from the fridge it must be diluted within 2 hours. It must be discarded, if not diluted within 2 hours.</td>
</tr>
<tr>
<td>Maximum time allowed from storage at +2°C to +8°C to dilution</td>
<td>When the vaccine is diluted it must be used within 6 hours. The “discard” date and time i.e. 6 hours after dilution must be written on the vial using a 24 hour format.</td>
</tr>
</tbody>
</table>
| “Discard” date and time                                                       | Note:
| Maximum time allowed from dilution to expiry                                 | Early batches of vials had a space for date and time of dilution. All vial labels now contain space for “discard” date and time.
|                                                                             | EMA has advised that “discard” date and time i.e. 6 hours after dilution must be written on all vials using a 24 hour format.
|                                                                             | e.g. Vial is diluted 01/01/2021 at 10.00. Discard time is 01/01/2021 at 16.00. This is the date and time that should be written on the vial.
|                                                                             | Any unused or partially unused diluted vials must be discarded when this time has been reached.                                                                                                       |
For General Practice and Pharmacies, please return any unused and unusable vials to the NCCS for destruction. Please give these damaged or unusable vaccines to the NCCS van-driver at your next vaccine delivery. See [http://www.hse.ie/eng/health/immunisation/hcpinfo/vaccineordering/gpvaccreturn.pdf](http://www.hse.ie/eng/health/immunisation/hcpinfo/vaccineordering/gpvaccreturn.pdf)

Further regulatory information on COVID-19 vaccines can be found in the approved product information (Summary of Product Characteristics (SmPC) for health care professionals, and Package Leaflet (PIL) for the public), is available via the EMA website [www.ema.europa.eu](http://www.ema.europa.eu)

**Primary Vaccination Course for those aged 12 years and older: Comirnaty® (Pfizer BioNTech): dosage, scheduling and site of vaccination**

- Two doses of 0.3mls Comirnaty® should be administered intramuscularly with an interval of 21 days between doses (the NIAC recommends an interval of 21 to 28 days). The day the first dose is given is day 0.
- The minimum interval between the first and second dose is 17 days.
- The vaccine should be administered intramuscularly (IM). The preferred site of administration is the deltoid muscle.
- A vaccine course started with Comirnaty® should if possible be completed with this product.
- For those receiving Comirnaty® as a 2nd dose following a 1st dose of Vaxzevria®, only one dose of Comirnaty® is required to complete the schedule in this situation. There should be an interval of 28 days between the Vaxzevria® (dose 1) and Comirnaty® (dose 2).
Table 4: Interval between 2 doses for those aged 12 years and older

<table>
<thead>
<tr>
<th>Interval between 1st and 2nd Doses</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 17 days</td>
<td>This is not considered a valid vaccine. A third dose should be given 28 days after the second (invalid) vaccine.</td>
</tr>
<tr>
<td>17 to 21 days</td>
<td>No further action needed (Evidence from trial data is that this is a valid vaccine).</td>
</tr>
<tr>
<td>Longer than 21 days</td>
<td>Give the 2nd dose at whatever interval. The course does not need to be restarted.</td>
</tr>
</tbody>
</table>

Dilution of Comirnaty® (Pfizer BioNTech) for those aged 12 years and older

Requirements for diluting the vaccine
- One Comirnaty® (Pfizer BioNTech) multidose vial
- One 10ml ampoule of Sodium Chloride 0.9% solution for injection (Stored at room temperature/should not be kept in a fridge)
- Two 70% alcohol swabs
- One 21 gauge green needle
- A 2.5ml, 3ml or 5ml syringe

STEP 1. PREPARING FOR DILUTION
- Check the “use before” date and time on the box containing the vials with a colleague
- Remove the vial from the box in the fridge/cool box
- Gently invert vial 10 times prior to dilution. Do not shake
- Inspect the liquid in the vial prior to dilution
- Should be an off-white solution. It may contain white to off-white amorphous particles.
- Remove cap
- Clean with 70% alcohol swab and allow it to air dry fully
STEP 2. DILUTION

- Twist to separate one ampoule of sodium chloride from other ampoules if attached
- Check product and expiry date with colleague
- Clean with a 70% alcohol swab
- Open the ampoule by twisting the cap using standard aseptic technique
- Connect syringe tightly to sodium chloride ampoule
- Withdraw 1.8ml of Sodium Chloride 0.9% Solution for Injection
- Cross check correct amount withdrawn with colleague
- Discard the ampoule and any remaining diluent in it into waste bin
- Using a 21 gauge green needle attached to the syringe,
- Insert diluent slowly into the vaccine vial. You may feel some pressure in the vial as you add the diluent.
- Do not remove the needle from the vial. Keeping the needle above the level of the liquid, slowly withdraw 1.8 ml of air into the empty diluent syringe to equalise the pressure.
- Remove needle and syringe from vial.
- Dispose of the needle and syringe in a sharps bin.
- Gently invert the diluted solution 10 times. Do not shake.
- Diluted vaccine should be an off-white solution with no visible particles. Discard if particles present.
- Discard the diluted vaccine if particulates or discoloration are present.

STEP 3. LABELLING THE VIAL

- Label the diluted vial with the date and “discard time” (6 hours after time of dilution) using a 24 hour format.
- Do not use the diluted vaccine after this date and time.
- e.g. vial diluted at 10.00 01/01/2021. Discard time is 16.00 01/01/2021
- After dilution, the vial contains 6 doses* of 0.3 ml
- Diluted vaccines can be stored at room temperature between +2°C and +30°C but must be used within 6 hours following dilution.
- Bring the vial to your vaccination table/site for vaccine preparation and administration

*If a seventh 0.3ml dose can be safely and accurately withdrawn from a diluted vial, then it can be used as valid doses.
If it is not possible to withdraw more than six 0.3mls doses from the vial, the remaining vaccine solution should be discarded.

**There should be no pooling of vaccine solution from different vials.**

**Administration of Comirnaty® (Pfizer BioNTech)**
- Vaccine dose preparation and administration should be carried out at the point of administration i.e. within the clinic area.
- All six doses should be drawn up from the vial and a seventh if possible.
- The vial should be inspected for any remaining solution
- Each syringe should be re-checked if the remaining volume in the vial appears to be more than 0.15ml.
- The same needle and syringe should be used to draw up and administer the vaccine.
- Each dose should be drawn up and immediately administered to the patient.
- Vials should not routinely be diluted in advance as per best practice and the manufacturer’s instructions that diluted vials should be used immediately.
- There should be no pooling of vaccine solution from different vials.

**Requirements for administration of up to 7 doses of vaccine**
- One diluted Comirnaty® (Pfizer BioNTech) multidose vial (up to 7 doses)
- x 70% alcohol swabs
- x 23 gauge blue needles
One Comirnaty® vial (0.45 mL) contains up to 7 doses of 0.3 mL after dilution with NaCl (1.8 ml).

Sites must ensure that proper procedures are in place before administration so that a maximum of 7 doses are obtainable from a vial.

Should 8 doses be obtained from a vial the following steps should be considered:
- Identify stage of the process where the error happened e.g. dilution, dose draw up
- Add extra in-process and finished product checking steps
- Retrain personnel involved
- Audit the process regularly

Should 8 doses be administered, in addition to the above steps, the following steps should also be considered:
- Discuss the incident at management level-this is a clinical decision and must be taken locally
- Consider the need for open disclosure

Coring issues with Comirnaty® reconstitution

A number of complaints have been submitted to Pfizer regarding the presence of rubber stopper particles inside the solution. Investigation of the complaint samples at the Pfizer manufacturing site has established that the following factors can cause rubber particles to be removed from the stopper:
- When the needle is not inserted in the centre ring of the top plug;
- When the end of the needle scrapes rubber off the inner wall of the small channel of the stopper due to non-vertical insertion of the needle;
- When the needle is rotated or twisted during piercing of the stopper, resulting in a particle cored out of the stopper. This damage is enlarged when a wider bore needle is used.

The needle used for reconstitution should be 21G or narrower.

The presence of rubber stopper particles inside the solution may be due to incorrect technique used during product administration.
**STEP 1. Preparation and administration of one dose of vaccine**

Check the date and "discard time" has not expired (dilution was within last 6 hours).

Clean top of vial with a single use 70% alcohol swab and allow it to air dry fully
Attach 23 gauge blue needle to 1ml syringe
Withdraw 0.3ml of diluted product¹
Make sure correct dose is drawn up as smaller dose may not provide protection

Ensure all air bubbles have been removed before the needle is withdrawn
Do not change the needle between the vial and the patient unless the needle is contaminated or damaged or if indicated
Administer vaccine to patient intramuscularly (See Appendix A)
Dispose of used needle and syringe in a sharps bin

¹ When vaccination is carried out in settings where this is practicable and feasible, best practice is for the volume of each dose to be checked by a colleague to ensure the correct volume has been withdrawn
5.2 Spikevax® (COVID-19 Vaccine Moderna)

mRNA vaccines are fragile vaccines. Correct storage is essential to ensure the stability of the vaccine. Store vials upright in their original carton in a fridge at temperature between +2°C and +8°C. DO NOT store on their side.

Table 5: Details of Spikevax® (COVID-19 Vaccine Moderna) for the primary vaccination course

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing process</td>
<td>mRNA</td>
</tr>
<tr>
<td>Name of vaccine</td>
<td>Spikevax® (COVID-19 Vaccine Moderna)</td>
</tr>
<tr>
<td>Constituents</td>
<td>Lipid SM-102 Cholesterol 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC) 1,2-Dimyristoyl-rac-glycero-3-methoxypolyethylene glycol-2000 (PEG2000 DMG) Tromethamol Tromethamol hydrochloride Acetic acid Sodium acetate trihydrate Sucrose Water for injections</td>
</tr>
<tr>
<td>Presentation</td>
<td>The vaccine is contained in a multidose clear glass vial.</td>
</tr>
</tbody>
</table>
| Number of doses in each vial | Up to 10 doses\(^2\)  
If more than 10 (0.5 ml) doses can be safely and accurately withdrawn from a vial, they can be used as valid doses. There should be no pooling of vaccine from different vaccine vials  
As per SmPC the bung must not be punctured more than 20 times |
| Dilution                   | NOT REQUIRED                                                                                                                                |
| Latex                      | No. The vial has a synthetic rubber stopper (chlorobutyl rubber)– the vial stopper does not contain latex.                                    |
| Preservatives              | No                                                                                                                                            |
| Dosage                     | 0.5ml (PLEASE NOTE THAT IF ADMINISTERING A BOOSTER DOSE, THE DOSE IS 0.25ml. Refer to section 8.0)                                           |
| Number of doses required    | 2                                                                                                                                              |
| Interval between doses      | 28 days is the recommended interval between doses 21 days is the minimum interval                                                           |
| Transportation time         | Within the 30 days storage of the unopened vaccine at +2°C to +8°C, up to 12 hours may be used for transportation.                           |

\(^2\) Up to 20 doses if booster doses. Refer to Section 8 for details of booster doses
**Spikevax® (COVID-19 Vaccine Moderna) storage**

mRNA vaccines are fragile vaccines. Correct storage is essential to ensure the stability of the vaccine.

**Store vials upright. DO NOT store on their side.**

The vaccine is transported to vaccination sites/clinics at temperature between +2°C and +8°C. The vaccine is delivered in its thawed state and the **USE BEFORE** date and time will be printed on the label that has been affixed to the box by the NCCS.

The unopened vial may be stored between +8°C and +25°C up to 24 hours within the USE BEFORE date & time.

**Never refreeze thawed vaccine.**

**DISCARD date and time**

Once a vial is punctured to draw up the first dose, a “DISCARD” date and time must be written on the vial. The maximum time after which the vial should be discarded is 19 hours. The “DISCARD ” date and time is calculated by adding 19 hours to the time the vial is first punctured. The “DISCARD” date and time must be written on the vial using a 24 hour format e.g. vial is first punctured 29/06/21 at 11.00. Discard date and time is 30/06/2021 at 06.00.

**Table 6: Storage of unopened vials of Spikevax® (COVID-19 Vaccine Moderna)**

<table>
<thead>
<tr>
<th>Method of Vaccine Storage</th>
<th>Temperature</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerator</td>
<td>Between +2°C and +8°C</td>
<td>“use before” date as labelled by NCCS</td>
</tr>
<tr>
<td>Room Temperature</td>
<td>Between +8°C and +25°C</td>
<td>Up to 24 hours</td>
</tr>
</tbody>
</table>

**Table 7: Storage of opened (needle punctured) vials of Spikevax® (COVID-19 Vaccine Moderna)**

<table>
<thead>
<tr>
<th>Method of Vaccine Storage</th>
<th>Temperature</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerator or Room Temperature</td>
<td>Between +2°C and +25°C</td>
<td>Up to 19 hours (until discard date and time)</td>
</tr>
</tbody>
</table>
Table 8: Definitions of terms for expiry date and usage times of Spikevax® (COVID-19 Vaccine Moderna)

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expiry date</td>
<td>The date the vaccine expires when continuously stored frozen at temperatures between -25°C and -15°C.</td>
</tr>
<tr>
<td></td>
<td>The batch number on the side of each vial is recorded in the patient record. This is linked to the expiry date.</td>
</tr>
<tr>
<td>Maximum shelf-life when vaccine is thawed</td>
<td>At vaccination sites/clinics the vaccine is stored at a temperature between +2°C and +8°C. The &quot;USE BEFORE&quot; date and time will is on the label affixed to the box by NCCS, and is dependent on the vaccine being stored between +2°C and +8°C.</td>
</tr>
<tr>
<td></td>
<td>The &quot;USE BEFORE&quot; date and time is approximately 29/30 days from delivery of vaccines by the NCCS van driver.</td>
</tr>
<tr>
<td></td>
<td>The vials must be returned to the NCCS for destruction if they remain unopened when the “USE BEFORE” date and time has been reached.</td>
</tr>
<tr>
<td>&quot;Discard&quot; date and time</td>
<td>After the initial puncture the vial must be used within 19 hours (within the allowed use period of 30 days at +2°C to +8°C and 24 hours at +8°C to +25°C).</td>
</tr>
<tr>
<td>Maximum time allowed from when the vial is first punctured</td>
<td>The &quot;discard&quot; date and time i.e. 19 hours after the initial puncture must be written on the vial using a 24 hour format.</td>
</tr>
<tr>
<td></td>
<td>e.g. vial is first punctured 29/06/21 at 11.00. Discard date and time is 30/06/2021 at 06.00</td>
</tr>
<tr>
<td></td>
<td>Any doses remaining in the vials must be discarded when this time has been reached, by discarding the vial into a sharps bin.</td>
</tr>
</tbody>
</table>

For General Practice and Pharmacies, please return any unopened and unusable vials to the NCCS for destruction. Please give damaged or unusable vaccines to the NCCS van-driver at your next vaccine delivery.


Further regulatory information on COVID-19 vaccines can be found in the approved product information (SmPC) for health care professionals, and Package Leaflet (PL) for the public, is available via the EMA website https://www.ema.europa.eu/en.
Spikevax® (COVID-19 Vaccine Moderna) dosage, scheduling for the primary vaccination course

In general, a vaccine course started with Spikevax® should be completed with this product. When possible the same vaccine should be used for both doses, unless contraindicated.

Two doses of 0.5mls of Spikevax® COVID-19 Vaccine Moderna are required with an interval of 28 days between doses. The minimum interval between the first and second dose is 21 days. The day the 1st dose is given is day 0.

Note that Spikevax® is not recommended in people aged <30 years.

The vaccine should be administered intramuscularly (IM). The preferred site of administration is the deltoid muscle.

Table 9: Interval between 2 doses for the Primary Vaccination Course

<table>
<thead>
<tr>
<th>Interval between 1st and 2nd Doses</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 21 days</td>
<td>This is not considered a valid vaccine. A third dose should be given 28 days after the second (invalid) vaccine.</td>
</tr>
<tr>
<td>21-27 days</td>
<td>No further action needed (Evidence from trial data that this is a valid vaccine).</td>
</tr>
<tr>
<td>Longer than 28 days</td>
<td>Give the 2nd dose at whatever interval. The course does not need to be restarted.</td>
</tr>
</tbody>
</table>

Preparation of Spikevax® (COVID-19 Vaccine Moderna)

Vials that have not been punctured may be kept at room temperature between +8°C and +25°C for up to 24 hours.

NEVER refreeze thawed vaccine

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3 Please refer to section 8 for details of booster doses
4 The 4 day rule does not apply to the 21 days
STEP 1. PREPARING THE VACCINE

- Check the “USE BEFORE” date and time on the box containing the vials with a colleague
- Allow vaccine stored at +2°C to +8°C to come to room temperature for 15 minutes
- DO NOT DILUTE THE VIAL
- DO NOT SHAKE THE VIAL
- Gently swirl the vaccine once thawed and before withdrawing subsequent doses.

STEP 2. LABELLING THE VIAL

- Label the vial with the “discard” time which is 19 hours after initial puncture using a 24 hour format. Store the vial at temperature between +2°C and +25°C.
- Bring the vial to the vaccination table

Spikevax® (COVID-19 Vaccine Moderna) dose preparation and administration

- Vaccine dose preparation and administration should be carried out at the point of administration i.e. beside the person to be vaccinated
- The same needle and syringe should be used to draw up and administer the vaccine
- Doses should not routinely be drawn up in advance as per best practice and the manufacturer’s instructions
- Each dose should be drawn up and immediately administered to the patient
- There should be no pooling of vaccine from different vials
- Pierce the stopper preferably at a different site each time.
- **Do not puncture** the vial more than 20 times

Requirements for administration of vaccine (IF ADMINISTERING BOOSTER DOSES, APPROPRIATE NUMBER OF SUPPLIES WILL BE NEEDED FOR EACH VIAL)

- One Spikevax® (COVID-19 Vaccine Moderna) multidose vial
- 10 x 70% alcohol swabs
- 10 x 23 gauge blue needles
- 10 x 1ml syringe
STEP 1. Preparation and administration of one dose of vaccine

**Unpunctured vials:** Check the USE BEFORE date and Never administer the vaccine after the USE BEFORE date and time.

**Punctured vials:** Check the DISCARD time. Never administer the vaccine after the discard time.

With the vial upright, gently swirl the vaccine. **Do NOT shake.** If the vial is shaken, contact the manufacturer.

Examine the vaccine. It should be white to off-white in colour and may contain white or translucent coloured particulates. Do not use if discoloured or contains other particulate matter.

Clean top of vial with a single use 70% alcohol swab and allow it to air dry fully

Attach 23 gauge blue needle to 1ml syringe

Withdraw 0.5ml of vaccine\(^5\)

**PLEASE NOTE FOR A BOOSTER DOSE, THE VOLUME REQUIRED IS 0.25mls, Please refer to Section 8**

Make sure correct dose is drawn up as a smaller dose may not provide protection

Ensure all air bubbles have been removed before the needle is withdrawn

Do not change the needle between the vial and the patient unless the needle is contaminated or damaged or if indicated

Administer vaccine to the patient intramuscularly (see Appendix A)

Dispose of used needle and syringe in a sharps bin

**Note:** Gently swirl the vaccine before withdrawing each dose of vaccine

**Transportation**

Within the USE BEFORE date & time, up to 12 hours may be used for transportation. This must include the transportation duration from NCCS to the vaccination site/clinic, which has been recorded on the delivery box.

\(^5\) When vaccination is carried out in settings where this is practicable and feasible, best practice is for the volume of each dose to be checked by a colleague to ensure the correct volume has been withdrawn
5.3 Jcovden® (formerly COVID-19 Vaccine Janssen)

This vaccine is currently used only in people aged 18 years and older who cannot receive an mRNA vaccine or Nuvaxovid® (because of a contraindication or a precaution).

Table 10: Details of COVID-19 Vaccine Janssen® for the primary vaccination course

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of vaccine</td>
<td>Adenovirus vector vaccine*</td>
</tr>
<tr>
<td>Name of vaccine</td>
<td>Jcovden Ad26.COV2.S</td>
</tr>
<tr>
<td>Constituents</td>
<td>One dose (0.5 ml) contains: recombinant, replication-incompetent adenovirus type 26 expressing the SARS-CoV-2 spike protein, citric acid monohydrate, trisodium citrate dehydrate ethanol, 2-hydroxypropyl-β-cyclodextrin (HBCD), polysorbate 80, sodium chloride, sodium hydroxide, hydrochloric acid</td>
</tr>
<tr>
<td>Presentation</td>
<td>Multidose clear glass vial</td>
</tr>
<tr>
<td></td>
<td>The vaccine is a colourless to slightly yellow, clear to very opalescent sterile suspension for intramuscular injection</td>
</tr>
<tr>
<td>Number of doses in each vial</td>
<td>Up to 5 doses</td>
</tr>
<tr>
<td></td>
<td>If more than 5 doses of 0.5mls can be safely and accurately withdrawn from a vial, they can be used as valid doses. There should be no pooling of vaccine from different vials</td>
</tr>
<tr>
<td>Dilution</td>
<td>NO DILUTION REQUIRED</td>
</tr>
<tr>
<td>Latex</td>
<td>No, the vaccine is latex free</td>
</tr>
<tr>
<td></td>
<td>The vial contains a rubber stopper (chlorobutyl with fluoropolymer coated surface), aluminum crimp, and blue plastic cap</td>
</tr>
<tr>
<td>Preservatives</td>
<td>The vaccine does not contain any preservative.</td>
</tr>
<tr>
<td>Dosage</td>
<td>0.5 mls</td>
</tr>
<tr>
<td>Number of doses required</td>
<td>1</td>
</tr>
<tr>
<td>Interval between doses</td>
<td>No interval – single dose schedule</td>
</tr>
</tbody>
</table>

Evidence shows that protection starts from approximately 14 days after the vaccine.
Jcovden® storage
The vaccine will be delivered by the NCCS at +2°C to +8°C.

Unopened (unpunctured) multidose vial should be stored in a pharmaceutical grade refrigerator (+2°C to +8°C) until the Use Before Date.
Vials must be stored in outer carton in order to protect from light.
Vials may be stored between 9°C to 25°C for up to 12 hours.

Opened multidose vial

After first opening, chemical and physical in-use stability has been demonstrated from the time of vial puncture to administration for no more than 3 hours at room temperature. The “discard” date and time i.e. 3 hours after the vial is first punctured must be written on the vial using a 24 hour format. E.g. vial is first punctured 20/01/2021 at 10:00. Discard date and time is 20/01/2021 at 13:00.

Table 11: Definitions of terms for expiry date and usage times of Jcovden®

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use before date</td>
<td>Is 11 months from date the vials were removed from the freezer and stored refrigerated at +2°C to +8°C, The use before date will be on the label on the vaccine box.</td>
</tr>
<tr>
<td>“Discard” date and time Maximum time allowed from first puncture to expiry</td>
<td>When the vaccine is first punctured it must be used within 3 hours Do not return to the refrigerator after this time. The “discard” date and time i.e. 3 hours from first puncture of the vial, should be written on the vial using a 24 hour format. e.g. vial is first punctured on 01/01/2021 at 10.00. Discard date and time is 01/01/2021 at 13.00. This is the date and time that should be written on the vial. Any unused or partially used vials must be discarded when this time has been reached.</td>
</tr>
</tbody>
</table>

Jcovden dosage, scheduling and site of vaccination for the primary vaccination course

A single dose of vaccine is 0.5 ml. The vaccine is a single dose schedule.

---

6 The SmPC states that after the first puncture of the vial, the vaccine can be held at +2°C to +8°C for up to 6 hours. However, the stability data for opened vials in a refrigerator at (+2°C to +8°C) applies ONLY if the vial remains at this temperature throughout i.e. is punctured and doses withdrawn while in a walk-in refrigerator. BEST PRACTICE IS THAT ALL VACCINE IS USED WITHIN 3 HOURS OF FIRST PUNCTURE.
Preparation and administration of Jcovden®

Vaccine dose preparation and administration should be carried out at the point of administration i.e. beside the person being vaccinated.

- The same needle and syringe should be used to draw up and administer the vaccine
- Doses should not be drawn up in advance as per the manufacturer's instructions
- Each dose should be drawn up and immediately administered to the patient
- There should be no pooling of vaccine from different vials.

Requirements for administration of vaccine

- One Jcovden multidose vial (up to 6 doses)
- x 70% alcohol swabs
- x 23 gauge blue needles or 25 gauge orange needles
- 6 x 1ml syringes

STEP 1. Preparation and administration of one dose of vaccine

Check the box
Check the “use before” date on the box containing the vials with a colleague

Punctured vials: Check the discard time. Never use vaccine after the discard time. With the vial upright, gently swirl the vaccine for 10 seconds. Do NOT shake.

Examine the vaccine.
It should be a colorless to slightly yellow, clear to very opalescent. The vaccine should be inspected visually prior to administration. Discard the vial if the suspension is discoloured or visible particles are observed.

Clean top of vial with a single use 70% alcohol swab and allow it to air dry fully

Attach 23 gauge blue or 25 gauge orange needle to a 1ml syringe
Withdraw 0.5ml of vaccine
Make sure the correct dose is drawn up as a smaller dose may not provide protection
Ensure all air bubbles have been removed before the needle is withdrawn.

Withdraw the needle from the vial.
Do not change the needle between the vial and the patient unless the needle is contaminated or damaged or if indicated.

Administer vaccine to the patient intramuscularly (see Appendix A)
Dispose of used needle and syringe in a sharps bin

Repeat for each dose

Email immunisation@hse.ie if you require a session report form/vial traceability form.

7When vaccination is carried out in settings where this is practicable and feasible, best practice is for the volume of each dose to be checked by a colleague to ensure the correct volume has been withdrawn
5.4 Nuvaxovid® (Novavax)

This vaccine is currently used only in people aged 12 years and older who cannot receive another COVID-19 vaccine because of a contraindication or a precaution, or in people who have declined another COVID-19 vaccine.

Table 12: Details of Nuvaxovid® for the primary vaccination course

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of vaccine</td>
<td>Protein sub-unit vaccine</td>
</tr>
<tr>
<td>Name of vaccine</td>
<td>Nuvaxovid®</td>
</tr>
<tr>
<td>Constituents</td>
<td>One dose (0.5 ml) contains:</td>
</tr>
<tr>
<td></td>
<td>One dose (0.5 ml) contains 5 micrograms of the of SARS-CoV-2 spike protein* and is adjuvanted with Matrix-M.</td>
</tr>
<tr>
<td></td>
<td>- Disodium hydrogen phosphate heptahydrate</td>
</tr>
<tr>
<td></td>
<td>- Sodium dihydrogen phosphate monohydrate</td>
</tr>
<tr>
<td></td>
<td>- Sodium chloride</td>
</tr>
<tr>
<td></td>
<td>- Polysorbate 80</td>
</tr>
<tr>
<td></td>
<td>- Sodium hydroxide (for adjustment of pH)</td>
</tr>
<tr>
<td></td>
<td>- Hydrochloric acid (for adjustment of pH)</td>
</tr>
<tr>
<td></td>
<td>- Water for injections</td>
</tr>
<tr>
<td>Adjuvant (Matrix-M)</td>
<td>Adjuvant Matrix-M containing per 0.5 ml dose: Fraction-A (42.5 micrograms) and Fraction-C (7.5 micrograms) of Quillaja saponaria Molina extract.</td>
</tr>
<tr>
<td></td>
<td>- Cholesterol</td>
</tr>
<tr>
<td></td>
<td>- Phosphatidylcholine (including all-rac-α-Tocopherol)</td>
</tr>
<tr>
<td></td>
<td>- Potassium dihydrogen phosphate</td>
</tr>
<tr>
<td></td>
<td>- Potassium chloride</td>
</tr>
<tr>
<td></td>
<td>- Disodium hydrogen phosphate dihydrate</td>
</tr>
<tr>
<td></td>
<td>- Sodium chloride</td>
</tr>
<tr>
<td></td>
<td>- Water for injections</td>
</tr>
<tr>
<td>Presentation</td>
<td>Multidose clear glass vial</td>
</tr>
<tr>
<td></td>
<td>The dispersion is colourless to slightly yellow, clear to mildly opalescent</td>
</tr>
<tr>
<td>Number of doses in each vial</td>
<td>Up to 10 doses</td>
</tr>
<tr>
<td></td>
<td>If more than 10 doses of 0.5mls can be safely and accurately withdrawn from a vial, they can be used as valid doses. There should be no pooling</td>
</tr>
<tr>
<td></td>
<td>of vaccine from different vials</td>
</tr>
<tr>
<td>Dilution</td>
<td>NO DILUTION REQUIRED</td>
</tr>
<tr>
<td>Latex</td>
<td>No, the vaccine is latex free</td>
</tr>
<tr>
<td></td>
<td>Each vial has a stopper (bromobutyl rubber) and an aluminium overseal with blue plastic flip-off cap.</td>
</tr>
<tr>
<td>Preservatives</td>
<td>None</td>
</tr>
<tr>
<td>Dosage</td>
<td>0.5 mls</td>
</tr>
<tr>
<td>Number of doses required</td>
<td>2</td>
</tr>
<tr>
<td>Interval between doses</td>
<td>21 days</td>
</tr>
</tbody>
</table>
* produced by recombinant DNA technology using a baculovirus expression system in an insect cell line that is derived from
Sf9 cells of the Spodoptera frugiperda species.

Evidence shows that protection starts from approximately 7 days after the second vaccine.

**Nuvaxovid® storage**

The vaccine will be delivered by the NCCS at +2°C to +8°C.

**Unopened (unpunctured) multidose vial** should be stored in a pharmaceutical grade refrigerator
(+2°C to +8°C) until expiry.

Vials must be stored upright in outer carton in order to protect from light.

Unopened Nuvaxovid® vaccine has been shown to be stable up to 12 hours at +25°C. Storage at +25°C is not the recommended storage or shipping condition, but may guide decisions for use in case of temporary temperature excursions during storage at +2°C to +8°C.

**Opened multi-dose vial**

After first opening, chemical and physical in-use stability has been demonstrated from the time of vial puncture to administration for no more than **6 hours at +2°C to +25°C**.

The “discard” date and time i.e. 6 hours after the vial is first punctured must be written on the vial using a 24 hour format. E.g. vial is first punctured 20/02/2022 at 10:00. Discard date and time is 20/02/2022 at 16:00.

**Table 13: Definitions of terms for expiry date and usage times of Nuvaxovid® (Novavax)**

<table>
<thead>
<tr>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expiry date</td>
<td>This is date after which the vial must not be punctured. It is printed on the vaccine vial and original box</td>
</tr>
<tr>
<td>“Discard” date and time</td>
<td>When the vaccine is first punctured it must be used within 6 hours</td>
</tr>
<tr>
<td>Maximum time allowed from first puncture to vaccine administration</td>
<td>The “discard” date and time i.e. 6 hours from first puncture of the vial, should be written on the vial using a 24 hour format. E.g. Vial is first punctured on 20/02/2022 at 10.00. Discard date and time is 20/02/2022 at 16.00. This is the date and time that should be written on the vial.</td>
</tr>
<tr>
<td></td>
<td>Any unused or partially used vials must be discarded when this time has been reached.</td>
</tr>
</tbody>
</table>
Preparation and administration of Nuvaxovid®

Vaccine dose preparation and administration should be carried out at the point of administration i.e. beside the person being vaccinated.

- The same needle and syringe should be used to draw up and administer the vaccine
- Doses should not be drawn up in advance as per the manufacturer’s instructions
- Each dose should be drawn up and immediately administered to the patient
- There should be no pooling of vaccine from different vials.

Requirements for administration of vaccine

- One Nuvaxovid® multidose vial
- 70% alcohol swabs
- 23 gauge blue needles or 25 gauge orange needles
- 10 x 1ml syringes

Preparation and administration of one dose of vaccine

Preparation for use:
- The vaccine comes ready to use.
- Unopened vaccine should be stored at +2°C to +8°C and kept within the outer carton to protect from light.
- Immediately prior to use, remove the vaccine vial from the carton in the refrigerator.
- Record the date and time of discard on the vial label. Use within 6 hours after first puncture.

Inspect the vial:
- Gently swirl the multidose vial before and in between each dose withdrawal. Do not shake.
- Each multidose vial contains a colourless to slightly yellow, clear to mildly opalescent dispersion free from visible particles.
- Visually inspect the contents of the vial for visible particulate matter and/or discolouration prior to administration.

Do not administer the vaccine if either is present.

Administer the vaccine:
- Each 0.5 mL dose is withdrawn into a sterile needle and sterile syringe to be administered by intramuscular injection, preferably in the deltoid muscle of the upper arm.
- Do not mix the vaccine in the same syringe with any other vaccines or medicinal products.
- Do not pool excess vaccine from multiple vials.

Storage after first needle puncture:
- Nuvaxovid does not contain a preservative.

Store the opened vial between +2°C to +25°C for up to 6 hours after first puncture.

Discard:
- Discard this vaccine if not used within 6 hours after first puncture of the vial
- Any unused medicinal product or waste material should be disposed of
Nuvaxovid® (Novavax) dosage, scheduling and site of vaccination

- Two doses of 0.5mls should be administered intramuscularly with an interval of 21 days between doses. The day the first dose is given is day 0.
- The minimum interval between the first and second dose is 17 days. The minimum interval should only be used in exceptional circumstances (e.g. commencing chemotherapy).
- The vaccine should be administered intramuscularly (IM). The preferred site of administration is the deltoid muscle.
- A vaccine course started with Nuvaxovid should, if possible be completed with this product.

Table 14: interval between 2 doses

<table>
<thead>
<tr>
<th>Interval between 1st and 2nd Doses</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 17 days</td>
<td>This is not considered a valid vaccine. Revaccination is not recommended at this time as there is no evidence as to the safety and efficacy of an additional dose in these circumstances.</td>
</tr>
<tr>
<td>17 to 21 days</td>
<td>No further action needed This is a valid vaccine.</td>
</tr>
<tr>
<td>Longer than 21 days</td>
<td>Give the 2nd dose at whatever interval. The course does not need to be restarted.</td>
</tr>
</tbody>
</table>
6. Contraindications and precautions to COVID-19 vaccines

6.1 mRNA Vaccines Comirnaty® (Pfizer BioNTech) and Spikevax® (Moderna)

Contraindications See Table 15 for more details

- Anaphylaxis (serious systemic allergic reaction requiring medical intervention) following a previous dose of the vaccine or any of its constituents (including polyethylene glycol (PEG)).
- Anaphylaxis following another mRNA vaccine.
- A history of myocarditis after a previous dose of an mRNA vaccine.

Those with a contraindication to one mRNA COVID-19 vaccine should not receive another authorised mRNA vaccine. Consideration may be given to a non-mRNA vaccine. Nuvaxovid® may be considered for anyone 12 and older including pregnant women. This should be given after an interval of at least 28 days after the 1st COVID-19 vaccine. In individuals who cannot receive an mRNA vaccine or Nuvaxovid® because of a contraindication.COVID-19 vaccine Jcovden® (Janssen)® is licensed from the age of 18 years and may be considered for individuals who cannot receive an mRNA vaccine or Nuvaxovid®.

Precautions: See Table 15 for more details

- Acute severe febrile illness; defer until recovery. Routine physical examination and temperature measurement of persons who appear to be healthy are not necessary prior to vaccination.
- A history of pericarditis after a previous dose of an mRNA vaccine: (seek specialist advice before vaccination).
- Individuals aged <30 years should receive Comirnaty®
- Consider a non-mRNA vaccine (Nuvaxovid)® for those aged 12 years and older, including pregnant women, with:
  - Anaphylaxis after multiple, different drug classes, with no identified allergen (may indicate PEG allergy)
  - Anaphylaxis after a vaccine, or a medicine which contained PEG
  - Unexplained anaphylaxis (may indicate PEG allergy)
- Patients with planned immunosuppressive therapy should ideally complete vaccination 2 weeks before treatment. The recommended minimum interval may be used. Specialists should consider...
the individual’s risk and provide advice based on the person’s immune response and likely immune response to vaccination.

For more information see Frequently Asked Questions about COVID-19 vaccines for people with pre-existing allergic conditions [www.rcpi.ie](http://www.rcpi.ie)

Table 15: Vaccination of those due an mRNA COVID-19 vaccine*

<table>
<thead>
<tr>
<th>History</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contraindication</strong></td>
<td></td>
</tr>
<tr>
<td>• Anaphylaxis after a previous dose of Comirnaty® or Spikevax®</td>
<td>Consider vaccination with a non-mRNA vaccine in a suitable facility.</td>
</tr>
<tr>
<td>• Anaphylaxis after polyethylene glycol (PEG) e.g. some bowel preparations for endoscopy, certain laxatives such as Movicol®)</td>
<td>Observe for 30 minutes or Discuss with allergist/immunologists</td>
</tr>
<tr>
<td>• Anaphylaxis after Trometamol®: Spikevax® is contraindicated</td>
<td>Vaccinate with alternative vaccine</td>
</tr>
<tr>
<td>• Previous history of myocarditis after a dose of Comirnaty® or Spikevax®</td>
<td>Consult with a cardiologist</td>
</tr>
<tr>
<td><strong>Special Precautions</strong></td>
<td></td>
</tr>
<tr>
<td>• Anaphylaxis after multiple, different drug classes, with no identified allergen (may indicate PEG allergy) • Anaphylaxis after a vaccine or a medicine known to contain PEG • Unexplained anaphylaxis (may indicate PEG allergy)</td>
<td>Clarify if PEG is tolerated (see FAQs) Discuss with allergist/immunologist Consider vaccination with Nuvaxovid® or JCOVDEN® Observe for 30 minutes</td>
</tr>
</tbody>
</table>

Those aged 12-29 should receive Comirnaty as a subsequent dose

<table>
<thead>
<tr>
<th>History</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Previous history of pericarditis after a dose of Comirnaty or Spikevax</td>
<td>Consult with cardiologist</td>
</tr>
<tr>
<td>• Mastocytosis</td>
<td>Vaccinate as scheduled Observe for 30 minutes</td>
</tr>
<tr>
<td>• Idiopathic anaphylaxis • Anaphylaxis after food, venom or medication</td>
<td>Vaccinate as scheduled Observe for 15 minutes.</td>
</tr>
<tr>
<td>• Non-anaphylactic food allergy • Family history of allergy, including anaphylaxis • Previous local reaction to any vaccine • Hereditary angioedema</td>
<td>Vaccinate as scheduled Observe for 15 minutes.</td>
</tr>
</tbody>
</table>
6.2 Viral vector vaccines Jcovden® (Janssen)

Contraindications to Jcovden® (Janssen) (See Table 15)

- Anaphylaxis (serious systemic allergic reaction requiring medical intervention) following a previous dose of the vaccine or any of its constituents (including polysorbate 80).
- Anaphylaxis following another viral vector vaccine.
- Thrombosis with Thrombocytopenia Syndrome (TTS) after the first dose of another viral vector COVID-19 vaccine
- Previous history of capillary leak syndrome.

Precautions to Jcovden® (Janssen) (See Table 15)

- Acute severe febrile illness; defer until recovery.
- Advice from a relevant specialist should be sought for a person with a history of an immediate severe allergic reaction to:
  - multiple drug classes with no identified allergen
  - any other vaccine, injected antibody preparation or medicine likely to contain polysorbate 80
  - unexplained anaphylaxis (may indicate polysorbate 80 allergy)
  - age < 50 years

If an individual has a history of thrombocytopenic disorder, the risk of developing low platelet levels such as Immune thrombocytopenia (ITP) as a very rare side effect to Jcovden® (Janssen) should be considered before vaccination. Therefore platelet monitoring is recommended after Jcovden® (Janssen) vaccination in an individual who has a past history of ITP.

Please refer to the National Immunisation Advisory Committee’s guidelines Table 5a.5 for details of contraindications and precautions to an adenoviral vector COVID-19 vaccine
6.3 Protein sub-unit vaccines Nuvaxovid®

Contraindications
Anaphylaxis (serious systemic allergic reaction requiring medical intervention) following a previous dose of the vaccine or any of its constituents including polysorbate 80.

Precautions
Acute severe febrile illness; defer until recovery.

Advice from a relevant specialist should be sought for a person with:
- a history of an immediate severe allergic reaction to multiple drug classes with no identified allergen,
- any other vaccine injected antibody preparation or medicine likely to contain polysorbate 80 or
- idiopathic anaphylaxis

The risks should be weighed against the benefits of vaccination.

Please refer to the NIAC’ immunisation guidelines for details.

6.4 Vaccination after COVID-19 (primary vaccination course)
Those who are unvaccinated and develop laboratory confirmed COVID-19 infection/antigen positive infection with symptoms, should complete a primary vaccination course. The first dose should be given at least four weeks after diagnosis or onset of symptoms.

Those who are partially vaccinated and develop laboratory confirmed COVID-19 infection/antigen positive infection with symptoms, should complete their primary vaccination course. Their next dose should be given at least four weeks after diagnosis or onset of symptoms.

Vaccination is not contraindicated for people with persisting symptoms post COVID-19 unless there is evidence of recent clinical deterioration.

See section 8 for details on booster vaccination and section 7.8.1 for guidance on the additional dose in immunocompromised people.
7. Clinical considerations for COVID-19 vaccines

7.1 Pregnancy

Pregnant women should be offered mRNA COVID-19 vaccines (Comirnaty® (Pfizer BioNTech) or COVID-19 Vaccine Moderna®) at any stage of pregnancy this includes the additional mRNA vaccine dose recommended for immunocompromised individuals and the 1st booster dose. For details of timing of a second booster dose please read below.

Pregnant women are at similar risk of COVID-19 infection to non-pregnant women of the same age.

However, if pregnant women become infected with SARS-COV2 they are at increased risk of hospitalisation, premature delivery if symptomatic in the third trimester and of stillbirth, and at significantly higher risk of ICU admission.

There is now a growing body of evidence on the safety and effectiveness of mRNA COVID-19 vaccination — clearly indicating that the benefits of vaccination outweigh any known or potential risks of COVID-19 vaccination during pregnancy. Long term follow-up of vaccine recipients is ongoing. Please note that women aged less than 30 years should receive Comirnaty®, rather than Spikevax® as a second, booster or additional dose.

Vaccination is the best way to protect both mother and baby from serious harm and mRNA vaccines should be available to pregnant women at all stages of pregnancy. Emerging data indicates that the maternal COVID-19 antibodies can cross the placenta, which may offer neonatal protection.

NIAC and the Institute of Obstetricians and Gynaecologists have developed materials to support healthcare workers and pregnant women in decision making about COVID-19 vaccination. Visit www.rcpi.ie.

Please refer to Section 8.0 for details of booster vaccinations and section 7.8.1 for details of additional dose for immunocompromised individuals.

7.1.1 Vaccination in pregnancy with Nuvaxovid®

There is limited experience with use of the vaccine in pregnant women. Animal studies do not indicate direct or indirect harmful effects with respect to pregnancy, embryo/foetal development, delivery or post-natal development.
Administration may be considered when the benefits outweigh the potential risks to the mother or the fetus and when mRNA vaccines are contraindicated or declined. The pregnant women and a relevant health professional should engage in shared decision-making in advance of vaccination. Counselling should balance the available data on vaccine safety, risks to pregnant women from COVID-19 infection, and a woman's individual risk for infection and severe disease. The two doses should be given 21 days apart at any stage in pregnancy.

7.2 Breastfeeding
There is no known reason to avoid breastfeeding.
All COVID-19 vaccines can be given to women who are breastfeeding.

7.3 Fertility
There is no evidence that any COVID-19 vaccine affects fertility or the fetus. No unexpected pregnancy or infant outcomes have been observed related to COVID-19 vaccination during pregnancy. There is no biologically plausible reason why any of the COVID-19 vaccines would have any effect of fertility. There is no evidence that any of the COVID-19 vaccines have any effect on fertility.

7.4 Individuals with a bleeding disorder
Individuals with a bleeding disorder or receiving anticoagulant therapy may develop haematomas in IM injection sites. Prior to vaccination, inform the recipient about this risk.

For those with thrombocytopenia (platelet count <50 x 10^3/ml) consult the supervising consultant.

People with mild bleeding disorders or on maintenance dose Emicizumab (Hemlibra®) do not require haemostatic cover for vaccination. Details of haemostatic cover for all others can be found in the Patient Information tab at http://www.stjames.ie/services/hope/nationalcoagulationcentre

Those with inherited coagulopathies receiving factor replacement therapy should receive the treatment on the day of vaccination, prior to the IM vaccination.

If there is uncertainty about the need for cover, contact the patient’s Comprehensive Care Centre.

If an individual has a history of thrombocytopenic disorder, the risk of developing low platelet levels
such as Immune Thrombocytopenia (ITP) should be considered before vaccination with virus vector Jcovden® (Janssen), and platelet monitoring is recommended after vaccination with in an individual who has a history of ITP.

**7.5 Individuals taking anticoagulants**
Those receiving long term anticoagulation with either warfarin or heparin are not considered to be at higher risk of bleeding complications following immunisation. There is no reason to expect that there is a greater risk of bleeding complications with the newer types of anticoagulants, such as antiplatelet agents, than with other anticoagulants.

People on Warfarin® should follow their usual schedule for international normalised ratio (INR) testing and can be vaccinated if it is less than 4.0. If the INR is 4.0 or more, follow the advice of the clinic/practice managing Warfarin® and wait until the INR is less than 4.0 to be vaccinated.

**7.6 Technique for IM injections in persons with bleeding disorders or on anticoagulants**
- Use a 23 or 25 gauge needle to reduce the pressure gradient and cause less trauma to the tissue.
- The vaccine should be injected slowly (≥5 seconds) to reduce the risk of tissue damage.
- Firm pressure should be applied to the site for 5 to 10 minutes after injection.
- Stabilisation of the limb will reduce the risk of a haematoma.
- The site should not be rubbed or massaged.
- Instruct the patient/caregiver to monitor the injected limb and to report any concerns to their supervising consultant.

**7.7 Co-administration of COVID-19 vaccines with other inactivated or live vaccines for those aged over 12 years:**
Other vaccines including influenza vaccines may be administered with COVID-19 vaccines at the same time or at any interval before or after a COVID-19 vaccine. This applies to all COVID-19 vaccines including mRNA vaccines, Nuvaxovid® and Jcovden®. If other vaccines are being given at the same time as COVID-19 vaccines it is preferable to give them in separate limbs.

The only exception to this is if someone has received a monkeypox/smallpox vaccine. In this case there should be a 4 week interval before a subsequent COVID-19 vaccine because of the unknown risk of myocarditis.
7.8 Immunosuppression due to disease or treatment

Individuals with immunosuppression due to disease or treatment should be vaccinated if they have no contraindications.

Patients with planned immunosuppressing therapy should ideally complete vaccination two weeks before treatment. The recommended minimum interval may be used.

Specialists should consider the individual’s risk and likelihood of disease exposure, and provide advice based on knowledge and understanding of the patient’s immune status and likely immune response to vaccination.

7.9 Extended primary course for those with immunosuppression due to disease or treatment: mRNA vaccines

Data indicates that those with severe immunocompromise at the time of primary vaccination do not have adequate protection following a primary COVID-19 vaccine course. There is evidence that protection can be enhanced by an additional mRNA vaccine dose, representing an extension of the primary vaccination series.

An additional mRNA vaccine dose should be given to those aged 12 and older with immunocompromise associated with a suboptimal response to vaccines at the time of vaccination who have completed their primary course, regardless of whether the primary course was with an mRNA or an adenoviral vector vaccine. This is an extended primary vaccination course. The additional dose can be given at the same time as the influenza vaccine or any other vaccines.

People less 30 years of age should receive Comirnaty® and not Spikevax®.

The additional vaccine should be given after a minimum interval of four months following the last dose of an authorised COVID-19 vaccine. In exceptional circumstances a 3 month interval may be used. If the vaccine is given before the minimum interval, there is no evidence of the safety and efficacy of administering a further additional dose of vaccine, and therefore a further additional vaccine dose should not be administered.

See Table 5a.2 for conditions that may be associated with a suboptimal response to vaccines (shaded in blue in the table)

---

The EMA has concluded that an extra dose of the COVID-19 vaccines Comirnaty® (Pfizer BioNTech) COVID-19 mRNA Vaccine and SpikeVax® (COVID-19 Vaccine Moderna) may be given to people with severely weakened immune systems, at least 28 days after their second dose. However, in Ireland we follow the interval recommended by the NIAC as described above.
**Vaccination with the additional dose after breakthrough infection**

For those who have had laboratory or antigen-positive confirmed COVID-19 breakthrough infection since primary vaccination with an authorized COVID-19 vaccine, the additional dose should be deferred until at least 4 months from diagnosis. If it is not possible to establish if an individual had breakthrough infection during that timeframe, they may be vaccinated. A minimum 3 month interval may be used in exceptional circumstances.

**Contraindication to mRNA vaccines:**

A non-mRNA vaccine may be considered as an additional dose in those with a contraindication to an mRNA vaccine. For those aged 12 years and older Nuvaxovid may be considered. For individuals who cannot receive Nuvaxovid, COVID-19 vaccine Janssen is licensed from the age of 18 years.

Please refer to section 7.1.3 for details of vaccination in pregnancy.

**7.10 People being treated with chemotherapy for cancer**

Chemotherapy is not a contraindication to COVID-19 vaccination. People taking chemotherapy should be vaccinated according to their priority group (provided there are no contraindications).

Vaccination for children aged 5-11 years is discussed in a separate chapter within this guidance document.
8. Booster COVID-19 Vaccines

8.1 First Booster dose
Booster doses of an mRNA vaccine are recommended for everyone aged 12 years and older including pregnant women and those with immunocompromise associated with a suboptimal response to vaccines who have completed an extended primary course.

The following vaccines are recommended:

**People aged 12-29**
- Comirnaty® 0.3mls (Spikevax® should not be administered).

**People aged 30 years and older:**
- Comirnaty® 0.3mls
- Spikevax® 0.25mls (NOTE THIS IS HALF THE DOSE FOR THE PRIMARY VACCINATION COURSE)

**Recommended intervals:**
- At least 4 months after the last dose of a COVID-19 vaccine. In exceptional circumstances a 3 month interval may be used. If a booster dose was given in error before the minimum 3 month interval, this is not considered a valid vaccine. However revaccination is not recommended.

**Vaccination after COVID-19 breakthrough infection**
- For those who have had laboratory confirmed/antigen positive with symptoms COVID-19 breakthrough infection since full vaccination, the booster dose should be deferred until 4 months after diagnosis. In exceptional circumstances a 3 month interval may be used.
- If it is not possible to establish if an individual had laboratory confirmed/antigen positive with symptoms confirmed breakthrough infection during that timeframe, they may be vaccinated.

**Safety of first booster doses of mRNA vaccines**
First booster doses of mRNA vaccines have not shown any unexpected safety concerns. Myocarditis and pericarditis are very rare risks of mRNA vaccination, predominantly in males aged under 30 years after the second dose of the primary vaccination course. The risk is comparatively lower following a first booster dose and in children aged 5-11 years. Data on additional boosters is limited but no unanticipated safety concerns have been identified.

Please refer to section 5.1 for details of preparation and reconstitution, transport and storage of...
Booster dose of mRNA vaccine in people aged 12 years and older

<table>
<thead>
<tr>
<th></th>
<th>Comirnaty®(0.3ml/30 micrograms)</th>
<th>Spikevax® 0.25mls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booster dose</td>
<td>0.3mls</td>
<td>0.25mls</td>
</tr>
<tr>
<td>Age group</td>
<td>12 years and older</td>
<td>30 years and older</td>
</tr>
<tr>
<td>Interval since last dose</td>
<td>4 months (exceptional circumstances 3 months)</td>
<td>4 months (exceptional circumstances 3 months)</td>
</tr>
<tr>
<td>Interval since COVID-19 infection</td>
<td>4 months (exceptional circumstances 3 months)</td>
<td>4 months (exceptional circumstances 3 months)</td>
</tr>
</tbody>
</table>

Please refer to section 5.2 for details of preparation, transport and storage of vaccine


**Vaccination in pregnancy**

Pregnant women are recommended to receive a 1st booster dose of an mRNA vaccine. The 1st booster dose can be given at any time during pregnancy.

**Nuvaxovid®**

Nuvaxovid® may be considered as a booster dose in those aged 12 years and older with a contraindication or precaution to an mRNA vaccine, or in individuals who have declined vaccination with other COVID-19 vaccines. A 4 month interval is recommended, in exceptional circumstances a 3 month interval may be used.

The need for and timing of homologous booster doses has not been established. No additional doses beyond the two-dose primary series are recommended at this time.

If there is a contraindication or precaution to a booster dose of an mRNA vaccine, or a person has chosen not to receive an mRNA COVID-19 booster, consideration can be given to a heterologous booster of Nuvaxovid following an individual benefit-risk assessment. The booster dose should be
given after a minimum interval of four months.

If pregnant women are receiving Nuvaxovid® as a booster dose, they should have a discussion with a healthcare professional (e.g. clinical lead vaccinator) on their individual risks and benefits of receiving the vaccine. Please refer to section 7.1.3.

8.2 Second booster dose

Please refer to recommendations from the NIAC for details of the rationale for booster doses. A second booster dose should be given to the following groups:

- People aged 65 years and older (NEW)
- People aged 50-64 years (recommended August 2022) (NEW)
- All those aged 12 or older with immunocompromise at the time of primary or booster\(^9\) vaccination associated with suboptimal response to vaccines (a 5\(^{th}\) COVID-19 vaccine dose).
  (See Table 5a.2 of Immunisation Guidelines for Ireland shaded BLUE areas)
- Those aged 12–49 years who have underlying medical conditions associated with a higher risk of severe COVID-19 (See Table 5a.2 conditions in white shaded areas) (a 4\(^{th}\) vaccine dose) .
  NEW
- Those aged 12-49 who are residents of Long Term care facilities NEW
- Health care workers (with the flu vaccine if possible) NEW

8.2.1 2\(^{nd}\) Booster vaccination in pregnancy

Pregnant women should already have received a primary vaccination course and a booster dose, in line with recommendations for the general population. Pregnant women are also recommended to receive a second booster dose in pregnancy. The timing of this second booster vaccine is recommended to be at 16 weeks gestation or later. This timing is to enhance protection to the infant and the mother.

Pregnant women who have had COVID-19 infection during the same pregnancy should receive the 2\(^{nd}\) booster dose at least 4 months after diagnosis (and at 16 weeks or more gestation).

If a woman has already received a 1\(^{st}\) booster vaccination in the current pregnancy, there is no

\(^9\) Note the advice regarding immunocompromise at the time of booster vaccination as well as primary vaccination
requirement for a 2nd booster dose in this pregnancy.

**Vaccines recommended for 2nd booster dose**

a) For those aged 12-29 years, Comirnaty® (0.3ml/30 micrograms) should be given  
b) For those aged 30 years and older, Comirnaty® (0.3ml/30 micrograms) or Spikevax (0.25ml/50 micrograms) should be given.

If an mRNA vaccine is contraindicated or declined, consideration may be given to using a non mRNA vaccine as the second booster vaccine, following an individual benefit-risk assessment.

**Timing of 2nd booster dose:**
The second booster vaccine is recommended at least four months after the first booster. A minimum interval of three months may be used in exceptional circumstances.

**2nd Booster vaccine safety**
First and second booster doses of mRNA vaccines have not shown any unexpected short term safety concerns. Myocarditis and pericarditis are very rare risks of mRNA vaccination, predominantly in males aged under 30 years after the second dose of the primary vaccination course and the risk appears to be comparatively lower following a first booster dose.

Data on second booster doses is more limited but experience has not revealed any new safety concerns.

### Recommended interval since last vaccine dose for all COVID-19 vaccines

<table>
<thead>
<tr>
<th>Age 12 years and older</th>
<th>Additional dose</th>
<th>Booster dose**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 5-11 years</td>
<td>At least 28 days</td>
<td>At least 4 months*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age 12 years and older</th>
<th>Additional dose</th>
<th>Booster dose**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 5-11 years</td>
<td>At least 4 months*</td>
<td>At least 4 months*</td>
</tr>
</tbody>
</table>

*In exceptional circumstances, 3 months  
**applies to 1st, 2nd and 3rd booster doses
8.3 Third booster dose
A third mRNA COVID-19 booster vaccine is recommended for
- those aged 65 years and older (5th covid vaccine)
- those aged 12 – 64 years with immunocompromise associated with a sub optimal response to vaccines at the time of their primary or booster vaccination (6th covid vaccine).

These vaccines are recommended to be administered with the seasonal influenza vaccine where practicable.

Vaccines recommended for 3rd booster dose
a) For those aged 12-29 years, Comirnaty® (0.3ml/30 micrograms) should be given
b) For those aged 30 years and older, Comirnaty® (0.3ml/30 micrograms) or Spikevax (0.25ml/50 micrograms) should be given.

If an mRNA vaccine is contraindicated or declined, consideration may be given to using a non mRNA vaccine as the second booster vaccine, following an individual benefit-risk assessment.

Timing of 3rd booster dose
The second booster vaccine is recommended at least four months after the first booster. A minimum interval of three months may be used in exceptional circumstances.
NIAC recommends that the 3rd booster dose be given at the same time as the seasonal influenza vaccine where practicable.
9. Protection from COVID-19 vaccines after a primary vaccination course

Following a primary vaccination course vaccine recipients may not be protected until:

- 7 days after the second dose of Comirnaty® (Pfizer BioNTech)
- 14 days after second dose of Spikevax® (Moderna).
- 15 days after the second dose of Vaxzevria® (AstraZeneca) (vaccine no longer available in Ireland)
- 14 days after COVID-19 Jcovden® (Janssen)
- 7 days after the second dose of Nuvaxovid® (Novavax)

For those who received a 1st dose of Vaxzevria® and an mRNA vaccine as a 2nd dose, protection is assumed from
- 7 days after the dose of Comirnaty® (Pfizer BioNTech)
- 14 days after the dose of Spikevax® (Moderna).

Clinical trial follow-up is on-going to determine the duration of protection from COVID-19 vaccines.

Duration of protection after a 1st or 2nd booster COVID-19 vaccination has not yet been determined.

Vaccinated persons should be informed that they should continue to follow all current public health guidance to protect themselves and others.
10. **Post Vaccination**

10.1 **Recording vaccination**

The individual should be given a record of vaccination and HSE advice leaflet for after vaccination.

Following a first dose of vaccine, check that the vaccinated person knows when to return for their second dose if they have received a vaccine with a two dose schedule. Vaccine administration should be recorded in the IT system.

**Table 16: Recording vaccine details**

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>Use before date and time of vaccine</th>
<th>Batch number of vaccine</th>
<th>Batch number of Sodium Chloride diluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comirnaty® (Pfizer BioNTech)</td>
<td>Use before date of vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spikevax® (Moderna)</td>
<td>Use before date of vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jcovden® (Janssen)</td>
<td>Use before date of Vaccine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuvaxovid® (Novavax)</td>
<td>Expiry date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comirnaty® (Pfizer BioNTech)**
The use before date and time of the vaccine must be recorded in the IT system (The use before date and time will be stamped on the vaccine box delivered by HSE NCCS. The batch number of the vaccine must be recorded. The Use Before date supersedes the expiry date on the vial.

The batch number of the 0.9% Sodium Chloride solution should also be recorded.

**Spikevax® (COVID-19 Vaccine Moderna)**
The use before date of the vaccine must be recorded in the IT system (the use before date and time should be written on the vaccine box by the person receiving the vaccine at the vaccination clinic). The batch number of the vaccine must be recorded.

**Jcovden® (Janssen)**
The use before date of the vaccine must be recorded in the IT system (the use before date will be labelled on the vaccine box delivered by HSE National Cold Chain Service). The batch number of the vaccine must be recorded.
The expiry date of the vaccine must be recorded in the IT system. The batch number of the vaccine must be recorded.

10.2 Observation period
Cases of anaphylaxis have been reported following administration of COVID-19 vaccines.

Please note that NIAC recommends a 15 minute observation period following administration of a homologous or heterologous booster COVID-19 mRNA vaccine.

Recommended intervals:
- All vaccine recipients (see exceptions below): 15 minutes of observation
- Those with a history of mastocytosis: 30 minutes
- Those with immediate itching, swelling or urticarial reaction at the vaccination site: 30 minutes or longer as clinically indicated

Vaccine recipients should be advised to seek urgent medical attention if they have symptoms suggestive of an allergic reaction such as difficulty breathing, feeling faint, rapid heartbeat or a skin rash.

11. Adverse Reactions

11.1 Adverse reactions of COVID-19 vaccines
The adverse events are listed below in Table 16 according to the following frequency: Very common (≥ 1/10), Common (≥ 1/100 to < 1/10), Uncommon (≥ 1/1,000 to < 1/100), Rare (≥ 1/10,000 to < 1/1,000), Very rare (< 1/10,000).

Table 17: Adverse reactions of COVID-19 vaccines from clinical trials and post authorisation experience

<table>
<thead>
<tr>
<th>Type of Reaction</th>
<th>Comirnaty® (Pfizer BioNTech)</th>
<th>Spikevax® (Moderna)</th>
<th>Jcovden® (Janssen)</th>
<th>Nuvaxovid® (Novavax)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Common (≥ 1/10)</td>
<td>Local: injection site swelling and erythema</td>
<td>Local: injection site pain, injection site swelling, lymphadenopathy (axillary swelling and tenderness of the vaccination arm)</td>
<td>Local: injection site pain</td>
<td>Local: Injection site Tenderness, Injection site pain</td>
</tr>
<tr>
<td>Rare (≥ 1/10,000 to &lt; 1/1,000)</td>
<td>General: acute peripheral facial paralysis</td>
<td>General: acute peripheral facial paralysis/Bell’s Palsy, facial swelling in those who have had dermatological fillers Hyponoesthesia Paraesthesia</td>
<td>General: Hypersensitivity, urticarial, hypoesthesia, lymphadenopathy, vomiting and tinnitus Venous Thromboembolism</td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td></td>
</tr>
<tr>
<td>Very rare (&lt; 1/10,000)</td>
<td>General: acute peripheral facial paralysis</td>
<td>General: acute peripheral facial paralysis/Bell’s Palsy, facial swelling in those who have had dermatological fillers Hyponoesthesia Paraesthesia</td>
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<td></td>
</tr>
<tr>
<td>Uncommon (≥ 1/1,000 to &lt; 1/100)</td>
<td>Local: injection site pruritus</td>
<td>Local: injection site pruritus</td>
<td>Local: Injection site pruritus</td>
<td></td>
</tr>
<tr>
<td>Common (≥ 1/100 to &lt; 1/10)</td>
<td>Local: injection site erythema, injection site urticarial, injection site swelling</td>
<td>Local: Injection site swelling</td>
<td>Local: Injection site swelling</td>
<td></td>
</tr>
<tr>
<td>General: nausea, vomiting</td>
<td>General: rash</td>
<td>General: cough, fever, chills, joint pain,</td>
<td>General: pyrexia, chills, pain in extremity</td>
<td></td>
</tr>
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<td>General: pyrexia, chills, pain in extremity</td>
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<td>General: pyrexia, chills, pain in extremity</td>
<td></td>
</tr>
</tbody>
</table>
### Not known (cannot be estimated from the available Data)

<table>
<thead>
<tr>
<th>Anaphylaxis</th>
<th>Erythema Multiforme</th>
<th>Anaphylaxis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial swelling in those who have had dermatological fillers</td>
<td>Extensive swelling of the vaccinated limb</td>
<td>Transverse Myelitis</td>
</tr>
<tr>
<td>Extensive swelling of the vaccinated limb</td>
<td>Myocarditis and pericarditis</td>
<td>Myelitis</td>
</tr>
<tr>
<td>Myocarditis and pericarditis</td>
<td>Erythema Multiforme</td>
<td>Immune thrombocytopenia</td>
</tr>
<tr>
<td>Erythema Multiforme</td>
<td>Paraesthesia and hypoesthesia</td>
<td>Cutaneous small vessel vasculitis*</td>
</tr>
</tbody>
</table>

*Low platelet counts were noted in some participants who underwent blood tests as part of clinical trials, these were asymptomatic, mild and were not associated with clotting events

** Severe and very rare cases of thrombosis in combination with thrombocytopenia have been reported post-marketing. These included venous thrombosis such as cerebral venous sinus thrombosis, splanchic vein thrombosis, as well as arterial thrombosis.

***Throughout the clinical trials, an increased incidence of hypertension following vaccination with Nuvaxov (n=46, 1.0%) as compared to placebo (n=22, 0.6%) was observed in older adults during the 3 days following vaccination.

*product information will be updated

- Events of anaphylaxis have been reported after COVID-19 vaccines. Appropriate medical treatment and supervision should always be readily available in case of an anaphylactic reaction following the administration of the vaccine
- Very rare events of neuroinflammatory disorders have been reported following vaccination with COVID-19 vaccines. A causal relationship has not been established.
- Based on a review of small number of cases, a warning will be added to the product information regarding a few cases of capillary leak syndrome (CLS) flare-ups have been reported in the first days after vaccination with Spikevax. Healthcare professionals should be aware of signs and symptoms of CLS to promptly recognise and treat the condition. In individuals with a medical history of CLS, planning of vaccination should be made in collaboration with appropriate medical experts. Note also that PRAC did not agree that there should be a contraindication to vaccination. There are also some literature reports of Covid-19 infection causing severe flare ups of CLS.

A higher rate of pyrexia (after Comirnaty®) and local and systemic adverse events (after Spikevax® (COVID-19 Vaccine Moderna) were seen after the second dose.
A higher rate of injection site reactions (redness, swelling, tenderness or pain), nausea or vomiting, myalgia, arthralgia, fatigue and malaise, and pyrexia were seen after the second dose of Nuvaxovid® (Novavax).

If required, symptomatic treatment with analgesic and/or anti-pyretic medicinal products (e.g. paracetamol containing products or ibuprofen) may be used. Note: Ibuprofen is not recommended for pregnant women

11.2 Adverse events following Comirnaty® (Pfizer/BioNTech) and Spikevax® (Moderna) and very rare cases of Myocarditis and Pericarditis

There has been an increase of very rare cases of myocarditis and pericarditis following vaccination with both Comirnaty and Spikevax.

The cases occurred particularly in males aged under 30 years, and following the second dose of Spikevax. In the US, reported rates in males were 1 case per 100,000 after a first dose, and 6.7 per 100,000 after a second dose.

Reporting rates for vaccine-associated myocarditis were highest among males aged 12–29 years. In Israel, the estimated incidence 2 per 100,000 persons who had received at least one dose of Comirnaty. The highest incidence of myocarditis was 10.7 per 100,000 in males aged 16-29 years. Most cases of myocarditis were mild or moderate in severity.

Studies have shown that after the second dose of Comirnaty there were about 2.6 extra cases of myocarditis per 100,000 males aged 12 - 29 years after seven days and 5.7 extra cases of myocarditis per 100,000 males aged 16 - 24 years after 28 days. The rates for Spikevax were three to five times higher.

Healthcare professionals should be alert to the signs and symptoms of myocarditis and pericarditis. They should tell people receiving these vaccines to seek immediate medical attention if symptoms indicative of myocarditis or pericarditis occur. These include:

- breathlessness,
- palpitations and
- chest pain.

Healthcare professionals should consult applicable guidance and/or consult specialists (e.g. cardiologists) to diagnose and treat these conditions.

Please refer to section 8 for details of booster doses.
11.3 Adverse events following Jcovden® (Janssen) and very rare cases of Thrombosis and Thrombocytopenia Syndrome (TTS)

The NIAC has issued recommendations in relation to Jcovden® (Janssen) following the reports of the EMA of rare thromboembolic events associated with thrombocytopenia after vaccination called Thrombosis and Thrombocytopenia Syndrome (TTS) and review of data from the US, and the EMA in relation to Jcovden®.

Based on recent data from the United States, the estimated risk of TTS after vaccination with Jcovden® is 1 in 312,000. The risk of this rare condition is higher in younger people.

The clinical features of TTS include cerebral venous sinus thrombosis (CVST), splanchnic vein thrombosis and thrombosis at other sites, arterial ischaemia in combination with thrombocytopenia. CVST and thrombosis without thrombocytopenia can occur in the general population, however the biological mechanism in these and other thrombosis such as a deep vein thrombosis differs from that in TTS.

The risk of TTS appears higher in younger age groups. These are the groups where risk of severe COVID-19 outcome is less, although the age-related risk of long-COVID is unknown.

As the risk/benefit of these vaccines is different in different age groups NIAC recommends that Jcovden® (Janssen) should be given to people aged 50 years and older, and that younger people should be offered an mRNA vaccine. In Ireland, Jcovden® (Janssen) is offered to individuals from the age of 18 who cannot receive an mRNA vaccine due to a contraindication or precaution.

Early recognition and prompt treatment are important in the management of TTS. Healthcare professionals should be alert to the signs and symptoms of thromboembolism and/or thrombocytopenia.

Recipients of Jcovden® should be advised to seek immediate medical attention if they develop the following symptoms in the weeks after vaccination:

- shortness of breath
- chest pain
- leg swelling
- persistent abdominal pain
- severe or persistent headaches (particularly 3 or more days after vaccination)
- blurred vision
• confusion (or mental status change)
• seizures
• petechiae or ecchymoses beyond the site of vaccination

Healthcare professionals should seek early expert advice from the National Coagulation Centre about the specialised testing and treatment options for patients presenting with thromboembolic events that are associated with thrombocytopenia, (including Disseminated Intravascular Coagulation (DIC) or Cerebral venous sinus thrombosis (CVST)) occurring within weeks following vaccination with Jcovden® (Janssen). Furthermore, the EMA has recommended that healthcare professionals who diagnose thrombocytopenia post vaccination should check for any thrombosis and vice versa (i.e. if they have a diagnosed thrombosis to check for thrombocytopenia).

11.4 Adverse events following Jcovden® (Janssen) and Rare cases of Venous Thromboembolism (VTE)
VTE (which is different from TTS or Thrombosis with Thrombocytopenia syndrome) was added a rare (frequency >1/10,000 to <1/1,000) side effect of Jcovden® (Janssen) based on data from clinical trials and post marketing surveillance. Healthcare professionals and individual receiving the vaccine should be aware of this risk, especially in those who may have an increased risk of VTE.

11.5 Adverse events following Jcovden® (Janssen) and very rare cases of Capillary Leak Syndrome (CLS)
On the 9th of July 2021, the EMA’s safety committee (PRAC) issued the results of a review of very rare cases of capillary leak syndrome following vaccination with Jcovden® (Janssen). Very rare cases of capillary leak syndrome (CLS) have been reported following vaccination with Jcovden® (Janssen), with an estimated reporting rate of one case per approximately 6 million doses. A history of CLS has been reported in at least one of the cases.

Capillary leak syndrome is a very rare, serious condition that causes fluid/plasma leakage from capillaries resulting in swelling mainly in the arms and legs, low blood pressure, thickening of the blood and low blood levels of albumin.

The EMA concluded that people who have previously had a very rare syndrome called capillary leak syndrome, must not be vaccinated with Jcovden® (Janssen). The Committee also concluded that capillary leak syndrome should be added to the product information as a new side effect of the vaccine, together with a warning to raise awareness among healthcare professionals and patients of this very rare risk.

(Refer to Section 6 for contraindications and precautions to Jcovden® (Janssen)).
11.6 Jcovden® (Janssen) and very rare cases of Guillain-Barre Syndrome

Information for vaccinated people
Guillain-Barre syndrome (GBS) has occurred very rarely in people who have had Jcovden® (Janssen). GBS is a rare neurological disorder in which the body's immune system mistakenly attacks nerves located outside the brain and spinal cord. Symptoms of GBS range from mild weakness to more severe paralysis. Most people eventually fully recover even from the most severe symptoms, while some may continue to have some degree of weakness.

People receiving Jcovden® (Janssen) should seek immediate medical attention if they develop the following:
- double vision or difficulty moving eyes
- difficulty swallowing, speaking, or chewing
- coordination problems and unsteadiness
- difficulty walking
- tingling sensations in the hands and feet
- weakness in the limbs, chest or face
- problems with bladder control and bowel function

Healthcare professionals should be alert to signs and symptoms of GBS to ensure correct diagnosis, to initiate adequate supportive care and treatment and to rule out other causes.

Transverse myelitis (TM) have been reported very rarely following vaccination with Jcovden® (Janssen). Healthcare professionals should be alert to TM signs and symptoms to ensure correct diagnosis, in order to initiate adequate supportive care and treatment and to rule out other causes.

11.7 Immune Thrombocytopenia (ITP) with Jcovden® (Janssen)
ITP is a condition in which the immune system mistakenly targets blood cells called platelets that are needed for normal blood clotting. It can cause bleeding and can sometimes be fatal. Very few cases of ITP have occurred after Jcovden® (Janssen). It has usually occurred within 4 weeks of vaccination and will be added as a side effect for both vaccines (frequency unknown).

If an individual has a history of thrombocytopenic disorder, the risk of developing low platelet levels such as ITP should be considered before vaccination, and platelet monitoring is recommended after vaccination with either of these vaccines in an individual who has a history of ITP.
11.8 Reporting adverse reactions

The Health Products Regulatory Authority (HPRA) is responsible for managing the national pharmacovigilance system. The HPRA reports nationally occurring adverse reactions to the EMA.

Adverse reaction reporting is an important part of the EMA intensive monitoring plan for COVID-19 vaccines, so that any changes in benefit risk balance can be promptly detected and acted upon.

This enables the EMA to continue to safeguard public health safety.

COVID-19 vaccines are subject to additional monitoring. This will allow quick identification of new safety information.

Healthcare professionals and members of the public are encouraged to report any suspected adverse reactions to the HPRA following the instructions available on the HPRA website www.hpra.ie. As much information as is known should be provided, and where possible, the vaccine batch number should be included.

11.9 Reporting of incidents during the vaccination session to HSE

In the case of medication errors that directly involve the vaccine recipient, i.e. wrong medication/dose/route being administered or another medication error, the vaccinator must remain with the person and closely monitor them for any adverse reactions. Vital signs should be recorded and the vaccine recipient should be reviewed by a medical practitioner.

The incident must be reported to the relevant line manager/person in charge as soon as possible. The incident and all actions taken must be recorded and the relevant National Incident Management Report Form (NIRF) completed as soon as is practicable after the event occurs and within one working day. (National Incident Report Form (NIRF 01 – V11)) (2020) available at: https://www.hse.ie/eng/about/qavd/incident-management/

The vaccine recipient and/or significant others should be informed of the incident. An incident report form must be completed by the vaccinator and forwarded to local or regional Risk Manager as per local policy.

Any suspected adverse reactions associated with medication errors should be reported to the HPRA as outlined above.
12. Differentiating between a reaction to the vaccine and symptoms of COVID-19 disease

Vaccinated individuals should be advised that COVID-19 vaccines may cause a mild fever which usually resolves within 48 hours. This is a common, expected reaction and isolation and further investigation is not required unless COVID-19 is suspected.

If the fever lasts for more than 48 hours, or if other symptoms of COVID-19 are present, the person should self-isolate and seek medical advice.

As has always been recommended, any fever after vaccination should be monitored and if individuals are concerned about their health at any time, they should seek medical advice.

See Appendix C for a statement from the NIAC.

13. Effect of COVID-19 vaccines on COVID-19 tests

Receiving a COVID-19 vaccine will not result in a false positive PCR or antigen COVID-19 test.

The spike protein is not a molecular target of either PCR or antigen COVID-19 tests. [The antibodies produced following vaccination may affect the result of a COVID-19 antibody test, but only if the test looks for antibodies against the spike protein of the coronavirus.]
14. Guidance for vaccination of those who are contacts of a case of COVID-19

If a person is required to restrict their movements, they must not attend for vaccination until the period of restricted movements has been completed. See https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/contacttracingguidance/

Where vaccination is being carried out in Residential Care Facilities (residents and staff) the following advice applies:

Primary vaccination:
Asymptomatic close contacts of cases of COVID-19 may receive COVID-19 vaccine.

Asymptomatic individuals who have undergone testing for COVID-19 and who are residents in a long-term care facility should also proceed with vaccination while awaiting the results of their tests. Healthcare staff in LTCFs should follow all public health and occupational health guidance.

www.hpsc.ie

Vaccination is a low contact clinical activity. Hand hygiene, PPE and infection prevention and control guidance should be followed. See www.hpsc.ie for details.
15. FAQs about COVID-19 vaccines

(please refer to Section 16 for Comirnaty® 10 mcg/dose formulation for children aged 5-11 years)

15.1 Should unvaccinated people who have had COVID-19 infection be offered COVID-19 vaccine?
Yes. People who have had COVID-19 infection should be offered COVID-19 vaccines.

The primary vaccination course should be deferred until clinical recovery from COVID-19 and at least four weeks after diagnosis or onset of symptoms, or four weeks from the first PCR positive specimen in those who are asymptomatic.

15.2 What if somebody is diagnosed with COVID-19 infection after a first dose of vaccine of the primary vaccination course?
Vaccination with the second dose should be deferred until clinical recovery from COVID-19 and at least four weeks after diagnosis or onset of symptoms, or four weeks from the first PCR positive specimen in those who are asymptomatic.

Please refer to sections 15.22 and 15.23 for details of timing of booster and immunocompromised additional doses of vaccination after breakthrough infection.

15.3 What if the second dose of COVID-19 vaccine in the primary vaccination course is administered at less than the recommended interval
The day that the first dose of vaccine is given is day 0

**Comirnaty® (Pfizer BioNTech)**
- If the second dose is given at an interval of less than 17 days, this is not considered a valid dose. A third dose should be given 28 days after the second (invalid) vaccine.
- If a dose is given between 17 and 27 days, this is considered a valid dose.

**Spikevax® (COVID-19 Vaccine Moderna)**
- If a dose is given at an interval of less than 24 days, it is not considered a valid dose. A third dose should be given 28 days after the second (invalid) vaccine.
- If a dose is given between 24 and 27 days, this is considered a valid dose.
Nuvaxovid® (Novavax)

- If a dose is given at an interval of less than 17 days, it is not considered a valid dose. However there is no evidence of the efficacy of safety of an additional dose in these circumstances so revaccination is not advised
- If a dose is given between 17 and 21 days, this is considered a valid dose.

15.4 For the primary vaccination course, what if the second dose of a COVID-19 vaccine is administered at longer than the recommended interval?

If the interval between doses is longer than the recommended interval, the second dose should still be given. The course does not need to be restarted.

15.5 What if the vaccine leaks during administration?

If some of the vaccine leaks out of the syringe during administration this is not a valid dose. A further dose of the vaccine should be administered at a separate site at the same visit.

15.6 What if a vaccine is given after the expiry date or after the use before or discard time?

If a vaccine is given after the expiry date or after the use before or discard date and time it is considered an invalid dose, and the dose should be repeated that day or as soon as possible. This should be explained to the person and a correctly diluted dose of the vaccine should be given as soon as possible. This should be reported to HPRA and an incident report form completed.

15.7 What if the whole multidose vial of vaccine is administered instead of the recommended dose?

Trial data showed that higher doses of vaccine were not harmful but the person is more likely to have more local reactions with very painful arms being reported.

Trial data of Nuvaxovid® showed that higher doses of the vaccine were not harmful but the person is more likely to have more local and systemic reactions (malaise, fatigue, myalgia, headache, arthralgia and fever) when a higher second dose was given.

The person should be reassured that this is not harmful but that they are more likely to experience the adverse events as above.
They should be given their second dose of vaccine according to the recommended schedule. This should be reported to HPRA and an incident report form completed.

15.8 What if only the diluent of Comirnaty® (Pfizer BioNTech) is given?
The diluent for Comirnaty® (Pfizer BioNTech) is sodium chloride, which is salt and purified water so no adverse reactions would be expected.

This should be explained to the person and a correctly diluted dose of the vaccine should be given as soon as possible. This should be reported to HPRA and an incident report form completed.

15.9 What if an over-diluted Comirnaty® (Pfizer BioNTech) vaccine is administered?
In this case, the person will not have received a sufficient dose of vaccine for protection.

This should be explained to the person and a correctly diluted dose of the vaccine should be given as soon as possible. This should be reported to HPRA and an incident report form completed.

In settings where doses may be prepared in advance, if eight doses have been obtained from a vial, each of the syringes must be examined by another person to identify the syringe with less than 0.3ml. If all syringes contain 0.3ml then more than 1.8ml must have been added and the vial has been over-diluted.

15.10 What if a person under 12 years is given Comirnaty® 30 micorgrams/dose (Pfizer BioNTech) vaccine inadvertently?
The vaccine formulation used for adults is licensed by the EMA from age 12 years and above only. The young person and their parent/guardians should be informed. A HSE incident form should be completed and the incident reported to the HPRA. The young person and their parents/guardians should be advised regarding the common adverse events expected after vaccination. They should also be informed of the very rare adverse event of myocarditis and pericarditis, the symptoms to be aware of, and to seek medical attention if they develop.

15.11 What if a person under 30 years is given Spikevax® inadvertently?
If a person under the age of 30 years receives the vaccine inadvertently, an incident form should be completed. The person (and their parents/guardians if less than 16 years old) should be advised regarding the common adverse events expected after vaccination. They should also be advised of
the very rare reported adverse event of myocarditis and pericarditis and the symptoms to be aware of. If the person who received the vaccine is less than 12 years of age, the incident should also be reported to the HPRA. (the vaccine is not licensed for this age-group).

15.12 What if a person under 18 years is given Jcovden® (Janssen) inadvertently
This should be reported to the HPRA and an incident form completed. The person (and their parents/guardians if less than 16 years old) should be advised regarding the common adverse events expected after vaccination.

They should be advised of Thrombosis with Thrombocytopenia syndrome (TTS) reported very rarely after vaccination, and of the symptoms to be aware of, and to seek urgent medical attention should these appear. They should also be advised of the very rare reported adverse event of capillary leak syndrome and of the symptoms to be aware of. They should also be advised of the very rare adverse event of Guillain-Barré syndrome and of the symptoms to be aware of.

15.13 What if a person aged under 12 is given Nuvaxovid® inadvertently?
This should be reported to the HPRA and an incident form completed. The person (and their parents/guardians if less than 16 years old) should be advised regarding the common adverse events expected after vaccination.

15.14 Does a woman who wishes to conceive need to leave any interval after getting COVID-19 vaccines before getting pregnant?
It is not necessary to leave any interval after having the vaccine and becoming pregnant.

15.15 Can COVID-19 vaccines affect fertility?
There is no biologically plausible reason why the vaccines would affect fertility. The vaccines cannot interact with a person’s DNA. The EMA licensed documentation states that animal studies do not indicate direct or indirect harmful effects on fertility.

15.16 Where can COVID-19 vaccine be given in the event that a person cannot receive the vaccine in the deltoid muscle?
In the event that a person cannot receive the vaccine in the deltoid muscle, the vaccine can be given into the vastus lateralis muscle.
15.17 What size needle should be used to vaccinate people with an elevated BMI?
If it is available, it is recommended to use a 23-25 gauge 40mm needle when vaccinating females >90kg and males >120kg. If a 38-40 mm needle is not available, a 23-25 gauge 25mm needle should be used.
(As an example, the quadrivalent inactivated influenza flu vaccine that is licensed and used in Ireland and in Europe comes in a prefilled syringe with a fixed needle attached, and the needle is not the longer 40mm in length).

15.18 Can other vaccines be co-administered with COVID-19 vaccines for those aged 12 years and older?
Yes, other vaccines may be co-administered with COVID-19 vaccine or at any interval. If other vaccines are being given at the same time as COVID-19 vaccines it is preferable to give them indifferent limbs.

The exception to this is moneypox/smallpox vaccine. There should be an interval of four weeks between monkeypox/smallpox vaccine and a subsequent COVID-19 vaccine because of the unknown risk of myocarditis. No interval is required between a COVID-19 vaccine and a subsequent monkeypox/smallpox vaccine (see Chapter 13a).

15.19 What is the recommended minimum interval between 1st and 2nd dose of a heterologous primary course (2 different vaccines)?
The recommended minimum interval between a 1st and 2nd dose in a heterologous primary course is 28 days.

15.20 What is the advice if someone has received a COVID-19 vaccine outside Ireland?
Those who have documentary evidence of a complete COVID-19 vaccination course with a COVID-19 vaccine authorised by the FDA, MHRA or recommended by WHO should be considered fully vaccinated.

Those who have partially completed a COVID-19 vaccine course with a vaccine authorised by the FDA, MHRA or recommended by WHO should be offered an EMA authorised COVID-19 vaccine to complete the series, and then should be considered fully vaccinated. The minimum interval between the last vaccine dose and an EMA authorised COVID-19 vaccine is 28 days.
Those who have received a partial or complete course of COVID-19 vaccine not authorised by the FDA, MHRA or recommended by WHO should be offered a complete course of an EMA authorised COVID-19 vaccine. The minimum interval between the last dose and an EMA authorised COVID-19 vaccine is 28 days.


**WHO:** [https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/covid-19-materials](https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/covid-19-materials)

15.21 **Who is recommended to receive a first COVID-19 booster dose?**

NIAC recommends people aged 12 years and over should be offered a booster dose of a COVID-19 vaccine. See Section 8 for more details.

15.22 **Who is recommended to receive a second COVID-19 booster dose?**

- People aged 65 years and older
- People aged 50-64
- People aged 12-49 with immunosuppression associated with a sub-optimal response to vaccination at the time of their primary or booster vaccination (shaded in blue in Table 5.a.2)
- People aged 12-49 with underlying medical conditions associated with a high risk or very high risk of severe COVID-19 (Shaded in white in Table 5.a.2).
- People aged 12-49 who are residents of long-term care facilities
- Healthcare workers, and when practicable, this should be given at the same time as seasonal influenza vaccine

15.23 **Who is recommended to receive a third COVID-19 booster dose?**

- People aged 65 years and older
- People aged 12-49 with immunosuppression associated with a sub-optimal response to vaccines at the time of their primary or booster vaccination (shaded in blue in Table 5.a.2)

When practicable, the third booster dose should be given at the same time as seasonal influenza vaccine.
15.24 What are the recommendations regarding the 2nd booster m-RNA COVID-19 vaccination in pregnancy?

All pregnant women should have received a primary COVID-19 vaccination course as well as a 1st booster dose, in line with the recommendations for the general population. If a pregnant woman has not already received these vaccines, she should receive the required vaccines at the recommended intervals, which can be given at any stage of pregnancy.

Pregnant women who have already completed primary and 1st booster vaccination, are recommended a 2nd mRNA vaccine booster dose in pregnancy. The timing of this 2nd booster dose should be at 16 weeks gestation or later. This timing is to enhance protection to the mother and the infant.

If a 1st booster mRNA vaccine dose has already been administered earlier in the pregnancy, a 2nd booster dose is not required.

15.25 Should a pregnant woman who has had COVID-19 infection during pregnancy receive a 2nd booster dose of COVID-19 in the same pregnancy?

Yes. She should receive a 2nd booster dose at least 4 months after diagnosis and at 16 weeks or more gestation.

If a 1st booster mRNA vaccine dose has already been administered earlier in the pregnancy, a 2nd booster dose is not required.

15.26 What is the advice for timing of the first mRNA booster dose in someone who has had a breakthrough infection since completing their primary vaccination course?

If a person has had laboratory confirmed (PCR) breakthrough COVID-19 infection/antigen positive infection with symptoms since completion of their primary course, the mRNA booster dose should be deferred for at least 4 months. In exceptional circumstances a 3 month interval may be used.

15.27 What is the advice for timing of an additional dose of vaccine for an immunocompromised person who has had a breakthrough infection since completing their primary vaccination course?

If a person has had laboratory confirmed (PCR) breakthrough COVID-19 infection since completion of their primary course, the additional dose should be deferred for at least 4 months after diagnosis. In exceptional circumstances a 3 month interval may be used. If it is not possible to establish if a
person had breakthrough COVID-19 infection in this timeframe, they may be vaccinated.

15.28 What if a person becomes immunocompromised after receiving their booster dose. do they then need an additional dose as well?
No. Individuals with immune-compromise at the time of primary COVID-19 vaccination may have a sub-optimal response to the vaccine. They are recommended an additional dose to enhance their response to the primary vaccination course. It is person's condition at the time that they receive the primary vaccination course that determines whether or not they need an additional dose.

The immunocompromising conditions associated with a suboptimal response to the primary vaccination course are shaded in blue in Table 5a.2 of the Immunisation Guidelines

15.29 What if a person is immunocompromised at the time that they receive the booster dose. Do they then need an additional dose as well?
No. Individuals with immune-compromise at the time of primary COVID-19 vaccination may have a sub-optimal response to the vaccine. They are recommended an additional dose to enhance their response to the primary vaccination course. It is person's condition at the time that they receive the primary vaccination course that determines whether or not they need an additional dose.

However their response to the booster dose may be sub-optimal, so they are recommended to receive a 2nd booster dose, which should be given 4 months after the 1st booster dose.

The immunocompromising conditions associated with a suboptimal response to the primary vaccination course are shaded in blue in Table 5a.2 of the Immunisation Guidelines

15.30 What if an additional dose of an mRNA vaccine for immunocompromised people is given before the minimum interval? Is there a need to repeat the dose?
If the vaccine is given before the minimuminterval (3months), there is no evidence as to the safety and efficacy of giving a further dose under these circumstances to complete the primary course. The dose should not be repeated. However, a booster vaccine should still be given at the recommended interval (at least 4 months).
The person (and their parents/guardians if less than 16 years old) should be advised regarding the error and the incident reported. The error should be reported to the HPRA.

15.31 What if an mRNA booster dose is given before the minimum interval? Is there a need to repeat the dose?
If the vaccine is given before the minimum interval there is no evidence as to the safety and efficacy of giving a further dose under these circumstances. The dose should not be repeated.

The person (and their parents or guardian if less than 16 years old) should be advised regarding the error and the incident reported. The error should be reported to the HPRA.

15.32 What if a person is given a booster dose of 0.5mls dose of Spikevax®/Moderna instead of the recommended and licensed 0.25ml dose?
The person should be informed of the error. The error should be reported to the HPRA, and an incident form completed. The person should be informed of the risks of very rare side effects from the vaccine including myocarditis and pericarditis, and the symptoms to be aware of.

15.33 What if a person less than 30 years of age is given a booster or an additional dose of Spikevax®?
The person should be informed of the error. An incident form completed. The person should be informed of the risks of very rare side effects from the vaccine including myocarditis and pericarditis and the symptoms to be aware of.

15.34 What should I do if a person who is immunocompromised and is receiving an additional dose of Spikevax® receives a 0.25ml dose (a booster dose) in error?
If the error is discovered on the same day a further 0.25ml dose can be given and these two doses can be considered as a valid vaccine.

If the error is discovered later, they should receive the correct 0.5ml dose as soon as possible (no minimum time interval required).

The subsequent booster dose of 0.25ml should be given at the recommended interval i.e. at least 3 months after the correct dose (or the two 0.25mls doses) is administered.

The person should be informed of the error and an incident form completed. The error should be reported to the HPRA if the person experiences an adverse event as a result.
15.35 Can Nuvaxovid® be used as an additional dose for people who have a contraindication to an mRNA vaccine or who have declined other COVID-19 vaccines?

Yes. Nuvaxovid® can be considered in these circumstances in people aged 12 years and older.

15.36 What is the recommended interval for the additional dose of Nuvaxovid?

The recommended interval is 4 months after the completion of the primary vaccination course. In exceptional circumstances, a 3 month interval may be used.

15.37 Can Nuvaxovid® be used as a booster dose for people who have a contraindication to an mRNA vaccine or who have declined other COVID-19 vaccines?

Nuvaxovid can be considered in these circumstances if the person is aged 12 years or older. However if an individual has already received 2 doses of Nuvaxovid®, there is no evidence of the efficacy or safety of a booster dose.

If an individual has been partially or fully vaccinated with another COVID-19 vaccine as part of their primary course, an additional dose of Nuvaxovid® can be considered.

15.38 What is the recommended interval for the booster dose of Nuvaxovid?

The recommended interval for the booster dose is at least 4 months after the last dose of a COVID-19 vaccine. In exceptional circumstances, a 3 month interval may be used.

15.39 Can Nuvaxovid be used in pregnancy if there is a contraindication to an mRNA vaccine or if a person has declined other COVID-19 vaccines?

Nuvaxovid® can be considered in these circumstances. However there is limited experience with use of the vaccine in pregnant women.

Administration may be considered when the benefits outweigh the potential risks to the mother or the fetus and when mRNA vaccines are contraindicated or declined.
16. Vaccination of children aged 5-11 years

For children aged 5 to 11 years, the recommended COVID-19 vaccine is Comirnaty® (Comirnaty® Children 5-11 years).

Comirnaty® 10 micrograms is licenced for active immunisation to prevent COVID-19 caused by SARS-CoV-2 virus in children aged 5-11 years.

The dose and schedule of Comirnaty® for this age group is 10 micrograms, two doses given 21 days apart.

16.1 National Immunisation Advisory Committee recommendation

Following approval of Comirnaty® formulation for children by the EMA in November 2021, the NIAC has made the following recommendations:

- COVID-19 vaccination is strongly recommended for those aged 5 to 11 years:
  - With underlying conditions
  - Living with a younger child with complex medical needs
  - Living with a person who is immunocompromised
- COVID-19 vaccination should be offered to all other children aged 5 to 11 years
  - This is because of the favourable benefit risk profile of the vaccine, to protect them from severe disease and from the consequences that can follow infection e.g., multisystem inflammatory syndrome in children (MISC), long COVID as well as psychosocial and developmental impacts
- Children aged 5 to 11 years who are severely immunocompromised should be given a third dose of Comirnaty® at least 28 days after the second dose to complete the primary series

Before vaccination, parents or guardians should be informed of the known benefits, risks and uncertainties of COVID-19 vaccination.

16.1.1 Booster doses

A first mRNA COVID-19 booster vaccine is now recommended for those aged 5 – 11 years with immunocompromise associated with a sub optimal response to vaccines at the time of their primary or additional vaccination (See Table 5a.1 areas shaded in blue) (4 doses in total)

In children who have become immunocompromised since their primary vaccination course, a booster dose is recommended. In this case they are expected to have mounted an adequate response to their primary vaccination and so they do not require an additional dose. (3 doses in total)
The decision to accept, defer or refuse vaccination for a child should be respected.

16.2 Vaccine storage

- The vaccine is delivered from the manufacturer to the HSE NCCS at -90°C to -60°C and this storage condition is continued as the vaccine is stored in an ultra-cold temperature (ULT) freezer at -90°C to -60°C.

- The vaccine is supplied to sites/clinics by the HSE NCCS at +2 to +8°C with a shelf life of 10 weeks. This new “use before” time and date is labelled by NCCS once vials are removed from ULT.

- The vaccine in each multi-dose vial requires dilution with 1.3ml of 0.9% sodium chloride.

- 0.9% sodium chloride is supplied separately to the vaccine and should be stored at room temperature.

- Undiluted vials of Comirnaty® (Pfizer/BioNTech) have a shelf life of 10 weeks when stored at +2 to +8°C (labelled “use before” time and date) and up to 12 hours at up to +30°C.

- After dilution, the vaccine must be kept at +2°C to +30°C and used within 12 hours after which the vial must be discarded.

Summary of Comirnaty 10 micrograms/dose

<table>
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<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>Name of vaccine</td>
<td>Comirnaty 10 micrograms/dose concentrate for dispersion for injection COVID-19 mRNA Vaccine (nucleoside modified)</td>
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<tr>
<td>Constituents</td>
<td>(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate) (ALC-0315) 2-[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide (ALC-0159) 1,2-Distearoyl-sn-glycero-3-phosphocholine (DSPC) Cholesterol Trometamol Trometamol hydrochloride Sucrose Water for injections</td>
</tr>
<tr>
<td>Number of doses in each vial</td>
<td>Post dilution 10 doses. If more than 10 doses can be accurately withdrawn from a diluted vial, it is a valid dose. No more than 12 valid doses are available.</td>
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<td>Dilution</td>
<td>Yes dilute with 0.9% Sodium Chloride (supplied separately)</td>
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<tr>
<td>Latex</td>
<td>No. The vial has a synthetic rubber (bromobutyl) stopper— the vial stopper does not contain latex.</td>
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<td>Number of doses required</td>
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<tr>
<td>Interval between doses</td>
<td>The recommended interval between doses is 21 days. The minimum interval between doses is 19 days. (the day of the first vaccine dose is day 0)</td>
</tr>
</tbody>
</table>
16.3 Vaccine dose

The vaccine for children is a different vaccine formulation, it contains a lower dose of antigen (10 micrograms per dose). The dose of the diluted vaccine is 0.2mls. Two doses of Comirnaty® for children aged 5-11 years are required for full protection.

The dose of Comirnaty® depends on the age at the time of vaccination i.e., an 11-year-old child who receives the first dose of 10 micrograms Comirnaty® and who is 12 years of age at the time of their second dose, should receive the 30 microgram dose of Comirnaty® as a second dose.

This is a different dose compared to the dose for those aged ≥12 years.

This image shows the children’s formulation

![Image of vaccine bottles]

Orange plastic cap and label with orange border.

16.4 Interval between doses

The recommended interval between doses is 21 days\(^{10}\). If the interval between doses is longer than 21 days, the second dose should be given as soon as possible. The course does not need to be restarted. The minimum interval is 19 days. This is a different minimum interval compared to the minimum interval for those aged ≥12 years. The date of administration of the 1\(^{st}\) dose is to be calculated as Day 0. If the second dose is given between 19 and 20 days after the first dose, it is a valid dose. If the second dose is given before 19 days, this is not considered a valid dose. A third dose should be given 21 days after the second (invalid) dose.

\(^{10}\) Note that the day the 1\(^{st}\) dose of vaccine is given is day 0
<table>
<thead>
<tr>
<th>Interval between 1st and 2nd Doses</th>
<th>Action required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 19 days</td>
<td>This is not considered a valid vaccine. A third dose should be given 21 days after the second (invalid) vaccine.</td>
</tr>
<tr>
<td>19 to 21 days</td>
<td>No further action needed (Evidence from trial data is that this is a valid vaccine).</td>
</tr>
<tr>
<td>Longer than 21 days</td>
<td>Give the 2nd dose at whatever interval. The course does not need to be restarted.</td>
</tr>
</tbody>
</table>

Prior to vaccination

- Check valid consent has been obtained
- Check for contraindications or precautions
  - See later in this chapter and the NIAC Immunisation guidelines for COVID-19 available at www.immunisation.ie
- Vaccinators who are vaccinating using a medicines protocol should check vaccine recipient’s eligibility under the protocol
- Check the interval when administering a second dose
- Explain the procedure
- Answer questions
- Maintain privacy & dignity

16.5 Infection prevention and control

- Prior to preparation and administration of COVID-19 vaccines, hand hygiene should be performed as per the “WHO five moments of hand hygiene” with emphasis on:
  - Before vaccine preparation
  - Before drawing up and administering the vaccine
  - Before and after each recipient contact
- PPE should be worn as per HPSC guidance for healthcare staff.
- It is not necessary to use a skin disinfectant prior to injection. If the skin at the injection site is visibly dirty, clean with soap and water. If an alcohol swab is used, delay injection for ≥30 seconds, to ensure the alcohol has evaporated.
- Gloves are not routinely recommended for vaccine preparation and administration
- There is no need to routinely check temperature either at registration or before vaccination.
- Follow HPSC standard precautions (sharps management, healthcare waste management etc.) https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/guidance/infectionpreventionandcontrolguidance/hseinfectionpreventionandcontrolguidanceandframework/
16.6 Vaccine Dilution and Preparation for Administration

Prior to dilution
- Perform hand hygiene
- Check you are using the correct formulation
- Verify that the vial of Comirnaty® COVID-19 mRNA vaccine has an orange plastic cap and a label with an orange border and states Age 5y to < 12y

Preparation for dilution
Prepare the equipment needed for dilution:
- A clean tray
- One Comirnaty® COVID-19 mRNA vaccine multidose vial
- One plastic ampoule of Sodium Chloride 0.9% Solution for Injection
  - This should not be kept in the fridge
- A needle and a syringe to dilute
  - Needles and syringes will be supplied
- Two 70% alcohol swabs

Check the use before date and time on the box containing the vials i.e., that the vial has NOT been stored in the fridge for more than 10 weeks. Before dilution mix by inverting vaccine vial gently 10 times, do not shake. Inspect the liquid in the vial prior to dilution, the liquid is a white to off-white suspension and may contain opaque amorphous particles. Do not use if the liquid is discoloured or if other particles are observed.

Dilution
- Take one ampoule of sodium chloride and check expiry date
- Clean with 70% alcohol swab
- Open the ampoule by twisting the cap
- Connect the syringe tightly (No needle is required)
- Follow Aseptic technique
  - Do not touch the key parts of the ampoule & syringe
- Withdraw 1.3 ml of Sodium Chloride 0.9% Solution for Injection
  - The volume of diluent is smaller than for the adult formulation
- Cross check with colleague
• Discard the ampoule and any remaining diluent in it
• Attach needle to the syringe
• Insert diluent into the vaccine vial
• You may feel some pressure in the vial as you add the diluent

Do not remove the needle and syringe from the vial until you have equalised the vial pressure by slowly withdrawing 1.3 ml of air into the empty diluent syringe before removing the needle from the vial.
• Gently invert the diluted solution 10 times, do not shake

• Inspect the vial
• The diluted vaccine should be an off-white suspension
• Do not use if vaccine is discoloured or contains particulate matter

Labelling the diluted vial
• Label the diluted vial with the discard time and date (12 hours after time of dilution) using a 24-hour format. Do not use it after this time and date
• E.g. time of dilution was 08.00 20/12/2021. The discard time and date is 20.00 20/12/2021
• After dilution, the vial contains up to 12 doses of 0.2 mL
  o **The volume of each dose is smaller than the adult dose**
• Diluted vaccines can be stored between +2°C and +30°C but must be used within 12 hours following dilution
• Bring the vial to your vaccination table/site.

Vaccine Dose Preparation
• Check that the time of vaccine dilution was within the last 12 hours
• Perform hand hygiene
• Clean top of vial with a single use 70% alcohol swab and allow it to air dry fully
• Attach 23g blue hub needle to 1ml syringe
  o The needle size is the same as for those aged 12 years and older
• Withdraw **0.2 ml** of diluted product
- Make sure correct dose is drawn up as smaller dose may not provide protection
- Before the needle is withdrawn ensure all air bubbles have been removed
- Do not change the needle between the vial and the patient unless the needle is contaminated or damaged.

16.7 Vaccine Administration

- Administer vaccine to patient intramuscularly, into the deltoid muscle
- Dispose the syringe and the needle into the sharps bin
- If more than ten 0.2ml doses can be safely and accurately withdrawn from a diluted vial, they can be used as valid doses
- **There is a maximum of 12 doses in each vial**
- Do not leave the empty vials unattended
- Dispose the empty vials safely into a sharps bin
- Low dead space syringes should be used if available in order to maximise the number of doses that can be drawn from the vial
- There should be **no pooling** of vaccine solution from different vials

16.7.1 Method of IM Vaccine Administration

- Intramuscular injection technique for children aged 5-11 is the same as for older children and adults
- Vaccine to be given Intramuscularly into the deltoid muscle
- The light triangle in figure indicates site for IM injection into the deltoid muscle
• The upper border of the triangle is approximately two finger-breadths below the acromion process and the apex is at the midpoint of the humerus
• The needle size for IM injection is the same as that for adults (23g blue hub needle)
• At the injection site spread the skin taut between the thumb and forefinger with the non-dominant hand
• Do not bunch up the skin as this leads to administering the vaccine into subcutaneous tissue inadvertently
• Further information is available at www.immunisation.ie

16.7.2 Positioning for vaccination
For younger/smaller children:
• The child sits on the parent/carer’s lap or stands in front of them as they sit
• The parent/carer embraces the child during the process, holding both the child’s arms as they do so
• Both of the child’s legs are anchored between the parent/carer’s thighs

Source: Immunisation guidelines of the National Immunisation Advisory Committee
Alternative positioning

- Sit child facing to the side. One arm is tucked under the parent/carer’s armpit (A cuddle position)

Source: Australian Immunisation handbook

For older/bigger children

- it may be appropriate to ask the parent/carer and the child the preferred sitting position for vaccine administration
- They may prefer to sit on the parent/carer’s lap or to sit independently

16.7.3 Techniques for vaccinating children

- Be honest and calm. Take time to explain in simple terms what to expect. Explain that the child may feel a little pinch and it will go away very quickly.
- Use words like “pressure” or “pinch” rather than “pain” or “shot”
- Distraction techniques can help in reducing pain and anxiety during vaccination. Keep the distraction going after the vaccine is given
  - Looking at toys, books, etc.
  - Pointing out interesting things in the room
  - Telling or reading stories
  - Taking deep breaths to help “blow out” the pain
  - Counting to five backwards

What to do if the child does not want to be vaccinated

- Only one person should hold the child for vaccination at any time (to avoid risk of needle stick injury)
- If the child cannot be held/positioned by the parent/carer so that vaccination is possible, then the child should not be vaccinated
- Repeated attempts to vaccinate the child are unlikely to help
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- Check with your clinical lead for advice
- It may be better to bring the child back another time
- With the parent if parent was not present.
- They may benefit from vaccination during quiet times

Prevention and Management of Syncope in Vaccination Clinics
- Syncope is rare in younger children, it is more common in adolescents
- Syncope episodes mostly occur within 15 minutes of vaccine administration
- Reassurance about the procedure may help to prevent fainting
- Recipients should be seated (or lying down - if past history of fainting) when being administered their vaccines in case of an immediate faint
- There should be facilities in place in case of fainting
  - So that the person can be placed in a recumbent position/lie down or sit with head between knees for several minutes if lying down is not possible
- It may be helpful to loosen any tight clothing and apply cool, damp cloths to the person’s face and neck
- Further information is available on the [www.immunisation.ie](http://www.immunisation.ie) and at [https://www.hse.ie/eng/health/immunisation/hcpinfo/covid19vaccineinfo4hps/](https://www.hse.ie/eng/health/immunisation/hcpinfo/covid19vaccineinfo4hps/)

16.8 Contraindications and precautions to COVID-19 vaccination in children

Contraindications
- Anaphylaxis (serious systemic allergic reaction requiring medical intervention) following a previous dose of the vaccine or any of its constituents (including polyethylene glycol (PEG)). The constituents of the formulation of Comirnaty® for children include trometamol
- Myocarditis after a previous dose of Comirnaty®

Appropriate support should be available in case of anaphylaxis or fainting after vaccine administration. Precautions should be in place to minimise injury from fainting

Precautions
- Acute severe febrile illness; defer until recovery
- Pericarditis after a previous dose of Comirnaty® (seek specialist advice)
- **Vaccination should be postponed in children with a previous history of MIS-C, until clinical recovery or until 90 days or more since diagnosis, whichever is the longer.**

If vaccination is advised for a child with prior history of mastocytosos, observe for 30 minutes after vaccination.
The following are **not contraindications or precautions** to vaccination:

- Food allergy (non-anaphylactic)
- Family history of allergy, including anaphylaxis
- Previous local reaction to any vaccine
- Underlying asthma
- Hay fever
- Hereditary angioedema
- Contact dermatitis to PEG containing cosmetic product
- NSAID allergy
- Chronic spontaneous urticarial

**16.9 Post-vaccination Procedures**

**Documentation post vaccination**

- Record vaccine batch number in the record/IT system
  - It will automatically link to the expiry date, so there is no need to record the expiry date
- Boxes delivered by NCCS will be labelled with a *Use before* date and time
- **This use before date and time should be recorded in the patient record**
- Give record card to vaccinee or parent/guardian
- Give post vaccination information sheet to vaccinee or parent/guardian

**Observation post-vaccination**

- Vaccine recipients: 15 minutes of observation
- Those with a history of mastocytosis: 30 minutes of observation
- Those with immediate itching, swelling or urticarial reaction at the vaccination site: 30 minutes or longer as clinically indicated

**Advice following vaccination**

- Give the parent/carer the after-care leaflet information
- Parent/carer should be advised that COVID-19 vaccines may cause a fever which usually resolves within 48 hours. This is a common, expected reaction and isolation and further investigation is not required unless COVID-19 is suspected
- If fever lasts for > 48 hours, or if other symptoms of Covid-19 are present, the person should self-isolate and seek medical advice
- Paracetamol or ibuprofen can be taken after vaccination if the child develops pain, fever or myalgia
Advise the child’s parent/carer that vaccinated children may still get infected and transmit the virus so they should continue to follow all current public health guidance to protect themselves and others.

Please refer to the NIAC immunisation guidelines available at [www.immunisation.ie](http://www.immunisation.ie)

### 16.10 Adverse Events

Overall, the safety profile seen in clinical trials for children aged 5-11 years was similar to that seen in older trial participants. No cases of myocarditis were noted and no new safety concerns were observed however the study size did not allow for detection of rare or very rare adverse events. Vaccination of children age 5-11 is underway in US, Canada, Israel. More than four million first doses and approximately 450,000 second doses have been given to children in this age group in the US. No immediate safety issues have been notified but follow up time has been short.

The most frequent adverse reactions in children 5 to 11 years of age were:

- Injection site pain (>80%)
- Fatigue (>50%)
- Headache (>30%)
- Injection site redness and swelling (>20%)
- Myalgia and chills (>10%)

The side effects were usually mild or moderate in intensity and resolved within a few days after vaccination. A higher rate of pyrexia is seen after the second dose.

#### Myocarditis and pericarditis

Myocarditis and pericarditis are inflammatory conditions of the heart. Symptoms can vary but often include breathlessness, palpitations and chest pain. An EMA review listed Pericarditis and Myocarditis as a **very rare** side effect of Comirnaty® vaccine. The risk is highest in younger males and is more often observed after the second dose. Two European studies have estimated the risk of myocarditis after the second dose of the vaccine:

- One additional case for every 38,000 men aged 12 to 29 (within 7 days)
- One additional case for every 17,500 men aged 16-24 (within 28 days)

**Data are very limited on those 5 to 11 years of age.**

Myocarditis has also been associated with COVID-19 infection and these events can also occur in all age groups unrelated to vaccines or to COVID-19. Available data suggest that the course of myocarditis and pericarditis following vaccination is similar to the typical course of these conditions and in most individuals, symptoms resolved with conservative management. The long-term follow-up of these cases is ongoing.
Reporting of adverse events following immunisation
Adverse Events Following Immunisation should be reported to the HPRA:

16.11 Clinical considerations

16.11.1 Vaccination after COVID-19 infection
Vaccination after COVID-19 Vaccination should be deferred until clinical recovery from COVID-19 infection and for at least four weeks after diagnosis or onset of symptoms, or four weeks from the first PCR positive specimen in those who are asymptomatic. Those with persisting symptoms post COVID-19 may be vaccinated unless there is evidence of recent clinical deterioration. Serological testing prior to vaccination is not recommended.

For children who are immunocompromised and receiving an additional/3rd dose: if they have had a laboratory-confirmed /antigen positive with symptoms breakthrough infection following their 2nd vaccine dose, the third dose should be delayed for at least 3 months.

16.11.2 Co-administration with other vaccines
COVID-19 vaccine may be given at the same time or at any interval as other vaccines (live and non-live) including influenza vaccine and the vaccines administered in the school immunisations programme. The only exception to this is children who have received monkeypox vaccine. In this instance, there should be a 4 week interval between monkeypox vaccine and a subsequent COVID-19 vaccine. There is however no evidence of the safety or efficacy of Nuvaxovid in these circumstances and an individual benefit-risk assessment should take place.

16.11.3 Children who are immunocompromised
Children who are immunocompromised due to disease or treatment may be vaccinated if they have no contraindications. Data indicates that those with severe immunocompromise do not have adequate protection following a primary COVID-19 vaccine course. There is evidence that protection can be enhanced by an additional mRNA vaccine dose, representing an extension of the primary vaccination series. See Table 5a.2 of the NIAC guidelines for conditions that may be associated with a suboptimal response to vaccines.

An additional Comirnaty® dose (10 micrograms 0.2ml) should be given to those aged 5-11 years with immunocompromise associated with a suboptimal response to vaccines at the time of vaccination, who have completed their primary course. This is an extended primary vaccination course.
Children who are severely immunocompromised at the time of vaccination can have the additional (3rd dose) at least 28 days after the second dose.

Children with planned immunosuppressing therapy should ideally complete vaccination two weeks before treatment. The recommended minimum interval may be used. Specialists should consider the child’s risk and likelihood of disease exposure, and provide advice based on knowledge and understanding of their immune status and likely immune response to vaccination.

16.11.4  Booster vaccination of children who are immunocompromised

A booster dose is recommended for children aged 5 – 11 years with immunocompromise associated with a sub optimal response to vaccines at the time of their primary vaccination.

A booster dose is also recommended in children who have become immunocompromised following their primary vaccination course.

The booster dose (10 micrograms 0.2ml) is recommended at least 4 months after the last vaccine dose. In exception circumstances, a 3 month interval may be used.

In individuals who have had a laboratory-confirmed /antigen positive with symptoms breakthrough infection following their last dose of vaccine, the booster dose should be delayed for at least 4 months. In exceptional circumstances a 3 month interval may be used.

16.11.5  Vaccination of those with bleeding disorders or on anticoagulants

Individuals with a bleeding disorder or receiving anticoagulant therapy may develop haematomas in IM injection sites. Prior to vaccination, inform the parent or guardian about this risk.

For those with thrombocytopenia (platelet count <50 x 10^9 /L consult the supervising consultant. People with mild bleeding disorders or on maintenance dose Emicizumab (Hemlibra) do not require haemostatic cover for vaccination.

Those with inherited coagulopathies who require factor replacement therapy should receive it on the day of vaccination, prior to the IM vaccination. If there is uncertainty about the need for replacement therapy, contact the child’s supervising consultant.

Those receiving long-term anticoagulation with either Warfarin or heparin are not considered to be at higher risk of bleeding complications following vaccination. There is no reason to expect that
there is a greater risk of bleeding complications with the oral anticoagulants or antiplatelet agents, than with other anticoagulants.

See Chapter 2 of the NIAC guidelines, sections 2.4.6 and 2.4.7 for further information, including technique for IM injection, in this patient group.

16.11.6 Duration of immunity
There is insufficient information to determine the duration of protection from the vaccine. Vaccine recipients may not have optimal protection until seven days after the second dose, and the vaccine may not protect all those vaccinated. After vaccination, vaccine recipients should continue to follow all public health guidance should be followed.

16.12 Frequently asked questions: Comirnaty (10 micrograms/dose concentrate) for children aged 5-11

16.12.1 Which COVID-19 vaccine is approved for children aged 5-11?
For children aged 5 to 11 years Comirnaty (10 micrograms/dose concentrate) is currently the only vaccine approved and licensed by the EMA for this age group. The EMA recommended extending the indication for Comirnaty to include use in children aged 5 to 11 years of age on 25th of November 2021.

**Note the vaccine for children aged 5-11 is a different vaccine formulation to the one used in persons aged 12 and over i.e Comirnaty (30 micrograms/dose concentrate).**

16.12.2 Why is the COVID-19 vaccine recommended for children aged 5-11?
COVID-19 vaccines are strongly recommended by the NIAC for children aged 5 to 11 years who:
• live with underlying conditions
• living with a younger child with complex medical needs
• living with a person who is immunocompromised

For all children in this age group, the recommendation of NIAC is that the benefits of vaccination are greater than the risks from the vaccine.

This is because of the favourable benefit risk profile of the vaccine, to protect them from severe disease, the consequences that can follow infection e.g. multisystem inflammatory syndrome in children (MIS-C), long COVID, psycho-social and developmental impacts.

16.12.3 What is the dose of Comirnaty for children aged 5-11 years?
The dose of vaccine for those aged 5 to 11 years is 0.2 ml intramuscularly (IM) into the deltoid muscle. Each dose contains 10 micrograms. Note that the dose volume, and the vaccine dose is different to that for ≥12 years (0.3mls and 30 micrograms per dose).

16.12.4 What volume of 0.9% saline should be used to dilute a vaccine vial?
The vaccine requires dilution with 1.3ml of 0.9% sodium chloride. After dilution, the vaccine should be kept at +2°C to +30°C and used within 12 hours. Note that the dilution volume and the discard time is different.

16.12.5 How many doses of 0.2mls are in a diluted vial of the vaccine?
If more than ten 0.2ml doses can be safely and accurately withdrawn from a diluted vial, they can be used as valid doses. There are a maximum of 12 doses in each vial.

16.12.6 What is the recommended Interval between doses?
The day that the first dose of vaccine is given is day 0.

The recommended interval is 21 days.

- If the interval between doses is longer than 21 days, the second dose should be given as soon as possible. The course does not need to be restarted.
- If the second dose is given between 19 and 20 days after the first dose, it is a valid dose.
- The minimum interval is 19 days. If the second dose is given before 19 days, this is not considered a valid dose. A third dose should be given 21 days after the second (invalid) dose.

**Note this is a different minimum interval compared to that for those aged ≥12 years**

16.12.7 When is an additional dose recommended for children aged 5-11?
NIAC have recommended that children aged 5 to 11 years who are severely immunocompromised at time of vaccination should be given a third dose of Comirnaty (10 micrograms/dose) at least 28 days after the second dose to complete the primary series in line with the licensed documentation.

16.12.8 Is a booster dose recommended for children aged 5-11?
A booster dose for children aged 5-11 is recommended only for children with immunocompromise associated with a sub optimal response to vaccines at the time of their primary vaccination course. They should receive the booster dose at least 4 months after their additional dose (total 4 doses of vaccine). In exceptional circumstances a 3 month interval may be used.

Is a booster dose is also recommended for children who have become immunocompromised
following their primary vaccination course. They should receive the booster dose at least 4 months after the last dose of vaccine (total 3 vaccine doses). In exceptional circumstances a 3 month interval may be used.

16.12.9 What if a child becomes immunocompromised after their primary vaccination course. Do they need an additional dose as well as a booster those?

These children do not need an additional dose, as they are expected to have mounted a normal immune response to the primary vaccination course. They are recommended a booster dose at least 4 month after completion of their primary course.

16.12.10 Which Comirnaty vaccine dose should a child receive if they are 11 years of age, but will turn 12 years old before they can receive a second dose?

The dose of Comirnaty® depends on the age of the child at the time of the vaccine, an 11 year old child who receives the first dose of 10 micrograms Comirnaty and who then becomes 12 years of age should receive a second dose of the 30 microgram Comirnaty as their second dose.

16.12.11 Which Comirnaty® vaccine dose should a child receive if they are immunocompromised and 11 years of age when receiving their 1st and 2nd dose, but will turn 12 years old before they can receive an additional/third dose?

If the child has turned 12 at the time they are due the additional/3rd dose of Comirnaty®, they should receive the 30 microgram Comirnaty® dose.

16.12.12 Which Comirnaty® vaccine dose should a child receive if they are immunocompromised and 11 years of age when receiving their additional dose, but will turn 12 years old before they can receive the booster dose?

If the child has turned 12 at the time they are due the booster dose of Comirnaty®, they should receive the 30 microgram Comirnaty® dose.

16.12.13 Can other vaccines be co-administered with Comirnaty 10 mcg/dose vaccine in children aged 5-11?

Yes. NIAC now recommend that Comirnaty® 10mcg/dose may be given at the same time or at any interval as other vaccines (live and non-live) including influenza vaccine. The only exception to this is children who have received monkeypox vaccine. In this instance, there should be a 4 week interval between monkeypox vaccine and a subsequent COVID-19 vaccine.
16.12.14 Should unvaccinated children aged 5-11 who have had COVID-19 infection be offered the COVID-19 vaccine?

Vaccination should be deferred until clinical recovery from COVID-19 infection and for at least four weeks after diagnosis or onset of symptoms, or four weeks from the first PCR positive specimen in those who are asymptomatic.

Those with persistent symptoms post COVID-19 may be vaccinated unless there is evidence of recent clinical deterioration.

Serological testing prior to vaccination is not recommended.

16.12.15 What if a child aged 5-11 is diagnosed with COVID-19 infection after a first dose of vaccine?

Vaccination with the second dose should be deferred until clinical recovery from COVID-19 and at least four weeks after diagnosis or onset of symptoms, or four weeks from the first PCR positive specimen in those who are asymptomatic.

16.12.16 What if a child with immunocompromised aged 5-11 is diagnosed with breakthrough COVID-19 infection after their 2nd dose of vaccine?

If a child is immunocompromised and has had a laboratory-confirmed breakthrough infection following their 2nd vaccine dose, the additional dose should be delayed for at least 4 months. In exceptional circumstances a 3 month interval may be used.

16.12.17 What if a child with immunocompromised aged 5-11 is diagnosed with breakthrough COVID-19 infection after their additional dose of vaccine?

If a child is immunocompromised and has had a laboratory-confirmed breakthrough infection following their additional vaccine dose, the booster dose should be delayed for at least 4 months. In exceptional circumstances a 3 month interval may be used.

16.12.18 What are contraindications to vaccination with a Comirnaty® (10 micrograms/dose concentrate)?
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- Anaphylaxis following a previous dose of the vaccine or following any of its constituents including polyethylene glycol (PEG) and Trometamol (found in gadolinium-containing contrast dyes).
- Myocarditis after a previous dose of Comirnaty®

16.12.19 What are precautions to vaccination with a Comirnaty® Vaccine?
- Acute severe febrile illness; defer until recovery
- Pericarditis after a previous dose of Comirnaty® (seek specialist advice)
- Vaccination should be postponed in children with a previous history of MIS-C, until clinical recovery or until 90 days or more since diagnosis, whichever is the longer.

For more information see Frequently Asked Questions about COVID-19 vaccines for children with pre-existing allergic conditions.

16.12.20 What if only the diluent of Comirnaty® is administered?
The diluent for Comirnaty® (Pfizer BioNTech) is sodium chloride, which is salt and purified water so no adverse reactions would be expected.

This should be explained to their parent/guardian and a correctly diluted dose of the vaccine should be given as soon as possible. This should be reported to HPRA if this is associated with an adverse event and an incident report form completed.

16.12.21 What if an over-diluted vaccine is administered?
In this case, the person will not have received a sufficient dose of vaccine for protection.

This should be explained to the parent or guardian and a correctly diluted dose of the vaccine should be given as soon as possible (i.e. no minimal interval). This should be reported to HPRA if this is associated with an adverse event and an incident report form completed.

In settings where doses may be prepared in advance, if thirteen doses have been obtained from a vial, each of the syringes must be examined by another person to identify the syringe with less than 0.2ml. If all syringes contain 0.2ml then more than 1.3ml must have been added and the vial has been over-diluted.

16.12.22 What if an under-diluted vaccine or the whole multi-dose vial of vaccine is administered instead of the recommended dose?
In clinical trials where a small number of children were given higher doses of a similar vaccine was not associated with serious adverse events during the observation period but most local reactions were mild to moderate and short lived.

If the error was made with the first dose, the child is given their second dose of vaccine according to the recommended schedule. The parents should also be informed of the very rare adverse event of myocarditis and pericarditis, the symptoms to be aware of, and to seek medical attention if they develop.

This vaccine error should be reported to HPRA if associated with an adverse event and an incident report form completed.

16.12.23 What if a 10mcg dose of children's Comirnaty is inadvertently given to a person aged 12 and over?

In this case, the error should be explained to the parent or person (if aged 16 and over). The actions will dependent on the person's age:

<table>
<thead>
<tr>
<th>Person aged 12-17 years</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>Action</td>
</tr>
<tr>
<td>Given lower 1st dose</td>
<td>Do not repeat. Give correct second dose</td>
</tr>
<tr>
<td>Given lower 2nd dose</td>
<td>Do not repeat</td>
</tr>
<tr>
<td>Given lower 1st and 2nd dose</td>
<td>Give correct dose 21 days after incorrect second dose</td>
</tr>
<tr>
<td>Given lower booster dose</td>
<td>Do not repeat</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Person aged 18 years and older</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>Action</td>
</tr>
<tr>
<td>Given lower 1st dose</td>
<td>Give correct dose immediately (no minimum interval) and correct second dose 21 days later</td>
</tr>
<tr>
<td>Given lower 2nd dose</td>
<td>Give correct dose immediately (no minimum interval)</td>
</tr>
</tbody>
</table>

This should be reported to HPRA if this is associated with an adverse event and an incident report form completed.

16.12.24 Comirnaty® vaccine for children aged 5-11 years (orange cap) contains 10 micrograms of mRNA vaccine in each dose. The vaccine for people aged 12
years and older contains 30 micrograms in each 0.3ml dose. Can I use 0.1 mls of the purple cap vaccine to vaccinate a child who is aged 5-11 years?

No. You cannot use the vaccine for people aged 12 years and older (purple cap) to vaccinate children aged 5-11 years. Although it might appear that 0.1ml of the purple cap formulation would be equivalent to a 10 microgram dose of the orange cap formulation, the correct concentration of mRNA vaccine cannot be guaranteed in such a small volume of vaccine.

16.12.25 What if a 30mcg dose of Comirnaty® if given in error to a child aged 5-11?

In clinical trials where a small number of children were given higher doses of a similar vaccine was not associated with serious adverse events during the observation period and most local reactions were mild to moderate and short lived.

If the error was made with the first dose, the child is given their second dose of vaccine according to the recommended schedule. The parents should also be informed of the very rare adverse event of myocarditis and pericarditis, the symptoms to be aware of, and to seek medical attention if they develop.

This vaccine error should be reported to HPRA if associated with an adverse event and an incident report form completed.

16.12.26 How can you ensure the right formulation of Comirnaty is given to the appropriate age group?

The following checks are routinely recommended before COVID-19 vaccination:

- Is this a primary course, an additional dose for a person who is immunocompromised or a booster dose?
- What is the age of the person?
- What is the recommended vaccine for this age-group?
- What is the recommended dose?
- What is the recommended interval since the last dose?
- Has the person had COVID-19 infection? What is the recommended interval since laboratory-confirmed COVID-19 infection?

In addition, NIAC recommends consideration should be given to establishing separate child friendly vaccination clinics for children aged 5 - 11 years. This would minimise distress in young children and reduce likelihood of vaccine error by avoiding having the adult and paediatric formulations of Comirnaty at the same venue.
17. Useful links


Information for women who are pregnant or breastfeeding and their doctors about COVID-19 vaccine https://www.rcpi.ie/news/releases/information-for-women-who-are-pregnant-or-breastfeeding-about-the-covid-19-vaccine-update/


HSE Guidelines for maintaining the vaccine cold-chain in vaccine cool boxes https://www.hse.ie/eng/health/immunisation/hcpinfo/vaccineordering/sopnio02.pdf


HPSC COVID-19 guidance www.hpsc.ie
APPENDIX A: INTRAMUSCULAR INJECTION

TECHNIQUE
At the injection site spread the skin taut between the thumb and forefinger with the non-dominant hand. Do NOT bunch up the skin. Inject at a 90-degree angle. Inject medication over 1-2 seconds.

**Landmark injection site**
- **Base of triangle:** Two finger widths down from the acromion process;
- **Bottom edge:** At an imaginary line drawn from the axilla.

**Identify injection site**
- The recommended site is the middle of the triangle. Do not inject too high or too low.

**Administer**
- Swift needle entry, slow injection of medication, swift needle withdrawal = less pain

**Technique**
- Swift needle entry, slow injection of medication, swift needle withdrawal = less pain
APPENDIX B: SOP
Guidance at vaccination clinics for management of Comirnaty for 12 years of age and older

- Comirnaty 30 micrograms/dose concentrate for dispersion for injection – Purple cap
- Comirnaty 30 micrograms/dose dispersion for injection - Grey cap.

This document is under regular review and will be updated when relevant new information becomes available. Please check www.immunisation.ie for the current version.

1. Background

Comirnaty for 12 years of age and older is at a temperature of +2°C to +8°C when delivered to the site by the National Cold Chain Service (NCCS). The vial will be boxed and labelled with a HSE SCAN ME label which contains the updated shelf life also known as the USE BEFORE date.

Additional information is provided about the vaccination programme in the document Clinical Guidance for Covid-19 Vaccination available at www.immunisation.ie

Comirnaty vaccine is authorised by the European Medicines Agency (EMA). The vaccine is available in two formulations

- Comirnaty 30 micrograms/dose concentrate for dispersion for injection (Purple cap – Dilution required)
  The SmPC is accessible at https://www.medicines.ie/medicines/comirnaty-30micrograms-dose-concentrate-for-dispersion-for-injection-35059/spc

- Comirnaty 30 micrograms/dose dispersion for injection (Grey cap – No Dilution required- Ready to Use)
  The SmPC is accessible at https://www.medicines.ie/medicines/comirnaty-ts-30-micrograms-dose-dispersion-for-injection-35229/spc

2. Responsibilities

The Responsible Person should ensure that this SOP is followed.

3. Scope

The scope of this document is to set a standardised protocol of procedures in the provision of the

- Comirnaty 30 micrograms/dose concentrate for dispersion for injection – Purple cap
- Comirnaty 30 micrograms/dose dispersion for injection - Grey cap

Separate documents are available for other COVID-19 vaccines.
4. Purpose

The purpose of this document is to outline the management of Comirnaty vaccine for 12 years of age and older at the vaccination centre level and to provide supporting guidance in relation to:

- Safe and temperature controlled storage,
- Safe vaccine handling and management of shelf life reduction processes following dilution.
- Transportation of vaccines

The documents provided may be used as templates to be adapted for local use or may be used as reference sources to check that existing local procedures are robust and comprehensive.

4.1 Safe and temperature controlled storage

Upon arrival at your vaccination centre:

- Read the temperature of the fridge/s,
- Record maximum, minimum and current temperature,
- Reset after recording

For additional information the following document may be consulted:

NCCS will deliver Comirnaty vials at a temperature of +2 °C to +8 °C in their original carton, or pre-packed into labelled cartons.

Check the delivery and please make note of the formulation delivered

- Comirnaty 30 micrograms/dose concentrate for dispersion for injection (Purple cap – Dilution required before administering vaccine) with USE BEFORE date up to one month (31 days) as per affixed label. OR
- Comirnaty 30 micrograms/dose dispersion for injection (Grey cap – No Dilution required) with USE BEFORE date up to 10 weeks as per affixed label.

Scan stock onto the system as you unpack the delivery.

Place the stock immediately in the fridge at a temperature of +2°C to +8°C. The vials should not be refrozen.

4.2 Vaccine decommissioning

The original boxes will be decommissioned by the NCCS for the Article 23 locations e.g., GPs and HSE locations including Vaccination Clinics. Decommissioning does not pertain to pre packed boxes.
4.3 Safe handling

**Comirnaty 30 micrograms/dose concentrate for dispersion for injection (Purple cap)**

Comirnaty 30 micrograms/dose concentrate for dispersion for injection comes in a multi-dose vial and **before use, must be diluted with 1.8 ml of sodium chloride (0.9%) solution for injection.** Each vial contains 0.45 ml antigen and after dilution the vial contain 2.25 ml and therefore up to 7 doses of 0.3 ml may be available. One dose (0.3 ml) contains 30 micrograms of tozinameran, a COVID-19 mRNA Vaccine (embedded in lipid nanoparticles).

**Undiluted vial**

An undiluted vial of Comirnaty30 micrograms/dose concentrate for dispersion for injection may be stored until the USE BEFORE date and time (this may be up to 31 days) at temperatures between +2°C and +8°C. When delivered, boxes or cartons will have a label created by the NCCS displaying the USE BEFORE date and time. The USE BEFORE date and time is the time by when the vial must be taken out from +2°C and +8°C for dilution. The USE BEFORE date is the date that should be recorded in the patient's record.

Prior to use, the unopened vial can be stored for up to 2 hours at room temperature up to +30°C.

The following information is intended to guide healthcare professionals only in case of temporary temperature excursion.

Stability data indicate that the unopened vial is stable for up to:

- 24 hours when stored at temperatures from -3 °C to +2°C
- A total of 4 hours when stored at temperatures from +8 °C to +30 °C; this includes the 2 hours at up to +30°C detailed above.

**Diluted medical product**

Once diluted a “DISCARD date and time” is applied and written on the vial which is 6 hours from the time of dilution.

Chemical and physical in-use stability, has been demonstrated for **6 hours** at +2 °C to +30 °C after dilution. From a microbiological point of view, the product should be used immediately. If not used immediately, in- use storage times and conditions are the responsibility of the user.

Do not use the vaccine if the vial contains particulates or if the solution is discoloured.
Guidance for management of Comirnaty (Pfizer/BioNTech) COVID-19 Vaccine for 12 years of age and older

**Comirnaty 30 micrograms/dose dispersion for injection (Grey cap) - Ready to Use**

Comirnaty 30 micrograms/dose dispersion for injection comes in a multi-dose vial. One vial (2.25 ml) contains 6 doses of 0.3 ml. One dose (0.3 ml) contains 30 micrograms of tozinameran, a COVID-19 mRNA Vaccine (embedded in lipid nanoparticles).

**Unopened vial**

Unopened vials of Comirnaty 30 micrograms/dose dispersion for injection can be stored for up to 10 weeks at temperatures between +2°C and +8°C. When delivered, boxes or cartons will have a label created by the NCCS displaying the **USE BEFORE date and time**. The **USE BEFORE date and time** is the time by when the vaccine must be administered. The **USE BEFORE date** is the date that should be recorded in the patient's record.

Prior to use, the unopened vial can be stored for up to 12 hours at temperatures up to 30 °C. The following information is intended to guide healthcare professionals only in case of temporary temperature excursion. Stability data indicate that the unopened vial is stable for up to:

- 10 weeks when stored at temperatures from -2 °C to 2 °C, within the 10-week storage period between 2 °C and 8 °C.
- 24 hours at temperatures of 8 °C to 30 °C, including up to 12 hours following first puncture.

**Opened vial**

**DISCARD date and time** must be recorded on the vial once the vial is initially punctured. This is calculated by adding 12 hours to the time of first puncture. During this period the vaccine can be stored at room temperature of up to +30 °C. From a microbiological point of view, unless the method of opening precludes the risks of microbial contamination, the product should be used immediately.

**To note:**

- The **USE BEFORE dates and time** of the vaccine must be recorded in the IT system (as displayed on the label affixed to the vaccine box delivered by the HSE National Cold Chain Service).
- The batch number of the vaccine must be recorded.
- When low dead volume syringes and/or needles are used, the amount remaining in the vial may be sufficient for a seventh dose.
- **DO NOT** pool excess or residual vaccine solution from multiple vials.
- Comirnaty 30 micrograms/dose concentrate (Purple cap) must be diluted and the **batch number** of the 0.9% Sodium Chloride solution must be recorded.

Note: Please see quick reference to dosing, dilution, and storage information at the end of this SOP.
4.4 Transportation of vaccines

An appropriate container should be used to minimize the potential for vials to be jostled. If vials are inadvertently bumped, they should be righted, however the risk to the product is minimal and vials, which are temporarily knocked over, may still be used.

For additional information the following document may be consulted:

HSE Guidelines for maintaining the vaccine cold chain in vaccine cool boxes (Updated 15 April 2020)

- **Comirnaty 30 micrograms/dose concentrate for dispersion for injection (Purple cap)**

  The total or cumulative duration of transit of the undiluted product at temperatures between +2 °C and +8°C, must not exceed 48 hours. The 48 hours must include all travel time commencing at time of departure from NCCS to the vaccination centre and all other transportation of the undiluted vaccine thereafter. These times must be taken within the USE BEFORE dates and time. Each delivery box is over labelled with time of departure label which is stamped when leaving NCCS and is completed by driver at time of handover to recipient.

  During the 6 hours in-use period after dilution the medical product can be transported.

- **Comirnaty 30 micrograms/dose dispersion for injection (Grey cap)**

  Unopened vials can be transported during the 10 weeks storage between +2 °C to +8 °C.

  During the 12 hours period after first puncture the medical product can be transported for up to 6 hours.

5. Consumables, Patient Information Leaflet (PIL) & Record Cards and Other Equipment

A national distribution service will provide all necessary supplies, to handle, prepare and administer the vaccine including PPE and critical clinical and non-clinical consumables. These are not included in this SOP.

Other Equipment includes:

- **Anaphylaxis Kits**

  Refer to National Immunisation Advisory Committee Guidelines
  
  [https://www.hse.ie/eng/health/immunisation/hcpinfo/schoolproghcp/protocols/anaphylaxis 2016.pdf](https://www.hse.ie/eng/health/immunisation/hcpinfo/schoolproghcp/protocols/anaphylaxis 2016.pdf) The epinephrine will be provided by a pre-determined community/ hospital pharmacy as agreed by the lead governance organization CHO/HG.
Guidance for management of Comirnaty (Pfizer/BioNTech) COVID-19 Vaccine for 12 years of age and older

- **Storage Equipment**

  A pharmaceutical fridge must be used to store vaccines. The fridge should be set to maintain the temperature at +5 °C +/- 3 °C, and alarms should take into account the need to maintain the temperature above +2 °C and less than +8 °C.

  Fridges should be validated and monitored in accordance with existing local procedures.

6. **Stock Control, Security & Monitoring of Wastage**

   A physical stock count of COVID-19 vaccine vials should match the stock count recorded on the IT system.

   Sites will need to ensure that vaccines are stored securely at all points between receipt and use or disposal.

   All waste must be handled in such a way as to prevent theft and/or misuse, both on site and after removal from the site.

   Dispose empty vials into sharps bins safely as per health care management policy. Dispose syringes and needles into sharps bins according to normal local waste management procedures.

   Original cartons must have their labels defaced using permanent black marker pens, and placed into appropriate waste sack for incineration, as soon as possible after they become empty.

7. **Health & Safety**

   There are no special handling requirements for routine handling and dealing with spillages of Comirnaty COVID-19 vaccine.

   Health and Safety risk assessments should be undertaken locally to ensure these risks are adequately controlled.
A quick reference to dosing, dilution, and storage information for Comirnaty COVID-19 mRNA vaccine

<table>
<thead>
<tr>
<th></th>
<th>12 years and older, Dilute to use</th>
<th>12 years and older, Ready to use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formulation</strong></td>
<td>Multi-dose Vial</td>
<td>Multi-dose Vial</td>
</tr>
<tr>
<td><strong>Vial</strong></td>
<td>Purple</td>
<td>Grey</td>
</tr>
<tr>
<td></td>
<td><img src="Image" alt="Purple Vial Cap" /></td>
<td><img src="Image" alt="Grey Vial Cap" /></td>
</tr>
<tr>
<td><strong>Dosage</strong></td>
<td>30 mcg</td>
<td>30 mcg</td>
</tr>
<tr>
<td><strong>Injection Volume per Dose</strong></td>
<td>0.3 ml</td>
<td>0.3 ml</td>
</tr>
<tr>
<td><strong>Dilution</strong></td>
<td>Dilution required</td>
<td>NO DILUTION</td>
</tr>
<tr>
<td><strong>Fill Volume per Vial</strong></td>
<td>0.45 ml</td>
<td>2.25 ml</td>
</tr>
<tr>
<td><strong>Amount of Diluent Needed per Vial</strong></td>
<td>1.8 ml</td>
<td>NO DILUTION</td>
</tr>
<tr>
<td><strong>Doses per Vial</strong></td>
<td>6 doses per vial (after dilution)</td>
<td>6 doses per vial</td>
</tr>
<tr>
<td><strong>Refrigeration Storage Time (2 °C to 8 °C)</strong></td>
<td>1 month (31 days)</td>
<td>10 weeks</td>
</tr>
<tr>
<td><strong>Room Temperature (8 °C to 30 °C)</strong></td>
<td>2 hours prior to dilution</td>
<td>12 hours prior to first puncture</td>
</tr>
<tr>
<td><strong>After First Puncture (2 °C to 30 °C)</strong></td>
<td>Discard after 6 hours</td>
<td>Discard after 12 hours</td>
</tr>
</tbody>
</table>

* Diluent: sterile sodium chloride 9 mg/ml (0.9%) solution for injection. Bacteriostatic saline or other diluents must NOT be used.
Management of Comirnaty 10 micrograms/dose concentrate for dispersion for injection for children 5 to 11 years
Guidance at vaccination clinics

This document is under regular review and will be updated when relevant new information becomes available. Please check www.immunisation.ie for the current version.

1. Background

Comirnaty 10 micrograms/dose concentrate for dispersion for injection (for 5 to 11 years) is at a temperature of +2°C to +8°C when delivered to the site by the National Cold Chain Service (NCCS). The vaccine has approximately 10 weeks shelf life once delivered. The site will be responsible for the vaccine upon delivery.

Additional information is provided about the vaccination programme in the document Clinical Guidance for Covid-19 Vaccination available at www.immunisation.ie

COVID-19 vaccine Comirnaty 10 micrograms/dose concentrate for dispersion for injection (for 5 to 11 years) was granted conditional marketing authorisation by the European Commission on 26th November 2021. The SmPC is accessible at https://www.medicines.ie/medicines/comirnaty-10-micrograms-dose-concentrate-for-dispersion-for-injection-35164/spc

2. Safe Handling

Comirnaty 10 micrograms/dose concentrate for dispersion for injection comes in a multi-dose vial and before use, must be diluted with 1.3 ml of sodium chloride (0.9%) solution for injection. Each box contains 10 vials and one vial (1.3 ml) contains 10 doses of 0.2 ml after dilution.

Each vial contains 1.3 ml concentrate for dispersion. Dilute with 1.3 ml of sodium chloride (NaCl 0.9%) solution for injection. After dilution the vial will contain 2.6 ml.

One 0.2 ml dose contains 10 micrograms of tozinameran, a COVID-19 mRNA Vaccine (embedded in lipid nanoparticles).

When low dead volume syringes and/or needles are used, the amount remaining in the vial may be sufficient for 12 doses. The National Immunisation Advisory Committee (NIAC) advises that if more than 10 doses can be safely and accurately withdrawn from a vial they can be used as valid doses.

- Each dose must contain 0.2 ml of vaccine.
- If the amount of vaccine remaining in the vial cannot provide a full dose of 0.2 ml, discard the vial and any excess volume.
- Do not pool excess vaccine from multiple vials.
3. Unopened vial

An undiluted vial of Comirnaty 10 micrograms/dose concentrate for dispersion for injection may be stored until the USE BEFORE date and time (this may be up to 10 weeks) at temperatures between +2°C and +8°C. The vials should not be refrozen.

When delivered, boxes will have a label created by the NCCS displaying the USE BEFORE date and time. The USE BEFORE date and time is the time by when the vial must be taken out from +2°C and +8°C for dilution. The USE BEFORE date is the date that should be recorded in the patient's record.

Prior to use, the unopened vials can be stored for up to 12 hours at temperatures between +8 °C and +30 °C. This is within the USE BEFORE date and time.

Handling of temperature excursions during refrigerated storage

- Stability data indicate that the unopened vial is stable for up to 10 weeks when stored at temperatures from -2 °C to +2 °C, and within the 10 weeks storage period between +2 °C and +8 °C.
- Stability data indicate the vial can be stored for up to 24 hours at temperatures of +8 °C to +30 °C, including up to 12 hours following first puncture.

This information is intended to guide healthcare professionals only in case of temporary temperature excursion.

Note:
- The USE BEFORE dates and time must be recorded in the IT system (as per the HSE SCAN ME label on the vaccine box delivered by the HSE National Cold Chain Service).
- The batch number of the vaccine must be recorded, to be selected on Scanvax.
- The batch number of the 0.9% Sodium Chloride solution must be recorded on Scanvax.

4. Diluted vial

Once diluted with sodium chloride 9 mg/ml (0.9% NaCl) solution for injection the DISCARD Date and Time is calculated as 12 hours after dilution. DISCARD Date and Time is written on the vial which is stored at +2°C to +30°C. From a microbiological point of view, the product should be used immediately. If not used immediately, in-use storage times and conditions are the responsibility of the user.

The diluted vaccine should present as a white to off-white dispersion with no particulates visible. Do not use the diluted vaccine if particulates or discolouration are present.

Note: The doses must be administered before the Discard date and time.
5. **Transportation of vaccines**

**Unopened vials** can be transported during the 10 weeks storage between +2 °C to +8 °C.

**Diluted vial:** During the 12 hours in-use period after dilution the vial can be transported for 6 hours.

For additional information the following document may be consulted:

[HSE Guidelines for maintaining the vaccine cold chain in vaccine cool boxes](https://www.hse.ie/eng/health/immunisation/hcpinfo/schoolproghcp/protocols/anaphylaxis2016.pdf) (Updated 15 April 2020)

6. **Consumables, Patient Information Leaflet (PIL) & Record Cards and Other Equipment**

A national distribution service will provide all necessary supplies, to handle, prepare and administer the vaccine including PPE and critical clinical and non-clinical consumables. These are not included in this SOP.

**Other Equipment includes:**

- **Anaphylaxis Kits**
  
  Refer to National Immunisation Advisory Committee Guidelines
  
  [https://www.hse.ie/eng/health/immunisation/hcpinfo/schoolproghcp/protocols/anaphylaxis2016.pdf](https://www.hse.ie/eng/health/immunisation/hcpinfo/schoolproghcp/protocols/anaphylaxis2016.pdf) The epinephrine will be provided by a pre-determined community/ hospital pharmacy as agreed by the lead governance organization CHO/HG.

- **Storage Equipment**
  
  A pharmaceutical fridge must be used to store vaccines. The fridge should be set to maintain the temperature at +5 °C +/- 3 °C, and alarms should take into account the need to maintain the temperature above +2 °C and less than +8 °C.
  
  Fridges should be validated and monitored in accordance with existing local procedures.

7. **Stock Control, Security & Monitoring of Wastage**

A physical stock count of COVID-19 vaccine vials should match the stock count recorded on the IT system.

Sites will need to ensure that vaccines are stored securely at all points between receipt and use or disposal. All waste must be handled in such a way as to prevent theft and/or misuse, both on site and after removal from the site.
Dispose empty vials into sharps bins safely as per health care management policy. Dispose syringes and needles into sharps bins according to normal local waste management procedures.

Original cartons must have their labels defaced using permanent black marker pens, and placed into appropriate waste sack for incineration, as soon as possible after they become empty.

8. Health & Safety

There are no special handling requirements for routine handling and dealing with spillages of ComirnatyCOVID-19 vaccine.

Health and Safety risk assessments should be undertaken locally to ensure these risks are adequately controlled.
Management of Spikevax® COVID-19 Vaccine Moderna Guidance at Vaccination Clinics

This document is under regular review and will be updated when relevant new information becomes available. Please check www.immunisation.ie for the current version.

1. Background
Spikevax® (Moderna) will be delivered by the National Cold Chain Service (NCCS) at temperature of +2°C and +8°C to the site therefore it will be thawed and labelled with the “USE BEFORE” time and date. (if Time is not included on the label, “USE BEFORE” time is 23:59 of the preceding day, ie “USE BEFORE” date 28/01/2022 is 11:59 pm on 27/01/2022.)

Additional information is provided about the vaccination programme in the document Clinical Guidance for COVID-19 Vaccination available at www.immunisation.ie


2. Responsibilities
It is the responsibility of the Responsible Person to ensure that this SOP is followed.

3. Scope
The scope of this document is to set a standardised protocol of procedures to be followed in the provision of Spikevax® (Moderna). Separate documents are available for other COVID-19 vaccines.

4. Purpose
The purpose of this document is to outline the management of Spikevax® (Moderna) at the vaccination centre level, and to provide supporting guidance in relation to:

- Safe and temperature controlled storage
- Safe vaccine handling including management of shelf life reduction processes following first puncture of the vial
- Transportation
- Vaccines decommissioning
- Stock reconciliation for CVCs
Management of Spikevax® COVID-19 Vaccine Moderna Guidance at Vaccination Clinics

This document may be used as template for local use, or may be used as reference sources to check that existing local procedures are robust and comprehensive.

4.1 Safe and temperature controlled storage

Upon arrival at your vaccination centre:

- Read the temperature of the fridge/s
- Record maximum, minimum, and current temperature
- Reset after recording

Spikevax® (Moderna) will be thawed and delivered at temperatures between +2°C and +8°C to each vaccination clinic. Receipt and scan stock onto the system as you unpack the delivery.

Note: Spikevax® (Moderna) vials may be delivered by NCCS with the USE BEFORE date of 14 days instead of 30 days.

Place in the fridge at a temperature of +2°C to +8°C, in original boxes to protect vials from light. Note and retain details of the transportation label affixed to the delivery box.

4.2 Safe vaccine handling including management of shelf life reduction processes following first puncture of the vial

Each box of vaccine presents as multi-dose vials (MDV).

Store in original carton at +2°C to +8°C. The USE BEFORE date and time specified on the label affixed by the NCCS on the box indicates the time by which the vaccine must be administered, irrespective of the expiry date.

The USE BEFORE date is the date that should be recorded in the patient’s record.

Note: the vaccine will be delivered in a thawed state, therefore the product should not be re-frozen.

The following information is intended to guide healthcare professionals only in case of temporary temperature excursion.

Stability data indicate that the unopened vial is stable for up to:
24 hours when kept between +8°C and +25°C after which the product must be discarded.
The DISCARD date and time should be recorded on the vial after the initial puncture. Chemical and physical in-use stability has been demonstrated for 19 hours (see Note 1 in section 5) at +2°C to +25°C after initial puncture (within the allowed USE BEFORE date and time at +2°C to +8°C and 24 hours at +8°C to +25°C).

For the primary vaccination course, one dose is 0.5 mL of Spikevax® (Moderna) (contains 100 micrograms of messenger RNA (mRNA) embedded in SM-102 lipid nanoparticles). On 29th October 2021, Spikevax® was authorised by the EMA for use as a booster dose (0.25mls). The booster dose (0.25mls) is half the dose used for the primary schedule.

Ten (10) doses (of 0.5 mL each) or a maximum of twenty (20) doses (of 0.25 mL each) can be withdrawn from each vial.

Pierce the stopper preferably at a different site each time.

Do not puncture the vial more than 20 times.

When low dead volume syringes and/or needles are used, the amount remaining in the vial may be sufficient for additional dose(s). There should be no pooling of excess vaccine volume from multiple vials.

4.3 Transportation

Up to 12 hours may be used for transportation of the unopened vaccine stored at +2°C to +8°C and within the timeframe of the USE BEFORE date and time. The delivery box will have a transportation label affixed which will indicate the time of the dispatch from NCCS and the time of delivery at the site. This duration must be taken into consideration for any onward transportation.

4.4 Vaccine decommissioning

Serialised boxes of Spikevax must be decommissioned by Hospitals and by Retail Pharmacies. NCCS will decommission for other locations as per Art.23.

4.5 Stock reconciliation for CVCs

TrackVax (v24) has been updated for labelling and stock management. Stock is booked out and labelled in either Booster mode (0.25ml dose) OR Standard mode (0.5ml dose).

There is no clinical reason why both (0.25ml and 0.5ml doses) cannot be withdrawn from the same vial. TrackVax cannot facilitate a combination of 0.25ml and 0.5ml doses from one vial, therefore the number of doses administered on Covax will not reconcile with the number of doses issued from TrackVax. This discrepancy must be reconciled at the end of day or session.
Management of Spikevax® COVID-19 Vaccine Moderna Guidance at Vaccination Clinics

For example in Booster Mode, 20 labels will be generated but if some standard doses are administered, then Covax will record less than 20 vaccinated people. When such discrepancies arise, complete the comment section on TrackVax end of session report, specifying how many standard (0.5ml) doses were withdrawn from that vial while operating in Booster Mode.

5. **Consumables, record cards and other equipment**

These will be delivered in advance by HSE in the required quantities to match the quantity of vaccine ordered/supplied. A national distribution service will purchase and deliver all necessary supplies, to handle, prepare, and administer the vaccine including PPE and critical clinical and non-clinical consumables. These are not included in this SOP.

<table>
<thead>
<tr>
<th>Note 1: For sites using TrackVax, the system can accept 19 hours or midnight whatever is the first to be reached.</th>
</tr>
</thead>
</table>

- **Anaphylaxis Kits**

Refer to National Immunisation Advisory Committee Guidelines


The epinephrine will be purchased and decommissioned by a pre-determined community/hospital pharmacy as agreed by the lead governance organization CHO/HG.

- **Storage Equipment**

A pharmaceutical fridge must be used to store vaccines. The set point for the fridge temperature and alarms should take into account the need to maintain the temperature above +2°C to prevent freezing and remain less than +8°C. The temperature should be set to maintain +5°C +/- 3°C.

Fridges should be validated and monitored in accordance with existing local procedures.

6. **Stock control, security and monitoring of wastage**

A physical stock count of COVID-19 vaccine vials should be performed. The physical stock count of SpikeVax® (Moderna) should match the stock count recorded on the IT system.

Sites will need to ensure that vaccines are stored securely at all points between receipt and use or disposal.

Dispose empty vials into sharps bins safely as per health care management policy. Dispose syringes and needles into sharps bins according to normal local waste management procedures.
Original cartons must have their labels defaced using permanent black marker pens, and placed into appropriate waste sack for incineration, as soon as possible after they become empty.

7. Health & Safety

There are no special handling requirements for routine handling and dealing with SpikeVax® (Moderna).

Health and Safety risk assessments should be undertaken locally to ensure these risks are adequately controlled.
Management of JCOVDEN (JANSSEN COVID-19) Vaccine Guidance at vaccination Clinics

This document is under regular review and will be updated when relevant new information becomes available. Please check www.immunisation.ie for the current version.

1. Background
JCOVDEN vaccine was granted conditional marketing authorisation by the European Commission on 11\textsuperscript{th} March 2021. https://www.ema.europa.eu/en/medicines/human/EPAR/COVID-19-vaccine-janssen

JCOVDEN is at a temperature of +2°C to +8°C when delivered to vaccination sites. The vial will be boxed and labelled with a HSE SCAN ME label which contains the updated shelf life also known as the \textit{Use Before} date. The \textit{USE BEFORE} date is calculated in NCCS by adding 11 months from date of removal from freezer. This does not exceed the manufacturer expiry date.

The site receives delivery of the vaccine at temperature of +2°C to +8°C and should continue to store at this temperature.

2. Responsibilities
It is the responsibility of the Responsible Person to ensure that this SOP is followed.

3. Scope
The scope of this document is to set a standardised protocol of procedures to be followed in the provision of the JCOVDEN Vaccine. Separate documents are available for other COVID-19 vaccines.

4. Purpose
The purpose of this document is to outline the management of the JCOVDEN\textsuperscript{®} vaccine at the vaccination clinic level, and to provide supporting guidance in relation to:

- Safe and temperature controlled storage
- Safe handling, including management of shelf life reduction processes following first puncture of the vial

The document provided may be used as a template to be adapted for local use, or may be used as reference sources to check that existing local procedures are robust and comprehensive.
Management of Nuvaxovid® (COVID-19 vaccine Novavax) Guidance

1. Background

Nuvaxovid® (Covid-19 vaccine Novavax) will be stored and delivered by the National Cold Chain Service (NCCS) at temperature between +2°C and +8°C.

Nuvaxovid was granted conditional marketing authorisation by the European Commission on 20 December 2021. Additional information can be found here:

Additional information is provided about the vaccination programme in the document Clinical Guidance for COVID-19 Vaccination available at www.immunisation.ie

2. Responsibilities

It is the responsibility of the Responsible Person to ensure that this SOP is followed.

3. Scope

The scope of this document is to set a standardised protocol of procedures to be followed in the provision of Nuvaxovid. Separate documents are available for other COVID-19 vaccines.

4. Purpose

The purpose of this document is to outline the management of Nuvaxovid® at the vaccination clinic level, and to provide supporting guidance in relation to:

- Safe and temperature controlled storage
- Safe storage and handling, including management of shelf life reduction following first puncture of the vial

The document provided may be used as a template to be adapted for local use, or may be used as reference sources to check that existing local procedures are robust and comprehensive.
4.1 Safe and temperature controlled storage

Upon arrival at your vaccination centre:

- Read the temperature of the fridge/s
- Record maximum, minimum and current temperature
- Reset after recording.

For additional information the following document may be consulted:

4.2 Safe storage and handling, including management of shelf life reduction following first puncture of the vial

Nuvaxovid® comes as a Multi Dose Vial (MDV). An overfill is included per vial to ensure that a maximum of ten (10) doses of 0.5 mL each can be extracted.

Nuvaxovid® will be stored and delivered at temperature of +2°C to +8°C by NCCS and the EXPIRY DATE will be the printed on the vial label and original carton.

Place the stock immediately in the fridge at a temperature of +2°C to +8°C. The vials should be stored upright and kept in their original box to be protected from light.

Unopened Nuvaxovid® vaccine has been shown to be stable up to 12 hours at +8°C to +25°C. Storage at 25°C is not the recommended storage or shipping condition but may guide decisions for use in case of temporary temperature excursions during storage at 2°C to 8°C.

Immediately prior to use, remove the vaccine vial from the carton in the refrigerator. The vaccine is in ready to use presentation. Gently swirl the multidose vial before and in between each dose withdrawal. Do not shake.

Opened Nuvaxovid® vaccine must display a DISCARD date and time on the vial. When the vial is first punctured, calculate the DISCARD date and time on the vial. This is done by adding 6 hours to the time of the initial puncture and this time and date must be recorded on the vial. The vaccine can be stored between 2°C to 25°C during this 6 hour period.
5. **Stock control and Security**

A physical stock count of COVID-19 vaccine vials should be performed. In the HSE central vaccination clinics settings the physical stock count of the vaccine should match the stock count recorded on the IT system.

Sites will need to ensure that vaccines are stored securely at all points between receipt and use and including disposal of vials.

Dispose empty vials after vial reconciliation, into sharps bins safely as per health care management policy. Dispose syringes and needles into sharps bins according to normal local waste management procedures.

6. **Health & Safety**

There are no special handling requirements for routine handling of Nuvaxovid® vaccine. Any unused medicinal product or waste material should be disposed of in accordance with local requirements.
4.1 Safe and temperature controlled storage
Upon arrival at your vaccination centre:

- Read the temperature of the fridge/s
- Record maximum, minimum and current temperature
- Reset after recording

For additional information the following document may be consulted:

4.2 Safe handling, including management of shelf life reduction processes following first puncture of the vial
JCOVDEN vaccine comes as a multi dose vial (MDV) containing at least 5 doses.

Receipt delivery of stock and scan stock onto the system as you unpack the delivery.

Place the stock immediately in the fridge at a temperature of +2°C to +8°C. The vial(s) should remain in their box to be protected from light, for a single period of up to 11 months (and within original expiry date).

Unopened JCOVDEN is stable for a total of 12 hours at 9°C to 25°C. It is not a recommended storage or shipping condition but may guide decisions for use in case of temporary temperature excursions during the 11 month storage at 2°C to 8°C.

**DISCARD date and time** must be recorded on the vial once the vial is initially punctured. This is calculated by adding 3 hours to the time of first puncture. During this 3 hour period the vaccine can be stored at room temperature of up to +25°C.

Currently, Jcovden® is only available in Central Vaccination Clinics.

5. Consumables, Patient Information Leaflet (PIL), Record Cards & other equipment
These will be delivered in advance by HSE in the required quantities to match the quantity of vaccine ordered/supplied. A national distribution service will purchase and deliver all necessary supplies, to handle, prepare, and administer the vaccine including PPE and critical clinical and non-clinical consumables. These are not included in this SOP.

- **Anaphylaxis Kits**
Refer to National Immunisation Advisory Committee Guidelines:
In the HSE central vaccination clinics settings, the epinephrine will be purchased and decommissioned by a pre-determined community/hospital pharmacy as agreed by the lead governance organization CHO/HG.

- **Storage Equipment**
  A pharmaceutical fridge must be used to store vaccines. The set point for the fridge temperature and alarms should take into account the need to maintain the temperature above +2°C to prevent freezing and remain less than +8°C. The temperature should be set to maintain +5°C +/- 3°C.

  Fridges should be validated and monitored in accordance with existing local procedures.

6. **Stock control and Security**
A physical stock count of COVID-19 vaccine vials should be performed. In the HSE central vaccination clinics settings the physical stock count of the vaccine should match the stock count recorded on the IT system.

Sites will need to ensure that vaccines are stored securely at all points between receipt and use and including disposal of vials.

Dispose empty vials after vial reconciliation, into sharps bins safely as per health care management policy. Dispose syringes and needles into sharps bins according to normal local waste management procedures.

7. **Health & Safety**
There are no special handling requirements for routine handling of JCOVDEN vaccine. Should a spillage occur this should be disinfected with an appropriate antiviral disinfectant (active on adenovirus).

Health and Safety risk assessments should be undertaken locally to ensure these risks are adequately controlled.
APPENDIX C: ADVICE FROM THE NATIONAL IMMUNISATION ADVISORY COMMITTEE REGARDING FEVER AFTER COVID-19 VACCINATION THE NATIONAL IMMUNISATION ADVISORY VACCINATION
National Immunisation Advisory Committee

29 December 2020

Statement on fever following COVID-19 vaccination

Clinical judgement should be used based on the individual case. Carers and patients should be advised that if they have any concerns, they should seek advice from their GP.

Post immunisation fever

Vaccinated individuals should be advised that COVID-19 vaccines may cause a mild fever which usually resolves within 48 hours. This is a common, expected reaction. Isolation and further investigation are not generally required.

Fever may be managed symptomatically with an antipyretic, provided there are no other concerns.