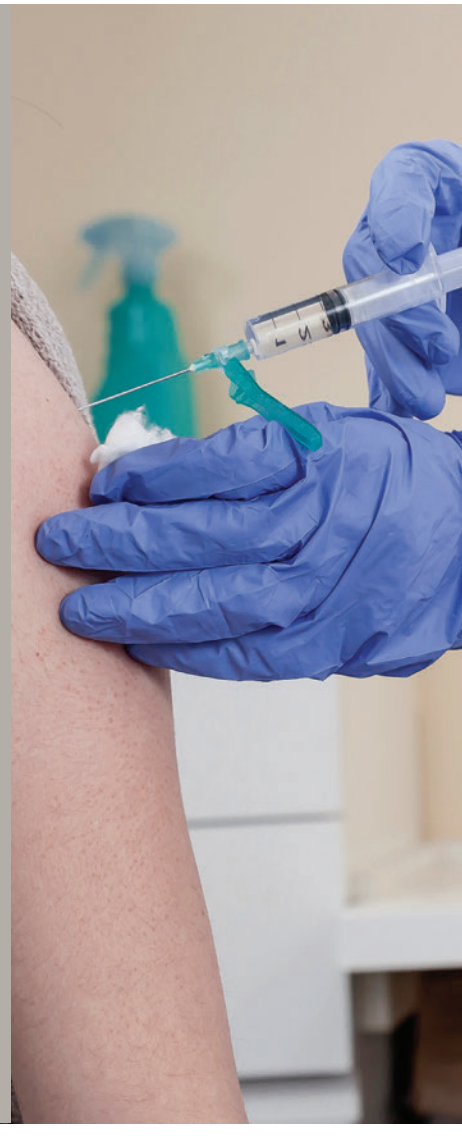
Controller and Auditor-General
Tumuaki o te Mana Arotake

B.29[21b]

Preparations for the nationwide roll-out of the Covid-19 vaccine



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Preparations for the nationwide roll-out of the Covid-19 vaccine

Presented to the House of Representatives under section 20 of the Public Audit Act 2001.

May 2021

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Auditor-General's overview

E ngā mana, e ngā reo, e ngā karangarangatanga maha o te motu, tēnā koutou.

The Covid-19 Immunisation Programme (the immunisation programme) is critical to New Zealand's response to, and recovery from, Covid-19.

The Government aims to vaccinate as many people as possible, aged 16 years and over, by the end of 2021. The Ministry of Health (the Ministry) is leading the immunisation programme, which is the largest ever carried out in New Zealand. It is being developed and implemented in an environment of continued uncertainty. Public expectations of the immunisation programme are high.

My report provides an independent view on how ready the Ministry and district health boards are to meet the Government's vaccination goals, in particular, to scale up to vaccinate the general population.

Our involvement as the immunisation programme has developed has meant that this has been a challenging audit. Our work provides a snapshot of progress at a point in time. I expect that by the time this report is published, further progress will have been made. Reviewing the immunisation programme at this early stage means that my recommendations can assist the Ministry to identify further improvements and make changes to increase the chances of success.

It is important to acknowledge early achievements. The Government has secured enough supply to vaccinate New Zealanders and a number of Pacific countries against Covid-19. It set up a taskforce, developed a procurement strategy, and put New Zealand in a strong position, with agreements to purchase four different vaccines.

The Government chose to invest in the security of supply at a time when there was no certainty that any of the vaccines would be viable. However, this decision may have come at a cost because the Government might have to pay for vaccines it no longer needs.

The immunisation programme is complex. Although the Ministry is leading the immunisation programme, district health boards, primary health care providers, and the wider health and disability sector are all critical to its success. Delivery models, supported by an extended vaccination workforce and appropriate information systems, are still being put in place. The logistics are complicated. The storage requirements for the Pfizer-BioNTech vaccine (which is the vaccine the Government has chosen to roll out) are not straightforward.

The speed at which the immunisation programme has needed to be set up led to an early decision to start rolling out the vaccine in limited settings while more detailed design and planning of the wider roll-out was still to be done. This

approach has enabled the Government to show early progress and learn from its experience. Although, as at 12 May 2021, nearly 400,000 vaccine doses have been administered, a significant scale-up is still required to achieve the Government's overall goals.

Given the significance of the challenge, I did not expect to find a perfect plan. However, to successfully navigate these challenges, a clear strategy, a well thought-out path, and fit-for-purpose governance arrangements are required. In particular, I expected to see a level of planning that matched the public commitments the Government has made.

My audit team found a high-level plan in place. There is a sequencing framework that sets out when specific population groups are expected to be vaccinated and in what time frame. There is information about the different locations where vaccines could be administered, and a range of communications have been developed to support vaccinations.

Early progress has relied largely on existing vaccination staff, a range of manual processes, and locally designed workarounds put in place while national processes and systems are developed. Some of what is in place right now will not be sufficient when the immunisation programme is vaccinating larger numbers.

At the time of this audit, the plan to scale up had not yet been fully developed and the critical path had only recently been identified. District health boards are still working out how they will organise aspects of the vaccine roll-out in their communities. Some are well-positioned, but others have a lot of work to do. Information systems are still being developed. If everything goes according to plan these will be ready, but only just in time. Although a lot of thought has been given to ensure that everyone (Māori and Pasifika communities in particular) can access the vaccine in a way that meets their social, linguistic, and cultural needs, it is not yet clear whether this will be fully achieved. At the time this audit was completed, many in the wider health and disability sector were still not clear about what their role will be or when they will know.

In my view, there are substantial risks around having enough trained vaccinators and establishing distribution and inventory management systems that will get vaccines to the right place in the right quantities at the right time, while minimising wastage. More work is needed to ensure that contingency plans are in place in case the vaccine is not delivered to New Zealand on time or in the quantities expected, or if there are other disruptions such as a further community outbreak of Covid-19 that affects the vaccine roll-out.

I am not yet confident that all of the pieces will fall into place quickly enough for the immunisation programme to reach the level of vaccinations required for the Government to meet its goals. In my view, there is a real risk that it will take more time than is currently anticipated to get there.

I have made recommendations that I hope will assist the Ministry to strengthen aspects of the immunisation programme. In particular, I consider it important that the Ministry remains open with the public about the uncertainty and the challenges ahead.

There will no doubt be some further operational problems and, in my view, the Ministry needs to manage public expectations appropriately. I am pleased to see that the Ministry has recently stepped up efforts to engage with the media about the roll-out, and a public awareness campaign has started. I encourage the Ministry to continue these efforts.

Although my audit team found several issues with the readiness of the immunisation programme for full-scale roll-out, these are not related to the safety of the vaccine. We are not clinical experts, but it is clear that the Ministry has drawn on substantial expertise and taken care to ensure that public safety is a primary consideration in developing and implementing the immunisation programme.

It is also clear that there is a group of capable and dedicated public servants working to get the immunisation programme ready for the full-scale roll-out. That goal will be realised only with the support and involvement of a large number of people across the health and disability sector.

I intend to report on the progress of the full-scale roll-out of the vaccine in the next phase of my work on the immunisation programme.

I thank everyone who spoke with my audit team as we carried out this work. In particular, I thank staff from the Ministry for their assistance as they continued to progress the immunisation programme. I also thank all those involved in the immunisation programme for their dedicated work to help keep New Zealanders safe.

Nāku noa, nā

John Ryan
Controller and Auditor-General
17 May 2021

Our recommendations

We recommend that the Ministry of Health:

1. continue to be transparent in its public communications about supply risks and the potential impact on the roll-out schedule;
2. complete contingency plans for major risks, for example, vaccine doses do not arrive in New Zealand at the scheduled time or in the expected quantities, adequate workforce is not able to be secured, key systems are not ready on time, or a community outbreak of Covid-19;
3. continue to improve guidance to district health boards about the scenarios in which it is acceptable to depart from the sequencing framework and make this transparent to the public;
4. continue to work with district health boards and Māori, Pasifika, and disability health care providers to make sure equity considerations are fully embedded in delivery plans;
5. provide more clarity to primary health care providers (including general practitioners) about their role in the wider roll-out to ensure that they have adequate time to prepare; and
6. continue to strengthen efforts to raise public awareness of the immunisation programme in a way that:
    - ensures that communications are co-ordinated with key vaccination events;
    - encourages uptake of the vaccine; and
    - is tailored to different audiences, in particular Māori, Pasifika, people with disabilities, and harder-to-reach communities.

1 Introduction

1.1 In May 2020, the Government initiated work to procure enough Covid-19 vaccines to vaccinate the New Zealand population. The Ministry of Health (the Ministry) is leading the nationwide roll-out of the vaccine and started planning for the Covid-19 Vaccine and Immunisation Programme (the immunisation programme) in August 2020.

1.2 By December 2020, the Government had entered into agreements with four pharmaceutical companies to supply vaccines, subject to their approval for use in New Zealand. The Pfizer-BioNTech vaccine (the Pfizer vaccine) was provisionally approved[1] for use in February 2021. In March 2021, Pfizer agreed to provide New Zealand with enough doses for the whole population.

1.3 The Pfizer vaccine will be supplied in instalments. Pfizer expects to provide all of its vaccine to New Zealand by the end of 2021. The Government's aim is to vaccinate as many people as possible, aged 16 years and over, by the end of 2021.

1.4 The Government has indicated that it will vaccinate the population in four main groups:

- Group one consists of border and managed isolation and quarantine workers and the people they live with. Vaccination of this group started in February 2021.
- Group two consists of high-risk frontline health workers and people living in high-risk settings. This group also started receiving vaccinations in February 2021.
- Group three consists of people who are at risk of getting very sick from Covid-19. This group is estimated to include about 1.7 million people with vaccinations scheduled to start in May 2021.
- Group four consists of the rest of the population aged 16 years and over – about two million people. These vaccinations are due to start from July 2021.

1.5 The Pfizer vaccine is being rolled out through a nationally co-ordinated and locally delivered model. District health boards will decide how they will run vaccinations for their communities and where the vaccination sites will be. There are four types of location for vaccination sites: hospitals, temporary sites (such as workplaces, marae, churches, residential care facilities, or mobile clinics), community sites (such as general practitioner hubs), and fixed-community vaccination centres.

1.6 The Ministry is responsible for getting the vaccine to the vaccination sites, and district health boards are responsible for managing these sites. Managing the sites includes storing the vaccine, securing the right staff, identifying and inviting people to be vaccinated, recording their details, and administering the vaccine.

1 Provisional approval means the pharmaceutical company must still meet certain conditions, including supplying more data from its clinical trials, and related to manufacturing quality standards. This will happen at the same time as the vaccine is rolled out. It is not unusual for vaccines to be rolled out with provisional approval. See *Common questions about the COVID-19 vaccine rollout* at www.healthnavigator.org.nz for more information.

1.7 There is public pressure to deliver the immunisation programme quickly. Other countries are moving ahead with their vaccination programmes. In our view, it is important for the Government to maintain public trust and confidence by ensuring that New Zealand does not fall significantly behind.

1.8 Although New Zealand has not experienced the same level of Covid-19 outbreaks as many other countries, there is pressure to reopen borders as soon as possible to aid economic recovery. Being able to do this depends, in part, on the success of the immunisation programme.

1.9 In this Part, we describe:

- what we looked at;
- how we carried out this audit; and
- the structure of this report.

What we looked at

1.10 Our audit looked at how well the Government is preparing for the nationwide roll-out of the Covid-19 vaccine. We did this to provide the public and Parliament with an independent view on how well positioned we consider the immunisation programme is for the nationwide roll-out scheduled for the second half of 2021. We carried out our audit as the immunisation programme was being developed so that the Ministry could act on our recommendations as soon as possible.

1.11 The primary objectives of our work were to:

- describe how the Government is approaching the nationwide roll-out of the immunisation programme, including any early progress;
- assess how well the immunisation programme has been set up, and how well associated processes and systems appeared to be working to date; and
- identify any areas for improvement to enable action to be taken if appropriate.

1.12 We looked at how vaccines have been procured and how the purchase agreements are being managed, the Government's strategy and planning for rolling out the Pfizer vaccine nationwide, and how well risks to the immunisation programme are being managed.

1.13 We did not look at:

- the safety or effectiveness of any of the vaccines purchased, or any other matter requiring clinical expertise, because we are not clinical experts;
- the likely effectiveness of the contracts related to vaccines that have been entered into by the Government;

- wider procurement matters, such as for information systems or other equipment or supplies;
- the cost-effectiveness of the immunisation programme overall, including the value for money of what is spent on vaccines, given the necessity to vaccinate and the limited supply options;
- the appropriateness of the Government's sequencing approach to vaccination; or
- the adequacy or security of the information systems used to support the vaccine roll-out or privacy controls on these systems.

1.14 This work has focused on the governance and management arrangements for the immunisation programme only. We have not assessed any of the wider governance, quality assurance, or review arrangements related to the all-of-Government response to Covid-19. However, we have a wider work programme under way that includes other aspects of the Covid-19 response.[2]

1.15 This audit is the first phase of work we intend to carry out on the immunisation programme. We also intend to carry out further work as the roll-out progresses.

How we carried out this audit

1.16 Most of our fieldwork for this audit was carried out from mid-February 2021 to mid-April 2021. Although we have done our best to ensure that the information in this report is up to date, it is likely that the immunisation programme will have made further progress by the time this report is published.

1.17 To carry out this work, we spoke with a range of people and groups. These included government agencies involved in the procurement of vaccines. We spoke with Ministry staff, including senior management. We interviewed members of the different governance and advisory arrangements that are in place to support the immunisation programme, as well as key members of the programme team.

1.18 We spoke to staff at some district health boards and members of professional bodies and advocacy organisations for different groups of health care workers, such as general practitioners (GPs), nurses, and pharmacists. We also spoke with Māori and Pasifika health care providers, disability advocates, communications specialists, vaccinator training specialists, and others in specialist roles.

1.19 We reviewed and analysed documents about the immunisation programme, including Cabinet papers, planning and programme documentation, and documents provided to Steering and Governance Groups. We looked at a sample of plans that district health boards provided to the Ministry.

1.20 We also carried out work to understand the process from purchase through to use of the vaccine, and to see whether:

2 More information about our work on the Government's response to Covid-19 is on our website at oag.parliament.nz.

- vaccine purchase contracts were properly authorised; and
- all vaccines are accounted for by comparing reported vaccine stock on hand against the stock movements.

1.21 We have also obtained a general understanding of the Covid-19 Immunisation Register and how it will work to support the immunisation programme.

Structure of this report

1.22 Part 2 describes the complexity and scale of vaccinating the New Zealand population. It sets out the challenges that the Ministry and the health and disability sector are dealing with. It also sets out the progress that had been made in the immunisation programme at the time we prepared this report.

1.23 Part 3 explains the process that the Government followed to procure vaccines. We consider whether good procurement practice was followed and describe the uncertainty that remains about delivery of the Pfizer vaccine.

1.24 Part 4 looks at how the immunisation programme had been set up and the supporting governance that is in place. We describe the approach that has been taken to strategy and planning and how effectively the immunisation programme is managing risks.

1.25 Part 5 sets out how the immunisation programme is progressing towards scaling up to vaccinate larger groups of people, the work that has been done, and what was left to do at the time our audit was completed. We discuss how ready we consider the immunisation programme is to scale up.

1.26 Part 6 looks at the approach the Ministry has taken to communicating the roll-out. We discuss communications to people involved in the immunisation programme, stakeholders and the wider health and disability sector, and most importantly the public.

The challenges of planning for a large-scale immunisation programme

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2.1 The Covid-19 immunisation programme will be the largest ever carried out in New Zealand. It aims to vaccinate as many New Zealanders as possible, as well as provide vaccines to the Cook Islands, Niue, Tokelau, Samoa, Tonga, and Tuvalu.

2.2 For the immunisation programme to be successful, there are a substantial number of inter-related elements that need to come together at the right time. There is also a lot of uncertainty, for example, about the potential uptake of the vaccine. There is pressure on the Ministry to move at pace to roll out the vaccine, and there is a high level of public interest. The Ministry has also decided that ensuring that there is equitable access to the vaccine – that is access in a way that meets social, linguistic, and cultural needs – is important. All these factors make planning and managing the immunisation programme particularly complex.

2.3 In this Part, we describe some of these complexities, including:

- determining who will get vaccinated and in what sequence;
- the challenge of building a centrally co-ordinated but locally delivered approach that will ensure that there is equitable access to the vaccine for all communities;
- the significant logistical difficulties associated with getting the right number of vaccine doses to the right place at the right time;
- ensuring that there is a national workforce that can administer the vaccine;
- the need for national information systems to support the roll-out and monitor progress;
- the need to have contingency plans for multiple scenarios; and
- developing effective communications for multiple audiences to manage expectations but also build confidence.

Determining who will get vaccinated and in what sequence

2.4 For the immunisation programme to be successful, vaccines need to be administered to as many people as possible. The health and disability sector needs time to build capacity to manage vaccinations on a large scale.

2.5 The Government has decided to prioritise vaccinations based on need. The largest group of people to be vaccinated will be the general population. Vaccination of this group is scheduled to begin from July 2021. Decisions might still be required about whether it makes sense to further sequence the order that people are vaccinated in this group.

2.6 The sequence will affect the logistics of the roll-out. Some options will be simpler to implement – for example, fewer larger locations will make distribution easier.

Focusing on one geographical area at a time could help if there are not enough trained vaccinators in all parts of the country. With each option there are likely to be trade-offs. Large vaccination centres, for example, might not be effective for certain communities.

2.7 It might make sense to depart from the sequence in some circumstances – such as to minimise vaccine wastage or allow health care providers in certain areas to move ahead of the sequence if they are well positioned to do so.

2.8 The Ministry wants to ensure that there is equitable access to the vaccine, with a particular focus on Māori and Pasifika communities and people with disabilities. Equitable access means ensuring that everyone can access the vaccine in a way that meets their social, linguistic, and cultural needs.

2.9 Parts of the roll-out, such as where vaccines will be administered and who will be administering them, will need to be tailored for different communities. Although this approach is likely to have better outcomes for these communities, it adds to the complexity of the immunisation programme. The Ministry can plan, co-ordinate, and monitor the programme, but district health boards and the wider health and disability sector have a significant role in its implementation.

2.10 District health boards are expected to work with other health care providers to understand their capacity and make decisions about how to get the vaccine to their communities.

The logistical challenges

2.11 One of the key decisions for the Ministry has been to decide where people will be vaccinated. Getting the vaccine to some communities will be a particular challenge, such as communities in rural or hard-to-reach locations, or communities that have less direct access to the health system or have less trust in health care providers. The Ministry and district health boards need to choose options that will help reach as many people as possible (and provide equitable access), while also keeping the roll-out as simple as possible so there are fewer variables to plan for.

2.12 The Pfizer vaccine has storage requirements that make transporting and storing it complicated. It must be stored at a temperature between -90˚C and -60˚C. It can also be stored at -20˚C for two weeks. However, after it has been thawed, it must be stored at a temperature between 2˚C and 8˚C and used within five days. Any thawed vaccine not used after five days will be wasted.

2.13 Booking systems are expected to provide sites with information that will allow them to forecast the amount of vaccine they need. However, not everyone will show up for their appointment and there will need to be provision for people

without appointments (walk-ins). This makes it challenging for the Ministry to work out how to ensure that enough vaccine doses are available at vaccination centres when they are needed, while minimising wastage. This might require having a process in place to move vaccines between vaccination sites. The Ministry will need to consider what level of wastage is realistic in these circumstances and be open with the public about what is likely to occur.

Ensuring that there are enough vaccinators

2.14 The Ministry needs enough vaccinators to vaccinate about 4.23 million[3] people by the end of 2021. The number of vaccinators and other staff required depends on the types of delivery model used. To estimate the required workforce, there needs to be clarity about how each district health board is planning to roll out the vaccine in its community.

2.15 There are currently about 12,000 health care practitioners authorised to vaccinate in New Zealand. The Ministry expects that most vaccinators for the Covid-19 vaccine will come from this group. However, these people are already working in the health system. If they are diverted to administer Covid-19 vaccinations, other health services and immunisation programmes, such as for influenza and measles, could be affected. Some of the health workforce are already involved in testing people, including border workers, for Covid-19 to support the wider Covid-19 response. Most of the health workforce will not be able to work full-time administering Covid-19 vaccinations, so there needs to be a wide pool of vaccinators to draw from.

2.16 If the Ministry and district health boards cannot source enough vaccinators from the "regulated workforce",[4] they will need to decide where to source additional vaccinators. Non-regulated groups will need extra training and support before they meet the requirements to administer vaccinations.

2.17 As well as vaccinators, district health boards will need to source staff to help run each vaccination site. This includes staff who can take people's details and monitor them after they have received their vaccine.

Developing fit-for-purpose information systems

2.18 The Ministry needs to be able to identify the individuals to be vaccinated, and monitor and report on who is being vaccinated to ensure that the vaccine reaches all communities. This requires a range of capabilities, including having the right information technology systems in place.

3 This is the total number indicated in the vaccine roll-out plan. See Ministry of Health (2021), *Our COVID-19 vaccine rollout plan* at covid19.govt.nz. Each person will need two doses of the Pfizer vaccine.

4 The regulated workforce are those working for a health care profession regulated under the Health Practitioners Competence Assurance Act 2003, such as doctors, nurses, paramedics, and midwives.

2.19 A number of systems are needed to support the nationwide roll-out, for example, to record vaccine stock, identify where vaccines need to be delivered, and manage bookings for people to have vaccinations. These systems might also need to interact with each other and with other systems, such as patient management systems used by other health care providers.

2.20 The Ministry has decided that these need to be national systems so that vaccine distribution, uptake, and possible safety issues can be centrally monitored. Some of these systems are already in place. For example, there is a national immunisation register and a national system for recording adverse reactions.

2.21 However, systems are not currently equipped to manage the scale of the immunisation programme. The existing systems will need to be significantly upgraded and, in some cases, new systems will need to be built. All of these systems need to be ready as soon as possible, and before the roll-out to the general population. In the meantime, a range of workarounds are in place. The Ministry will need to work out if, when, and how it will transfer data collected in the early stages of the roll-out to the new systems when they come online.

2.22 The National Health Index contains some data about the New Zealand population, but there are gaps. Not all groups will be identifiable through the National Health Index's data. The Ministry will need to decide whether, and how, it will supplement the National Health Index's data so that it can identify certain communities to invite to be vaccinated and monitor uptake. This is important to understand whether any overall goal for vaccination, as well as specific equity objectives, are being achieved.

Contingency planning for multiple scenarios

2.23 The immunisation programme needs to be able to adapt to a range of changing circumstances.

2.24 The immunisation programme has been developed, and will be implemented, with an ongoing risk of a Covid-19 outbreak in the community. Depending on the extent of any community transmission, different parts of the country might need to go into different alert levels. This could significantly affect the immunisation programme. For example, people working on the immunisation programme might be diverted, reducing the availability of the health workforce to run both vaccination sites and carry out Covid-19 testing or provide care if there is a severe outbreak. Changes in alert levels might also reduce people's willingness to attend vaccination centres.

2.25 Alongside the risk of community outbreak, there are a range of other challenges. New variants of the virus could diminish the effectiveness of the current vaccines or require them to be used differently. The immunisation programme will also need to keep up with the rapidly evolving science about who the vaccine is suitable for and how it should be delivered. For example, if it is determined that some or all people under 16 years can be vaccinated, the Ministry will need to decide whether and when to start vaccinating this group.

Building confidence with effective communication

2.26 The speed at which the immunisation programme is moving is likely to mean that members of the public have questions that the Ministry might not be able to answer yet.

2.27 Clear and transparent communication that is tailored to different audiences is essential so that people know what to expect and can plan accordingly. This will help to build confidence in the immunisation programme. It will also be important to provide assurance to the public that getting vaccinated is not just safe for themselves, but for all New Zealand.

2.28 With such a large immunisation programme, and one that is implemented in a context of considerable uncertainty, there will likely be problems. The Ministry will need to consider how to manage expectations about what can realistically be achieved, while at the same time building public confidence in the immunisation programme.

Progress so far

2.29 The first vaccines arrived in February 2021. The first vaccinations were administered to border workers on 20 February 2021. These first vaccinations were administered while the processes and systems needed for the wider nationwide roll-out were still being developed.

2.30 Early progress has relied largely on existing vaccination staff, a range of manual processes, and locally designed workarounds. Some of what is in place right now will not be sufficient when the immunisation programme is vaccinating much larger numbers.

2.31 The first group to receive the Pfizer vaccine was border workers and the people they live with. On 12 March 2021, the first person received their second dose of the vaccine. By 12 May 2021, 268,787 people had received their first dose of the vaccine and 120,090 people had received both their first and second dose.

2.32 The first vaccinations for border and managed isolation and quarantine staff occurred primarily at managed isolation and quarantine facilities in Auckland, Hamilton, Christchurch, and Wellington. The largest number of vaccinations administered was in Counties Manukau.

2.33 Vaccination sites were scaled up rapidly during February and March 2021. By 23 March 2021, more than 100 vaccination sites were in operation, including at hospitals, community pop-up centres, medical centres, and marae. By 7 April 2021, all 20 district health boards were administering vaccines.

2.34 District health boards have been responsible for identifying who needs to be vaccinated and inviting them for a vaccination. So far, district health boards have used their own booking systems and recorded information when people are vaccinated in the newly developed national Covid-19 Immunisation Register.

2.35 To manage the complicated storage and transport requirements of the Pfizer vaccine, district health boards have been estimating how much vaccine they will require and the Ministry has organised for the vaccine to be delivered when needed. This model works for the delivery of smaller amounts of the vaccine but, in our view, will not be sufficient as the amounts increase when the nationwide roll-out scales up.

2.36 The workforce needed for the nationwide roll-out includes vaccinators and staff who provide a range of support services. Training for vaccinators is under way. More than 4000 health care professionals have been trained so far to administer the Pfizer vaccine. Significantly more vaccinators will be required when the immunisation programme is fully scaled up.

3 Procuring Covid-19 vaccines

3.1 In this Part, we describe the Government's strategy to procure vaccines. We assess:

- how the Government developed the strategy;
- the process the Government followed to secure advance purchase agreements;
- how decisions were made about which vaccines to purchase; and
- whether procurement processes were reasonable in the circumstances.

3.2 Given the importance of securing an appropriate vaccine supply, we expected that the Government would have had a clear procurement strategy and that it would have moved quickly to negotiate with suppliers. We expected to see a framework in place to help guide the Government's decision-making, that it had drawn on appropriate expertise to help inform its approach (including the experience of other jurisdictions where possible), and weighed up costs and benefits of its choices.

3.3 Given the circumstances, we recognised that the Government's procurement rules might not be applicable.[5] Nonetheless, we expected to see evidence that the principles of good procurement were considered.

Summary of findings

3.4 A clear strategy for securing vaccines was developed and implemented. This resulted in advance purchase agreements with four pharmaceutical companies to supply vaccines to New Zealand. These advance purchase agreements are for more vaccines than are needed for New Zealand and the Pacific countries the Government has committed to support. Purchasing that amount was a deliberate strategy because of the uncertainty about if and when the vaccines would be supplied, and whether they would be approved for use in New Zealand.

3.5 Subsequently, one of the suppliers, Pfizer, had its vaccine approved for use in New Zealand and supply of the vaccine began. Pfizer agreed to provide enough doses of the vaccine to meet New Zealand's needs.

3.6 In our view, the approach to procuring a vaccine was reasonable in the circumstances and broadly aligned with principles of good procurement. However, these decisions may have come at a cost. Even though the Government has now secured enough Pfizer vaccine for the population, it might have to pay for all of the vaccines it has entered into an agreement to purchase. Depending on how many vaccines are needed, and whether these vaccines gain approval for use in New Zealand, the costs could be significant.

3.7 There are also risks with the timing of delivery of the Pfizer vaccine, which are outside the Ministry's control. In our view, it is important to manage public expectations in the event of delays in delivery affecting the roll-out.

5 For more information about the Government procurement rules, see www.procurement.govt.nz.

Development of the procurement strategy

3.8 On 18 May 2020, Cabinet agreed to put a vaccine strategy in place to "ensure access for New Zealand to a safe and effective vaccine in order to implement our preferred immunisation strategy at the earliest possible time".[6] At that time, it was uncertain whether or when a successful vaccine could be produced. The strategy needed to be flexible to maximise New Zealand's chances of acquiring an effective vaccine.

3.9 A key concern was how much priority New Zealand would be given compared to countries with more negotiating power, more chance of producing their own vaccines, and which were seen as having a higher need. Cabinet was also advised that global manufacturing capacity could be constrained by the expected levels of demand.

3.10 A dedicated taskforce (the Taskforce) was set up to advance the vaccine strategy and, in particular, focus on securing an appropriate supply of vaccines. A Science and Technical Advisory Group provided advice to the Taskforce on vaccine development, manufacturing, and safety. Members specialised in areas such as vaccinations and immunology, virology, and Māori health.

3.11 The Ministry of Foreign Affairs and Trade (MFAT) developed an International Engagement Plan to engage a range of overseas partners. Medsafe was also working with international colleagues to develop a shared framework to assess vaccines for efficacy and safety more quickly. PHARMAC issued a request for information from firms on Covid-19 vaccine research, manufacture, and supply. PHARMAC also worked with MFAT to initiate conversations with major international pharmaceutical companies that were not represented in New Zealand.

Securing a supply of vaccines

3.12 On 10 August 2020, Cabinet agreed a purchasing strategy that would maximise the chances of securing advance purchase agreements for a portfolio of vaccines.

3.13 One approach in the purchasing strategy was to secure agreements through what became the COVAX Facility (COVAX). COVAX is a framework set up to specifically support fair and equitable access to Covid-19 vaccines globally. It is led by GAVI,[7] the Coalition for Epidemic Preparedness Innovations, and the World Health Organisation. COVAX negotiates access to vaccines directly with suppliers and then offers its members options to purchase vaccines based on an equitable distribution.

6 Cabinet Paper (May 2020), *Covid-19 Vaccine Strategy*, page 2.

7 GAVI is a global alliance bringing together public and private sectors with the shared goal of creating equal access to new and underused vaccines for children living in the world's poorest countries. Its partners include the World Health Organisation, vaccine companies, philanthropists, and others.

3.14 The Government agreed to join COVAX in September 2020. In January 2021, the Government accepted purchase options for 100,620 doses of the Pfizer vaccine and 1,668,000 doses of the AstraZeneca/Oxford (AstraZeneca) vaccine through COVAX.

3.15 The other approach that the Government took was to negotiate directly with vaccine suppliers. This is how the Government secured agreements to purchase four different vaccines.

The Taskforce was well prepared to enter negotiations

3.16 The Taskforce recognised that it needed to negotiate advance purchase agreements for vaccines from different vaccine suppliers to give New Zealand a good chance of having timely access to a suitable vaccine.

3.17 In August 2020, Cabinet agreed to set up a negotiating team drawing on expertise from the Ministry of Business, Innovation and Employment, MFAT, PHARMAC, and the Ministry of Health together with external commercial and legal advisors. A science review panel of seven experts, including some from the Science and Technical Advisory Group, was also set up to advise the negotiating team.

3.18 Cabinet agreed to establish a contingency that could be drawn down to secure advance purchase agreements for vaccines, with the approval of the Prime Minister, the Minister of Finance, the Minister of Research, Science and Innovation, and the Minister of Health (the Joint Ministers).

3.19 The Taskforce developed a robust process with clear roles and responsibilities for negotiating and signing advance purchase agreements. The process involved three main activities:

- initial engagement (for example, identifying target vaccine candidates and signing Confidential Disclosure Agreements for information about the potential vaccine);
- scientific and commercial evaluation of the vaccine candidate; and
- negotiation to agree the terms of a full agreement.

3.20 After a satisfactory agreement for purchasing supply of a vaccine had been reached, the process required the Ministry of Health and the Ministry of Business, Innovation and Employment to jointly make recommendations to the Joint Ministers, who would then authorise the Director-General of Health to sign the agreements.

A clear framework guided decisions about which vaccine to purchase

3.21 By September 2020, the Taskforce had a list of 10 target vaccines. The target vaccines were then prioritised based on expected performance and expected availability and access.

3.22 There were clear decision-making frameworks that guided how target vaccines were prioritised. These included clear criteria, accounted for situations where all the desired information was not available, and considered how the target vaccine would contribute to New Zealand's overall vaccine strategy and portfolio.

3.23 In December 2020, Cabinet approved additional funding to be allocated to the contingency so there were enough funds available to secure agreements for a portfolio of vaccines.[8] This funding also covered the estimated costs of implementing the immunisation programme.

3.24 By the end of 2020, advance purchase agreements had been entered into for four different vaccines. At the time of finalising the agreements, there was still uncertainty about the safety and effectiveness of each vaccine. Some were near the end of clinical trials but others had further to go. One of the main reasons for selecting four vaccines that used different technologies was to increase the likelihood of at least one resulting in a viable vaccine.

3.25 If all four vaccines purchased are deemed safe and effective, there will be more than enough doses to immunise all New Zealanders and the countries in the Pacific that the Government has committed to support.

The Government has now purchased enough of the Pfizer vaccine to meet New Zealand's needs

3.26 The initial purchase agreement with Pfizer was for 1.5 million doses. The Taskforce wanted to purchase more doses of the Pfizer vaccine but, at the time the agreement was signed, Pfizer was in negotiations with other potential purchasers and could not commit to supplying more doses of the vaccine to New Zealand. However, the purchase agreement included an option to purchase further doses of the vaccine if they became available.

3.27 Early in 2021, Pfizer advised that it could now offer extra doses of the vaccine to New Zealand. In March 2021, the Government secured an agreement to purchase an additional 8.5 million doses of the Pfizer vaccine so that all eligible New Zealanders could receive it. This new agreement brought the total number of doses of the Pfizer vaccine to 10 million – enough for all New Zealanders aged 16 years and older to receive the full course of vaccine (two doses for each person).

3.28 The cost of the additional doses of the Pfizer vaccine is covered by the contingency funding already set aside.

8 We have not disclosed the cost of the vaccines because this might be commercially sensitive. Public servants and Ministers who needed to know the details of the negotiations and the final agreement reached were required to sign confidentiality agreements before the vaccine producers would share information with them. This was standard practice for any country purchasing Covid-19 vaccines.

Alignment with good procurement practice

3.29 The vaccine purchase was not a standard process. Agreements had to be made to purchase vaccines that might never reach production. Also, because of the significant demand for a Covid-19 vaccine and, at that time, a lack of supply, there was more competition between countries seeking to purchase vaccines than between suppliers. We considered the extent to which the purchase arrangements were in line with the principles of Government procurement.[9]

3.30 In our view, the Taskforce applied the principles of Government procurement in a way that was appropriate for the situation. Specific examples include:

- creating a clear vaccine strategy to guide the procurement;
- using the people with the right set of skills and experience for the Taskforce, the Science and Technical Advisory Group, the negotiating team, and the Science Review Panel;
- making efforts to understand the market for vaccines, including sharing information with other countries; and
- having clear processes for evaluating different vaccine options.

3.31 The Taskforce also worked to ensure that the Government was fully informed about different options, risks, and trade-offs. We describe some of these in more detail below.

The Government may still have to pay for the other vaccines it agreed to purchase

3.32 For all four vaccines, the Government had to make an initial payment to secure the advance purchase agreements. In some cases, this is partially refundable if the vaccine does not gain regulatory approval in New Zealand.

3.33 After a vaccine has been approved, the balance of the payment is due, in most cases, after each delivery. However, the Government has committed to paying for all the vaccines it has agreed to buy. Even if the vaccines are no longer needed, the Government can only terminate the agreements if the supplier fails to deliver the vaccines within a set time frame. Officials briefed Ministers about the terms of each agreement, including that payments would be non-refundable, before Ministers gave approval to sign each agreement.

3.34 Now that the Government has decided to offer the Pfizer vaccine to the whole population, it will need to decide what to do with the other vaccines it has agreed to purchase. Options are limited and will depend on Medsafe regulatory decisions about each vaccine and contractual commitments.

9 More information on the Government procurement rules and the principles of Government procurement can be found at www.procurement.govt.nz.

3.35 In the first instance, the Government is likely to keep some of the vaccines for a range of reasons. Some of the reasons include:

- vaccinating members of the public that cannot have the Pfizer vaccine due to specific health conditions;
- single-dose vaccines might encourage people in harder-to-reach communities to get vaccinated;
- one or more of the vaccines might be approved for people aged under 16 years and could be rolled out to that age group; and
- to fulfil New Zealand's commitment to purchase vaccines for other Pacific countries.[10]

There remains a risk that vaccines might not be delivered when expected

3.36 The purchase agreement with Pfizer includes an interim delivery schedule, which provides the number of doses of the vaccine that Pfizer expects to deliver to New Zealand for each quarter of 2021. Most of the doses are expected in the second half of 2021, which is when the general population is scheduled to be vaccinated. However, this delivery schedule is not a guarantee. We understand that it is standard international practice for vaccine suppliers to have agreed only indicative delivery schedules for Covid-19 vaccines.

3.37 We understand that the Ministry currently has certainty about vaccine delivery for up to two months ahead. This is largely because Pfizer is managing competing international demands for vaccines. This is not a risk specific to the Pfizer vaccine. The purchase agreements made with the other three vaccine suppliers also have indicative delivery schedules.

3.38 There are also delivery risks outside of Pfizer's control, such as global tensions over access to Covid-19 vaccines. For example, the European Union has blocked some exports of the AstraZeneca vaccine.

3.39 The Ministry's plans for rolling out the vaccine are based on an assumption of relatively even delivery of vaccines across the second half of 2021.

3.40 The Ministry is aware of the risks with delivery and has regular contact with Pfizer so that there will be warning of any potential problems with supply. The Ministry is also continuing to engage with the other three vaccine suppliers in the event of problems with Pfizer's supply. None of the other three vaccines have been approved for use in New Zealand, but approvals for both Janssen and AstraZeneca

10 From the outset, the vaccine strategy included consideration of ensuring access to vaccines for our closest Pacific neighbours: the Cook Islands, Niue, and Tokelau, as well as Samoa, Tonga, and Tuvalu. The Government has purchased enough vaccines to include the populations of those Pacific countries but, at the time of our audit, was still working through the details of which vaccine might be used and the associated logistics.

are in progress. Novavax is at an earlier stage of development and is not expected to be available until later in 2021.

3.41 The Ministry has stated publicly that it is confident, based on Pfizer's track record to date, that all the vaccine doses will be delivered. However, it has also acknowledged that there is no certainty from July 2021 about how many doses will arrive with each delivery and when. The Ministry needs to continue to be transparent about the risks of vaccine supply being disrupted or not arriving at the expected time or in the expected quantities. In our view, this is important to manage public expectations in the event of delays to the roll-out.

Recommendation 1

We recommend that the Ministry of Health continue to be transparent in its public communications about supply risks and the potential impact on the roll-out schedule.

4 The immunisation programme

4.1 In this Part, we describe how the immunisation programme is structured, the broad approach to strategy and planning, and the approach to risk management. We also describe the governance and advisory groups that support the immunisation programme, the planning that has been completed to date, and what still needed to be done at the time our audit was completed.

4.2 For the immunisation programme to be successful, we expected to see a dedicated programme team that is adequately resourced and supported by the leadership of the Ministry. We expected the immunisation programme to be designed to work at pace and be well supported by appropriate governance arrangements, including access to both technical advice and broader input from stakeholders with expertise in public health and immunisation.

4.3 We expected to see an immunisation strategy in place to provide direction to the immunisation programme and guide planning. By this stage in the programme, we expected to see a reasonably detailed operational plan to implement the immunisation strategy, with the main elements and critical path clearly identified and regular monitoring and reporting to governance against critical milestones and key risks.

4.4 We expected both the immunisation programme's structure and plans to reflect how the Ministry would achieve its stated objectives to uphold the principles of te Tiriti o Waitangi[11] and provide equitable access to the vaccine for Māori and Pasifika communities, people with disabilities, and harder-to-reach communities.

Summary of findings

4.5 A dedicated immunisation programme team has been established, and the programme has been designed to operate at pace. The programme structure – made of separate "design and build" and "run" components – allowed for vaccinations to begin in limited settings from February 2021 with the roll-out of vaccinations to groups three and four being planned at the same time.

4.6 This approach enabled the Ministry to make progress and learn from early experience. However, it has also created some problems. The urgency to start vaccinating meant that, early on, key resources were not sufficiently focused on designing the nationwide roll-out, which contributed to delays in planning. Aspects of the early programme structure, such as having multiple Senior Responsible Officers, confused accountabilities and slowed decision-making.

11 Te Tiriti responsibilities involve protecting the rights of Māori and implementing the five Wai 2575 principles of tino rangatiratanga, equity, options, active protection, and partnership in the immunisation programme.

4.7 The Ministry identified these issues and restructured the immunisation programme. Recent changes reduced the number of Senior Responsible Officers to one. Although these changes have been necessary and demonstrated the immunisation programme's ability to adapt, it is likely they have also slowed progress.

4.8 Some of the processes and systems that have supported the early roll-out of vaccinations will need to change when vaccinations are rolled out at a larger scale. At the time of our audit, the plan to scale up had not been fully worked through. The Ministry was not able to provide us with clear and consistent information about its overall plan. In our view, more time spent on developing the strategy could have provided better direction for decision-making and supported more efficient planning.

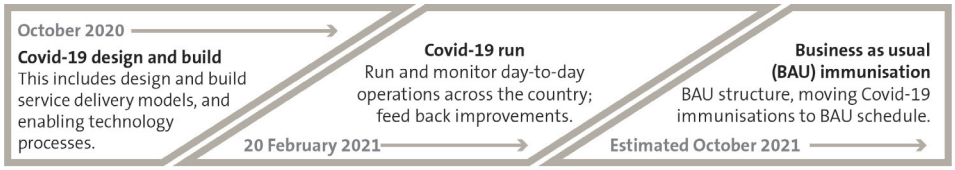
4.9 An experienced governance group provides advice to the immunisation programme, and there are arrangements in place to provide additional real-time assurance and advice. Several advisory groups are also in place to provide technical and clinical advice to the programme team and advice on how to ensure equitable delivery of the vaccine. Members of these groups bring significant expertise and a range of views to inform decision-making about programme design and implementation. The immunisation programme also has specific arrangements designed to monitor and provide ongoing advice about the safety of the vaccines.

4.10 Ensuring te Tiriti obligations and equity objectives are met is a key focus for the immunisation programme. Although accountability for this work was not initially clear, changes have been made to rectify this and ensure that it is properly resourced. Ongoing focus is needed on this aspect of the programme to ensure that it translates into tangible outcomes for Māori and Pasifika communities, people with disabilities, and harder-to-reach communities.

The immunisation programme's approach and structure

4.11 Figure 1 shows the three broad phases of activity that underpin the immunisation programme's approach: "Covid-19 design and build", "Covid-19 run", and "Business as usual (BAU) immunisation". These phases are not in a strictly linear sequence, and there is some overlap between them.

Figure 1
The three phases of the immunisation programme



Source: Adapted from planning documents supplied by the Ministry of Health.

4.12 This approach allowed vaccinations to start early in limited settings while planning for the roll-out to other groups progressed. It also meant that lessons from early "Covid-19 run" activities could be fed back into the "Covid-19 design and build" phase to improve implementation of later "Covid-19 run" activities.

4.13 The Ministry's programme team is also using a planning approach that enables the immunisation programme to move at pace and allow it to be responsive to changes in the environment. The immunisation programme is organised into a series of smaller activities, called sprints. Each sprint takes two weeks and involves teams working on a series of short-term goals. The focus of each sprint is currently planned out to the start of July 2021, which is when the roll-out moves to the general population. This is when all elements of the immunisation programme need to be ready.

The programme structure has changed a number of times

4.14 When we started our audit, the immunisation programme had a complicated structure that reflected, in part, the programme's complexity. The programme had four Senior Responsible Officers[12] who were each responsible for different parts of the programme. This was reduced to two in mid-March 2021 and then to one in early April 2021.

4.15 In February 2021, there were concerns both internally and externally that equitable access to the vaccine was not being properly incorporated into the immunisation programme. Although there were te Tiriti and equity leads in place from November 2020, and information was being developed to help inform district health board programme design, there were concerns that accountabilities were not clear.

4.16 It was also not clear how equity considerations would be factored into the way the vaccine was rolled out. At that time, strategies to support equity were still to be produced.

12 Individuals responsible and accountable for the successful delivery of a programme.

4.17 In early March 2021, the equity team was expanded to include dedicated leads for Māori, Pasifika, and disability considerations, along with additional support staff. Staff were drawn from the Māori Health Directorate and Pacific Health Team within the Ministry. There was also a Māori communications team established within the wider vaccine communications team. Māori and Pasifika strategies were prepared and finalised by 8 March 2021.

4.18 Changes to the programme's structure in April 2021 saw the te Tiriti and equity responsibilities combined under the new role of General Manager Equity. That role is now responsible for leading and co-ordinating all equity work and ensuring that it is embedded in decisions about the design of the immunisation programme.

4.19 The separation between the "Covid-19 design and build" and "Covid-19 run" parts of the programme (see Figure 1) created some problems. A significant number of staff had more than one main focus. Early on, as the "Covid-19 run" phase progressed, several staff supporting the "Covid-19 design and build" phase were diverted. This delayed important parts of the programme's design. Members of the programme team we spoke to told us about a lack of integration across the immunisation programme, which also created confusion.

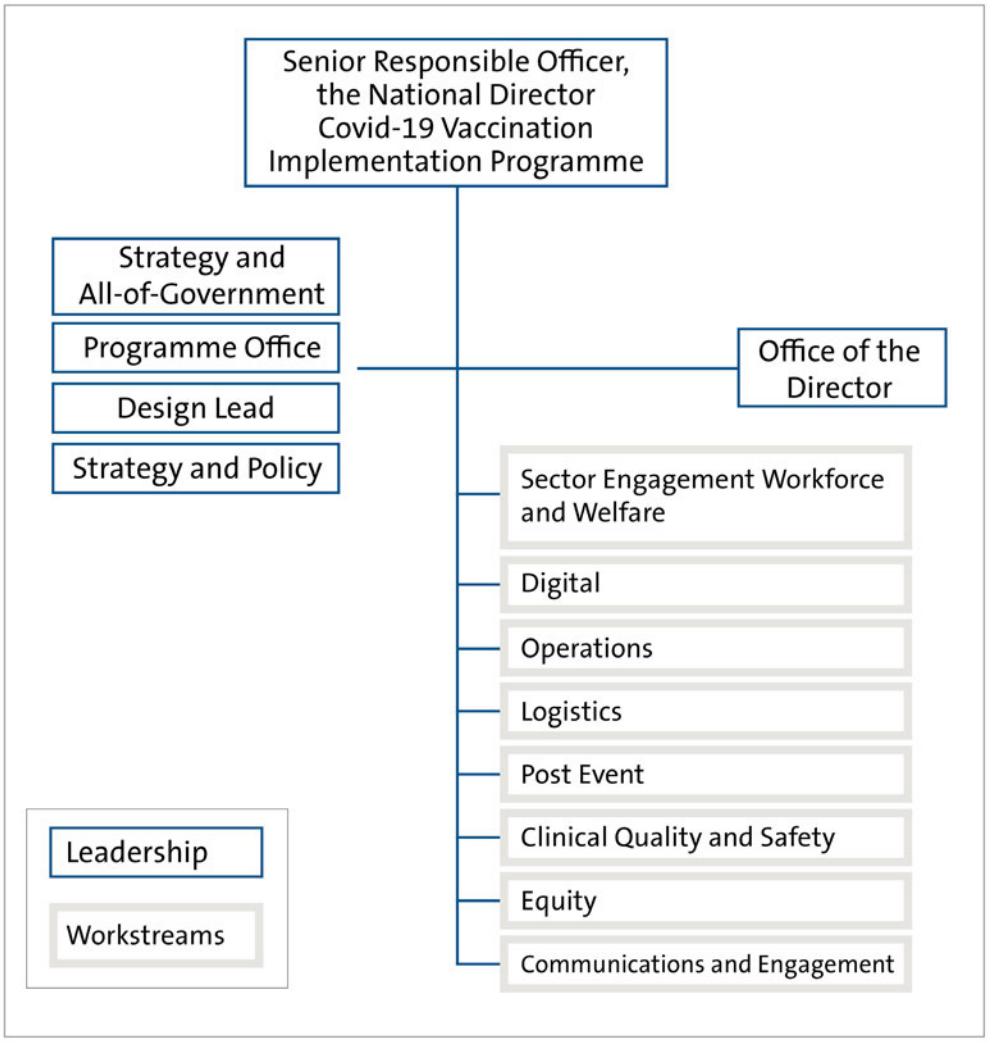
4.20 It is understandable that as these issues were identified, the immunisation programme's structure needed to be adapted. The Ministry has taken steps at various points to simplify the programme's structure and to clarify and strengthen lines of accountability. In early April 2021, further changes were made to the programme's structure to bring the "Covid-19 design and build" and "Covid-19 run" phases of the programme together and further reduce the number of Senior Responsible Officers.

4.21 The immunisation programme is now made up of eight workstreams, all of which report to the single Senior Responsible Officer, the National Director Covid-19 Vaccination Implementation Programme. The Senior Responsible Officer reports directly to the Director-General of Health, who reports to a group of Ministers (collectively referred to as the Vaccine Ministers).[13]

4.22 The eight workstreams cover both the design and run elements of the immunisation programme. Two additional elements – implementation and support – have been added to the structure. The Senior Responsible Officer, the eight workstream leads, and others with a strategy or programme support role comprise the Programme Leadership Group, which meets twice daily to oversee the immunisation programme. Figure 2 provides a summary of the programme's structure.

13 The Vaccine Ministers comprise the Prime Minister, Minister of Finance, Minister for Covid-19 Response, Minister of Health, Minister of Foreign Affairs, Associate Minister of Health (Māori Health), and Minister for Pacific Peoples.

Figure 2
Programme structure, as at April 2021



Source: Adapted from planning documents supplied by the Ministry of Health.

4.23 There are also several governance arrangements in place that support the immunisation programme (see paragraph 4.28).

4.24 In our view, clear roles and responsibilities are necessary for accountability. The changes described above show the immunisation programme can adapt as required. However, frequent changes in a short period can also create confusion and might have contributed to delays. In our view, the Ministry should try to limit further changes, especially to lines of accountability.

Resourcing the programme team is an ongoing challenge

4.25 The immunisation programme has drawn on a large number of Ministry staff. Additional resources and expertise have been brought in where required. People from the public and private sectors (including from district health boards) have been seconded into key positions.

4.26 Despite this, many people involved with the immunisation programme have been working long hours for many weeks. Some people have moved onto the immunisation programme after working on the Ministry's Covid-19 response activities.

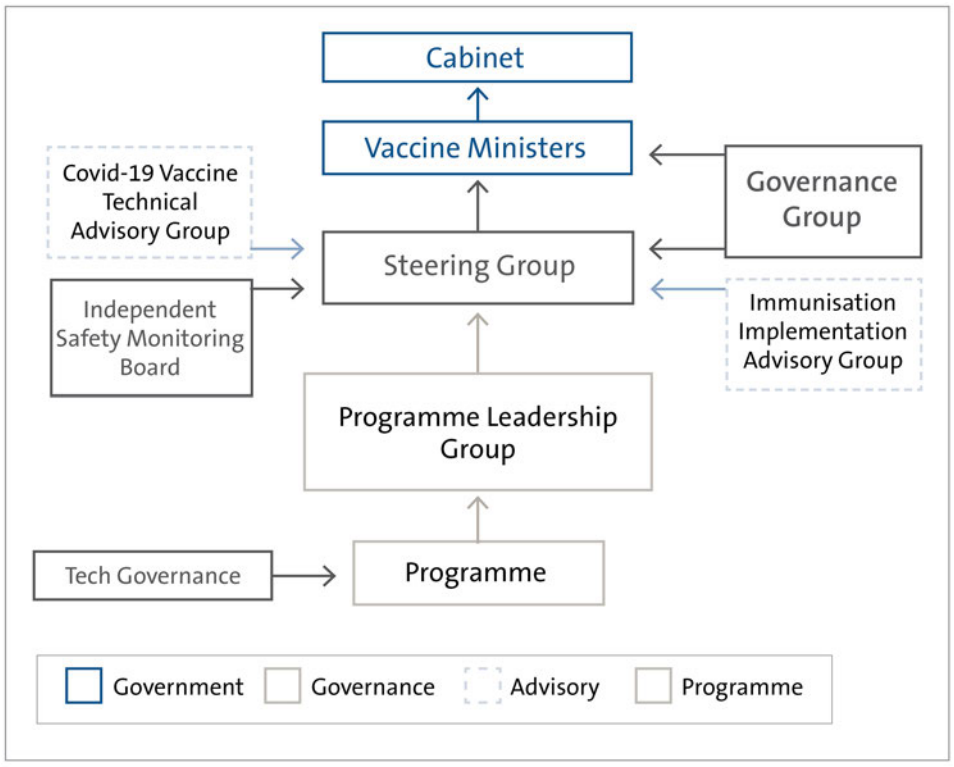
4.27 The sustainability of workloads for key staff has been consistently identified as a risk. Specific actions have been taken to mitigate this risk such as developing resource plans and ongoing recruitment of staff. As of mid-April 2021, all programme leadership positions were filled. We were told that none of these people had key responsibilities that would divert them from the immunisation programme in the event of a Covid-19 community outbreak.

Governance and oversight

4.28 The Programme Leadership Group reports to a Steering Group, which is chaired by the Director-General of Health. The Group is comprised of Ministry of Health senior managers and the chief executives of two district health boards.

4.29 The Governance Group provides oversight and assurance. The Governance Group does not make decisions. Its role is to provide advice, both to the Ministry and directly to Ministers. Figure 3 shows the governance structure.

Figure 3
Governance structure, as at April 2021



Source: Adapted from planning documents supplied by the Ministry of Health.

4.30 Two members of the Governance Group are from the Ministry: the Director-General of Health and the Deputy Director-General, Māori Health. The group is chaired by a senior experienced health and disability sector leader. Other members include the chief executives of MFAT and the Ministry for Business, Innovation and Employment, a previous government Minister, a private sector leader in information technology, a leader from the Māori community, and a health leader from the Pasifika community.

4.31 The Deputy Director-General, Māori Health is part of both the Governance Group and Steering Group. This role is designed to ensure that te Tiriti responsibilities are being considered throughout the immunisation programme.

There are a range of advisory arrangements in place

4.32 The immunisation programme also relies on several external advisory groups to provide advice on clinical matters, implementation, and safety. The main groups are the Immunisation Implementation Advisory Group, the Technical Advisory Group, and the Independent Safety Monitoring Board. Through these groups, the Ministry has access to people with extensive clinical, scientific, and immunisation expertise.

4.33 The Immunisation Implementation Advisory Group provides advice on vaccine implementation. This Group has played a key role in advising the Ministry on how to ensure that the immunisation programme is designed and implemented in a way that ensures that there is equity, particularly for Māori, Pasifika, people in aged care, and people with disabilities. Initially, the Group did not include a disabilities or aged care perspective. This was seen as a significant gap and a disabilities representative was included in January 2021, and an aged-care representative was included in February 2021.

4.34 The Technical Advisory Group provides technical advice about vaccine use to the immunisation programme. The main role of the Group is to provide clinical advice, such as how long people need to be monitored after they have received the vaccine.

4.35 More specific safety advice is provided by the Independent Safety Monitoring Board. Although the Pfizer vaccine has been provisionally approved for use by Medsafe, monitoring still needs to be carried out as the vaccine is administered more widely. The role of the Independent Safety Monitoring Board is to provide independent assurance about the safety of the vaccine during the roll-out.

4.36 The Independent Safety Monitoring Board provides a level of safety assurance over and above what is standard for immunisation programmes. There was consensus across those we interviewed that, collectively, the Technical Advisory Group and the Independent Safety Monitoring Board provide sufficient clinical and safety advice to the immunisation programme. Processes and systems are in place to ensure that the safety of the vaccine is monitored and managed.

Programme governance is supported with good information

4.37 Considerable resources have been applied to reporting to those governing and steering the immunisation programme. This includes daily reports to Ministers, and regular verbal and written reporting to both the Governance and Steering Groups as part of their respective fortnightly and weekly meeting cycles.

4.38 The reporting to the Governance and Steering Groups includes a number of standing items, including reporting on risks. Our observations of the detailed minutes from those meetings, and from people we spoke with, is that there are free, frank, and robust discussions taking place.

Strategy and planning

4.39 In August 2020, Cabinet invited the Ministry to report back on developing an immunisation strategy for Covid-19. The Ministry has not been able to provide us with a copy of an immunisation strategy. However, a Cabinet paper submitted by the Minister of Health, Associate Minister of Health, and the Minister for Covid-19 Response in December 2020 indicated that the purpose of the immunisation strategy would be to support "best use" of the vaccine, while upholding te Tiriti obligations and promoting equity.

4.40 The Cabinet paper set out four principles to guide the immunisation approach. These were that:

- Covid-19 vaccines would be free and safe;
- the roll-out would be sequenced as the Covid-19 vaccines became available;
- the sequencing of access would be based on need; and
- border settings and the roll-out strategy would continue until there was confidence that the New Zealand population is sufficiently protected.

4.41 The Ministry did not develop the strategy further. Instead it focused on planning for the vaccine roll-out. We understand that Ministers and the Ministry were trying to move the immunisation programme forward as quickly as possible.

4.42 In line with the immunisation programme's approach, vaccinations have started to be rolled out in limited settings before the detailed design for the roll-out to all groups is complete. As discussed in paragraph 4.12, this has some clear benefits. The Ministry and district health boards have been able to test some key processes and show early progress.

4.43 However, some processes and systems that have supported vaccinations to date will not be the same when vaccinations are rolled out on a larger scale. It has been difficult for the Ministry to provide us with a clear and consistent picture of what has been done and what is left to do to scale up to support the roll-out to all groups. At the time we completed our audit, the critical path had only recently been identified.

4.44 In our view, more time could have been spent formulating a high-level strategy before detailed planning began. We consider that a well thought-out strategy

could have provided direction for decision-making and supported more efficient planning. It is unclear to us how much consideration was given to identifying and weighing up the main trade-offs, for example:

- Simplicity and equity – should the immunisation programme prioritise volume of vaccinations over providing access to harder-to-reach communities?
- Use of existing capacity or building new capacity – should the immunisation programme focus on pushing vaccinations through existing channels or create new ones?
- Speed or certainty – how much time will it take to ensure that there is key infrastructure in place, and do the risks of moving quickly outweigh the risks of delay if things do not go as planned?

4.45 Although the key issues are being thought through as the immunisation programme progresses, we saw evidence that some decisions were re-litigated late. Other decisions are being made later than is desirable. This has placed additional pressure on the programme. Some of this might have been avoided if there was a clearer strategic framework to guide design decisions. In our view, the principles identified in the Cabinet paper in December 2020 are helpful but not sufficient to provide this guidance.

4.46 We also consider that some work could have started earlier. We have heard that the uncertainty about which vaccine would be used hampered early planning. In our view, there are many important aspects of the roll-out that could have been planned for without needing to know which vaccine will be used. For example, building a workforce of vaccinators. Similarly, the way in which the wider health and disability sector would be used to support the roll-out could have been determined and communicated earlier.

Much operational planning is being done by district health boards

4.47 When we started this audit, we heard a lot of confusion about exactly how roles and responsibilities were split between the Ministry and district health boards. This was despite a few district health boards having already started vaccinating border workers. The Ministry was not in a position to clarify roles and responsibilities because its detailed planning was not far enough advanced.

4.48 We have since clarified that the Ministry is responsible for the design of delivery models and training pathways for vaccinators and support staff. It will also be responsible for distributing the vaccine to district health boards. Because of the storage requirements of the Pfizer vaccine, distribution will have short lead times. District health boards have to give the Ministry 48 hours' notice of how many

doses of the vaccine they need and where it needs to go. The Ministry told us that during late March and April 2021 it was working with logistics teams in district health boards to further develop processes and systems to be more flexible and responsive to need.

4.49 District health boards and, where applicable, primary health care providers will be responsible for:

- arranging and setting up vaccination sites;
- finding suitably qualified staff to run the vaccination sites and to prepare and administer the vaccines; and
- purchasing some of the equipment that will be needed, except for consumables provided by the Ministry (see paragraph 5.51).

4.50 District health boards will be required to follow guidelines set by the Ministry, meet clinical standards, and use the information technology systems the Ministry is developing. However, district health boards will have some discretion over how they administer the vaccines to best meet the needs of their communities. Some primary health care providers, such as GPs, will also be involved. However, we understand that district health boards will make decisions about the extent of their involvement.

4.51 The Ministry asked each district health board to develop plans for how they propose to administer vaccinations in their communities, in line with the design specifications that the Ministry has set. In December 2020, the Ministry asked district health boards to start providing information about their preparedness for vaccine delivery, which they were required to respond to by January 2021.

4.52 Since then, district health boards have been required to provide a series of plans that show how they will progressively administer more vaccinations. The Ministry considers whether plans are adequate, by looking at whether:

- they have considered how to ensure equitable access;
- the required workforce for their vaccination sites has been identified and secured; and
- they can demonstrate how they plan to scale up.

4.53 The Ministry told us that district health boards will also be required to provide separate workforce plans in the future.

4.54 Some of the district health boards' plans have been more comprehensive than others. We understand that the Ministry is providing support to some district health boards to help them with their planning. This has included seconding someone to work directly with a district health board.

4.55 Before a new vaccination site is used, district health boards must do a "dry run" (without the vaccine) and a "wet run" (with the vaccine). The district health board chief executive or their delegate is required to sign off a checklist confirming that a site is ready. The signed checklist needs to be submitted to the Ministry before it will authorise vaccines to be delivered to the site.

4.56 The short lead time for developing these plans means some district health boards might not have engaged enough with health care providers in their areas to determine the best way to reach specific communities – for example, Māori and Pasifika communities and people with disabilities. If that continues to be the case, there is a risk that equity objectives will not be met in some parts of the country.

Assurance and risk management

The programme is supported by real-time assurance and advice

4.57 Shortly after it was set up, the Governance Group advised the Ministry that more assurance was needed over the immunisation programme. Because of the speed with which the programme needed to move, traditional assurance, such as Independent Quality Assurance reviews, was not considered immediate enough. Instead, in December 2020, the Ministry appointed two external people with relevant seniority and experience to provide real-time assurance and advice to the programme.

4.58 The assurance providers are embedded in the immunisation programme and have ready access to people and information. They attend Governance and Steering Group meetings and other meetings where relevant. They have considered issues at a programme-wide level, but also looked into parts of the immunisation programme in more detail.

4.59 Senior staff from the Ministry and members of the Governance Group told us that they have found the input from the assurance providers helpful. Input has been timely and made directly to the people that need to hear it. The assurance providers track the key findings from their work and report to the Ministry as they identify issues. The minutes of Governance Group meetings we saw included a record of advice being given by the real-time assurance providers. The Ministry provides information to both the Steering Group and Governance Group about the actions it intends to take in response.

4.60 In early April 2021, the real-time assurance providers adapted their approach so that they could focus on areas that needed more attention. These areas were: programme structure and leadership, reporting, public communications, communication with the health and disability sector, the vaccination workforce, and the booking system.

4.61 The real-time assurance providers also recommended that they focus on providing assurance over the extent to which an equity approach has been developed and embedded, and the identification and management of privacy and security risks.

4.62 In other areas, where more progress had been made, the real-time assurance providers recommended that the immunisation programme start to provide its own assurance. These areas included programme design, roles and accountabilities of district health boards, continuous improvement, logistics and finance, and funding. The Ministry told us it is putting an assurance framework in place to support this.

The risk management approach is sound

4.63 The Ministry engaged an experienced risk manager to lead the programme's risk management approach in mid-February 2021. This was in response to feedback from its assurance advisors that there was not an adequate risk-management approach embedded in the immunisation programme.

4.64 There is now an improved risk management approach in place. Risks have been identified and mapped to relevant workstreams and across the immunisation programme as a whole.

4.65 Mitigation and management strategies are being regularly identified, and progress is reported weekly to the Steering Group and fortnightly to the Governance Group. We saw evidence that the Steering Group makes decisions to address risks as required, for example:

- Additional staff were engaged to assist with managing key person risk, including the addition of a second Programme Director to work closely with delivery leads.
- In response to concerns raised about the clarity and alignment of external messaging, a review was carried out and changes were made to improve communications planning and output.
- In response to risks being escalated about unclear accountabilities, the immunisation programme's structure was reviewed and the number of Senior Responsible Officers reduced.

4.66 The approach appears to be working. It has identified the main risks to the immunisation programme that we would expect and largely reflects the issues we discuss in this report. Risk management reporting is being actively used by the Steering Group to identify and take action to reduce or resolve risks and issues. In our view, if this approach had been in place earlier, it could have helped resolve some of the issues that the immunisation programme is now facing.

Some risks require more attention

4.67 In our view, the risk management approach that is in place also highlights how much planning and design work is left to do before the immunisation programme will be ready to fully scale up. We consider that there are still risks that the programme should give more attention to:

- Matching demand for vaccine with supply to minimise wastage – the Ministry needs to focus on getting reliable systems to forecast demand as accurately as possible and track inventory in real time. The work under way to make sure the distribution model is fit for purpose and flexible enough to transport doses of the vaccine between sites is critical to minimising waste.
- Securing and training enough vaccinators – at the time we completed our audit, it was still not clear how big the workforce needs to be or where it will be sourced from.
- Meeting equity objectives – although there has been considerable focus on Māori and Pasifika communities and, more recently, people with disabilities, there is limited focus on other groups where there might be equity concerns, such as migrant communities, those with mental health issues, older people, and homeless people. We are concerned that there is little time to properly factor equity considerations into implementation. The risk we see is that district health boards and health care providers could ultimately focus on throughput of vaccinations over sequencing or equity considerations.
- Maintaining overall trust and confidence in the immunisation programme – the Ministry has started to be more transparent with the public about the significant challenges the programme faces and the level of uncertainty that still exists. We strongly encourage this to continue because, in our view, transparency is an important way to build public confidence.

4.68 The Ministry told us that although there could be some changes in timing in delivering aspects of the immunisation programme, it does not think that this will change the overall time frame for completing the programme.

4.69 Current district health boards' plans anticipate a daily vaccination rate of up to about 18,000 by the end of June 2021. We understand that this reflects both the supply of vaccines and the system capacity in place. For the remainder of 2021, the daily vaccination rate will need to increase significantly for the immunisation programme to be completed by the end of the calendar year.

4.70 The Ministry's forecasting shows the immunisation programme will need to deliver up to about 76,000 doses each day for a period of seven weeks in September and October. This assumes that vaccines are administered seven days a week.

4.71 Our view at this stage is that we expect the nationwide vaccine roll-out to scale up, but it could take more time than currently planned and there are likely to be some problems. To a degree, this is expected with a programme of this scale. It will be important to have effective processes to identify, escalate, and resolve issues as they arise.

More focus on contingency planning is required

4.72 As well as the risks we describe above, planning is still based on several important assumptions including:

- the vaccine will be delivered to New Zealand in relatively even instalments for the remainder of 2021, and it will all have arrived by the end of 2021;
- enough vaccinators and support staff (who are required to, among other tasks, check people in and to enter details into the Covid-19 Immunisation Register) will be able to be identified and trained to support the scale-up;
- a fit-for-purpose distribution and inventory management system and booking system will be ready in time;
- the immunisation programme will not be disrupted by further community outbreaks of the Covid-19 virus; and
- the vaccines purchased continue to be effective, including against any significant new variants of the Covid-19 virus.

4.73 We saw documents that set out how the sequencing of vaccinations could change in three community transmission scenarios. On 29 March 2021, advice was provided to the programme Steering Group that indicated it was likely that a "ring" vaccination approach would be required in an outbreak scenario – that is, to immediately vaccinate those most likely to be infected by a confirmed case – and that an acceleration of the roll-out plan might be desired.

4.74 The advice also recommended further work to develop contingency plans to enable the immunisation programme to respond in the event of community transmission. We agree, and we consider that this needs to be progressed with urgency. By this stage in the immunisation programme, we would expect contingency planning to be much further advanced.

4.75 We have not been provided with contingency plans that set out how to respond if the risks described earlier in this section become issues, or if other planning assumptions prove to be incorrect. The consequences might simply be that the roll-out will take longer. Nonetheless, we consider it important to have clearly thought through the likelihood and implications of each scenario and how the immunisation programme will respond.

Recommendation 2

We recommend that the Ministry of Health complete contingency plans for major risks, for example, vaccine doses do not arrive in New Zealand at the scheduled time or in the expected quantities, adequate workforce is not able to be secured, key systems are not ready on time, or a community outbreak of Covid-19.

5 Getting people vaccinated

5.1 In this Part, we describe what has happened so far to prepare for the nationwide roll-out of the immunisation programme and what we understand was left to do at the time our audit was completed. We outline:

- the decisions made to establish the sequence in which people will be vaccinated;
- where vaccinations will take place;
- how vaccines will be delivered;
- who will administer them; and
- the work to prepare the technology systems required to support the roll-out.

5.2 For the immunisation programme to be ready for the roll-out to groups three (people at risk of severe outcomes from catching Covid-19) and four (the remainder of the population), we would expect the Ministry to have a clear understanding of the sequence in which people will be vaccinated and clarity about where vaccinations will occur. We would also expect the Ministry to have worked out the logistics to make sure that the correct amount of vaccine doses is available at the right place at the right time.

5.3 We would expect that the workforce that will be administering the vaccinations would have been identified and that plans are in place to ensure that they are adequately trained by the time the roll-out to groups three and four starts. We would expect key systems to be in place, or will shortly be in place, to ensure that they can be tested and adjustments made in time to avoid delays to the roll-out plan.

Summary of findings

5.4 As noted in paragraph 1.4, a sequencing framework has been developed that divides people into four groups. Vaccination of the first two groups is under way. It has been stated that group three will start being vaccinated in May 2021, and group four from July 2021. More detailed plans show that most people in groups three and four will receive their vaccines later than this, over the rest of 2021.

5.5 As of 15 April 2021, district health boards' plans showed that they anticipate to have administered about 1.1 million doses by the end of June 2021.

5.6 Most people in group three will not be vaccinated before the end of June 2021. There will be an overlap of the vaccination of groups three and four. Planning documents show that most vaccines for group four will be administered between September and November 2021. In our view, although groups three and four may start as scheduled, there is a risk that these groups will not be fully vaccinated by the end of the year.

5.7 The Ministry has identified four types of locations for vaccinations to be administered. These are hospitals, temporary sites, community sites, and fixed vaccination centres. District health boards will choose which settings are the best options for each of their communities.

5.8 Equity considerations have been factored into the sequencing framework and the delivery models. District health boards are required to include in their delivery plans how they will ensure that Māori and Pasifika communities and people with disabilities will receive equitable access to the vaccine. Funding has also been set aside to increase access and uptake and to assist informed consent for Māori and Pasifika.

5.9 At the time we completed our audit, some of this funding had been distributed to Pasifika health care providers but decisions were still to be made about how this funding will be allocated to Māori providers. Continued delay means those health care providers will have very little time to prepare for the roll-out.

5.10 The workforce required to administer and support vaccinations is greater than has been needed for previous immunisation programmes. It also needs to be deployed in a way that does not result in major diversion of staff from other public health and immunisation programmes. The Ministry plans to use both the regulated and unregulated workforce but district health boards are still trying to determine the workforce requirements for the roll-out to groups three and four. The Ministry told us that it is providing additional support to district health boards to assist with workforce planning. This is positive. However, in our view there remains a risk that there will not be enough trained vaccinators available for the full scale-up.

5.11 Some information technology systems, including those that are required to support inventory management and distribution of the vaccine, are not scheduled to be fully implemented until shortly before the roll-out to groups three and four is due to start. Existing processes were expected to be sufficient for the current stage of the immunisation programme, but some of these – such as the inventory and distribution system – are already struggling with increasing volumes. Urgent work is required to get these new systems fully operational as soon as possible.

When will people receive their vaccine?

5.12 On 10 March 2021, the Government announced a detailed sequencing plan, which divided the population into four groups. See Appendix 2 for a summary of the sequencing framework and associated timing.

Equity was a central consideration in advice developed about sequencing

5.13 The Ministry set out to ensure that sequencing for the vaccine would be carried out in a fair, equitable, and consistent manner. Advice to Cabinet on 1 March 2021, which was based on input from the Independent Immunisation Advisory Group, recommended several changes to the initial sequencing framework to ensure equitable access to the Covid-19 vaccine. Higher morbidity, greater rates of hospitalisation, and earlier onset of degenerative diseases were identified as reasons to target Māori and Pasifika communities early. One of the changes recommended to Cabinet was that a risk-adjusted age (50 years) be used for Māori and Pasifika communities so that they could be included in group three. There was also a recommendation to adopt a whānau-centred approach to enable equitable outcomes.

5.14 That advice also highlighted that, in the past, immunisation campaigns have struggled to deliver for Māori and Pasifika, and that a "tailored approach, early engagement and active participation" were needed. To address this, it recommended that a proportion of the vaccine be allocated to Māori and Pasifika health care providers to distribute among Māori and Pasifika communities.

5.15 The advice also recommended that group two be expanded to include all staff and residents in long-term residential settings where there was a higher risk of transmission and severe outcomes from Covid-19. The rationale for this was that people in long-term residential settings have dual risks of a higher likelihood of underlying conditions and close contact living situations.

5.16 Cabinet agreed to provide a proportion of the vaccine (40,000 courses) to Māori and Pasifika health care providers to distribute to older people who might be living in hard-to-reach places and their households. Cabinet also agreed to expand the definition of those living in high-risk places.

People could be vaccinated later than they expect

5.17 As of 14 April 2021, district health boards plans showed that they anticipate having delivered about 1.1 million doses by the end of June 2021. This means that most of the people in group three will not be vaccinated before the end of June. Vaccination of groups three and four (due to start from July 2021) will overlap.

5.18 Although the Ministry told us that group four will start from July 2021, some planning documents show that most vaccines for group four will be administered between September and November 2021.

5.19 These timings are also subject to change if Pfizer does not deliver the vaccines as expected. The Ministry's planning currently assumes a regular delivery of vaccines across the second half of the year.

5.20 In our view, the Ministry needs to be more transparent about when the public can expect to be vaccinated and the inherent uncertainties in the vaccine scheduling. This will help to manage expectations about how long people should expect to wait to be vaccinated.

More guidance is needed about how to apply the sequencing framework

5.21 The Ministry and district health boards are balancing the need to ensure that the vaccine goes to those who most need it first (in line with the sequencing framework) and ensuring that vaccine is not wasted. During the early stages of the roll-out, some sites found that up to 40% of their scheduled bookings did not arrive. This means it is necessary to have a clear strategy for how surplus vaccine doses will be used.

5.22 In the first few days of vaccinations in Auckland, there was public criticism of the way the district health boards offered surplus vaccine doses to staff members who were not front-line health workers. Other health workers, including those carrying out Covid-19 testing, felt they should have been offered the vaccine first, in accordance with the sequencing framework.

5.23 More recently, the media has reported that Canterbury District Health Board was offering surplus doses to employees of businesses located near its vaccination sites.

5.24 We were told that the Ministry does not want to turn anyone away from getting a vaccine, and district health boards are required to make provisions for walk-ins in their planning. The Ministry has issued guidance on managing surplus vaccine doses. District health boards are responsible for managing any surplus vaccine doses and the Ministry has recommended that to minimise wastage, district

health boards should have a back-up or standby list of people to vaccinate that aligns to the sequencing framework. This guidance appears to relate primarily to group one and recommends that surplus vaccine doses ideally go to people in group two and preferably not group three.

5.25 The Ministry has stated publicly that it expects a degree of flexibility in how district health boards follow the sequencing framework. We understand that the Ministry has now told district health boards that the sequencing framework should be used as a guide but that they can distribute the vaccine in ways that best serve their communities and support equity.

5.26 In our view, this needs to be made clearer to members of the public so they understand what to expect ahead of the full roll-out to groups three and four.

Recommendation 3

We recommend that the Ministry of Health continue to improve guidance to district health boards about the scenarios in which it is acceptable to depart from the sequencing framework and make this transparent to the public.

5.27 There might also be decisions to be made about sequencing for the general population in group four. Based on the current sequencing framework, all of group four will be eligible to be vaccinated from July 2021. This group includes about two million people. It is not clear whether further segmenting will occur (for example by age group). The Ministry told us that work on this is currently under way.

Where will people be vaccinated?

5.28 As at 18 March 2021, four types of locations for administering vaccines had been identified:

- hospital sites;
- temporary sites (such as workplaces, marae, churches, residential care facilities, and mobile clinics);
- community sites (such as GP hubs); and
- fixed-community vaccination centres.

5.29 A range of factors had to be considered for the design of the delivery settings. The settings needed to be varied enough to suit the needs of different target groups. At the same time, given the scale of the immunisation programme, logistical challenges, and tight time frames, there was value in having fewer setting types to simplify things.

5.30 Initial planning had to consider the storage requirements of a range of vaccine types. Although the decision to primarily use one type of vaccine simplified things, delivery models needed to be suitable for the Pfizer vaccine's complicated requirements for storage and transportation at very cold temperatures. The range of settings that have been identified provide options for people to get vaccinated, but also make delivery more logistically complex.

5.31 Confirming the delivery and distribution models is a critical part of the roll-out planning. Other parts of the immunisation programme (such as the information technology and communications) also needed clarity about where and when vaccinations would happen to progress. Delivery models were not confirmed until mid-March 2021.

5.32 Delays in confirming the delivery models have been frequently identified as a risk to the immunisation programme. It has also affected some district health boards that felt this lack of preparedness meant they had to put some of their day-to-day work on hold to do urgent planning for the roll-out. Some of this might have been avoided if planning by the Ministry had been progressed earlier.

It is not clear that equity objectives will be fully achieved

5.33 The delivery models have been designed with equity in mind. Initially, the plan was to have fewer types of delivery locations. Advice from the equity team was that a wider range of location types would allow for more equitable access because they could be more tailored to each community's needs – for example, by allowing mobile vaccinations or vaccinations in marae and churches. The early roll-out was also reviewed by a Māori health care provider who made recommendations on the types of sites that would be suitable. This advice was used to inform the design of the delivery models.

5.34 It was repeatedly highlighted in documents and interviews that a key lesson from the Covid-19 response and other immunisation campaigns is that Māori and Pasifika health care providers have the relationships with, and the trust of, their communities. Therefore, they should have a lead role in administering the vaccine.

5.35 A district health board-delivered model has benefits in that it can allow delivery to be locally tailored, which is potentially conducive to ensuring that there is equitable delivery. However, it also presents risks. We were told that district health boards have a variable track record with understanding and engaging Māori and Pasifika communities and health care providers. This means there could be inconsistency in delivery and approach for Māori and Pasifika communities.

5.36 To address this, the Ministry is working with district health boards to ensure that plans reflect how they have engaged with Māori and Pasifika providers, and how Māori and Pasifika providers can be involved in the vaccine roll-out. In the plans we saw from district health boards, the extent to which equity considerations were reflected was variable, with some providing detailed descriptions of what had and would be done, and others providing little detail.

5.37 Funding will also be provided directly to Māori and Pasifika health care providers ($11 million announced so far) to support them to build capacity to administer the vaccine (alongside additional funding for workforce development, which is discussed in paragraph 5.60). We were told this was done to address issues highlighted during the earlier Covid-19 response, where Māori and Pasifika health care providers were not given funding early enough to support preparations for Covid-19 response activities. As discussed in paragraph 5.16, there have also been 40,000 courses of the vaccine earmarked for Māori and Pasifika health care providers to distribute.

5.38 However, at the time we completed our audit, the Ministry had not yet finalised how the $11 million funding or the 40,000 courses of the vaccine for Māori and Pasifika health care providers would be distributed.

5.39 We heard that some Māori and Pasifika health care providers did not feel they were being properly engaged by district health boards. Delivering the vaccine involves a range of complex logistics and Māori and Pasifika health care providers will need time to prepare. The Ministry told us that 68 Māori and 25 Pasifika health care providers have now been engaged to support the roll-out. This is good progress, but in our view there remains a risk that, with a fast-moving programme, engagement with Māori, Pasifika, and disability health care providers does not receive sufficient priority as urgent roll-out tasks take precedence.

Recommendation 4

We recommend that the Ministry of Health continue to work with district health boards and Māori, Pasifika, and disability health care providers to make sure equity considerations are fully embedded in delivery plans.

There remains a lack of clarity about the role of some providers and groups

5.40 The Ministry told us that, to some extent, all delivery models will be used in all stages of the roll-out. In the early stages there have been fewer vaccination sites, and vaccinations have focused on smaller target groups. As the immunisation programme progresses there will be increased priority on "volume over reach", which the Ministry told us means vaccinating more people through existing sites. At the peak of the roll-out, it is expected that there will be many sites across many locations.

5.41 At the time of our audit, some district health boards we spoke to were still confused about the roles and responsibilities of other health care providers, particularly GPs, in the roll-out. One district health board had interpreted the Ministry's guidelines to mean that only district health board staff could administer the vaccine, which meant GPs would not be involved.

5.42 Some groups, such as GPs, pharmacists, and nurses, told us they were unclear about their role. There was particular concern from some GPs that even if they were not involved in vaccinating, they would still be required to provide names of people needing to be vaccinated, which will place an administrative and financial burden on them.

5.43 As planning has progressed at the Ministry and in district health boards, there has been more clarity about how later stages of the roll-out will work. However, at the time we completed our audit this had still not been adequately communicated to GPs and other health care providers. We understand that the Ministry is working to strengthen engagement with GPs to explain how they will be involved at different stages of the roll-out. We strongly encourage the Ministry and district health boards to continue to engage with all relevant health care providers about their roles.

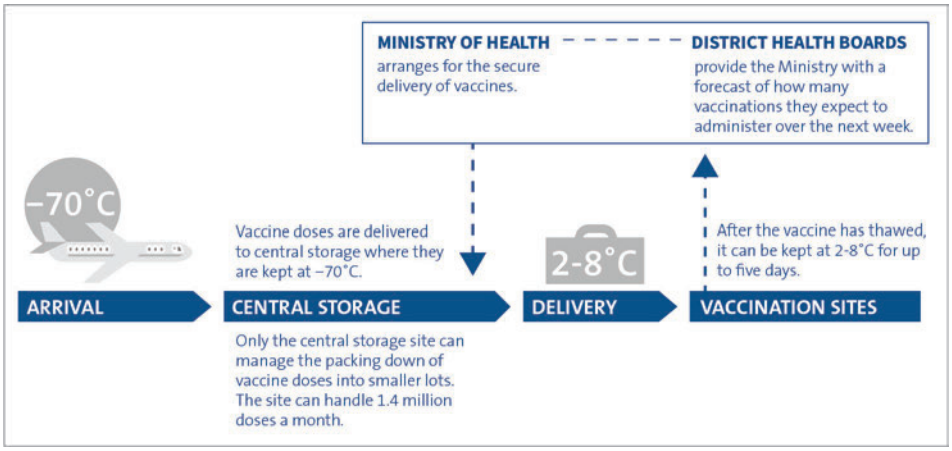
Recommendation 5

We recommend that the Ministry of Health provide more clarity to primary health care providers (including general practitioners) about their role in the wider roll-out to ensure that they have adequate time to prepare.

How will vaccine supplies get to the vaccination sites?

5.44 The Pfizer vaccine is transported to New Zealand and stored in Auckland at -70˚C before it is delivered for vaccination (Figure 4). The vaccine is thawed and packed into smaller lots before distribution. Vaccine deliveries are dispatched in cold chain-certified Crēdo Cubes, accompanied by a security person. On arrival, the Crēdo Cubes are handed over to a named site receipt person. Medsafe has recently approved storing the vaccine at -20˚C for up to two weeks, which will allow more flexibility in how and where the vaccine can be stored.

Figure 4
How the Pfizer vaccine is delivered and stored



Source: Adapted from Ministry of Health guidelines.

5.45 This distribution approach has worked effectively so far. However, there is expected to be more pressure as the number of vaccinations increase. The capability and capacity of district health boards to forecast demand have been identified as a challenge. A paper to the Governance Group on 12 March 2021 highlighted the need for district health boards to have staff dedicated to managing site logistics, planning, and implementation. In April 2021, about 1000 doses expired and had to be destroyed by one district health board after more stock was ordered than was used. The Ministry told us this incident was reviewed and process improvements were implemented. It is continuing to work closely with logistics staff at district health boards to mitigate these risks.

5.46 Distribution logistics for the roll-out to groups three and four will become significantly more complex. As well as the increase in vaccination appointments, there will also be more vaccination sites to manage and vaccine doses will need to be transported across greater distances and to more remote locations.

5.47 Ensuring that supply does not exceed demand (which creates risk of wastage) needs to be balanced against ensuring that there is sufficient supply to cover larger than expected volumes (for example, when there are walk-ins). The Ministry is currently developing a more flexible "hub and spoke" distribution model that is expected to be in place by 1 June 2021.

5.48 In this hub and spoke model, a range of local storage hubs, where the vaccine can be stored at -70˚C or -20˚C, can be set up closer to vaccination sites. This should allow vaccines to be transported to vaccination sites faster and at shorter notice to respond to changes in demand. Work is also under way to determine which district health boards can manage local hubs and whether any private providers need to be contracted to do this.

5.49 In our view, these improvements are likely to be useful. However, there is still no system to record the level of vaccine stocks at each vaccination site in real time. Instead, this information is entered into spreadsheets after weekly stocktakes. The new logistics and distribution information technology platform is designed to resolve this. However, it will not be in place until 1 June 2021, after the roll-out to group three is scheduled to start. These systems are critical to ensuring that wastage of vaccine is minimised. Although wastage is currently relatively low, risks are likely to increase as the immunisation programme scales up.

5.50 District health boards and providers are responsible for ensuring that vaccine handling and storage requirements at vaccination sites are met. There could be some sites without facilities to store the vaccine appropriately (for example, a temporary site like a workplace, church, or marae). In these cases, the Ministry will arrange to transport the vaccine to the site daily.

5.51 The Ministry is also responsible for delivering the vaccine and consumables (such as syringes, needles, and saline) to vaccination sites. At the time of our audit, negotiations were still under way to procure further consumables to cover the remainder of the immunisation programme. District health boards and providers are responsible for sourcing other equipment not provided by the Ministry.

Who will administer the Pfizer vaccine?

5.52 The Pfizer vaccine will be administered by trained vaccinators. The Ministry is responsible for determining who can give the vaccine and managing how vaccinators will be trained. District health boards and providers are responsible for ensuring that they have enough trained vaccinators and other support staff.[14]

14 The vaccinator is only one part of the workforce needed. Successfully vaccinating people also requires an available range of support staff, including receptionists and the kaiāwhina workforce, which includes people working in non-regulated roles in the health and disability sector, such as health care assistants. These staff are needed to support people through the vaccination process.

5.53 The current vaccinator workforce (a group that includes GPs, nurses, and pharmacists) is estimated to be about 12,000 people. Early estimates were that 1800 additional vaccinators would be required by June 2021, and 2000 to 3000 additional vaccinators would be required between August and November 2021. However, the estimates were based on an assumption that vaccinators would be working full-time, which is unlikely to be the case. In our view, more accurate and specific forecasting is still required.

5.54 Workforce capacity has been consistently identified as a risk throughout the immunisation programme, including by district health boards. It has been a challenge for district health boards to accurately forecast the workforce they need. The Ministry has developed a planning template for district health boards to estimate and report workforce needs. This template has been piloted and is intended to be in use from early May 2021. Although this is a positive development, it also means the Ministry and district health boards are still trying to determine the workforce requirements for the roll-out to groups three and four.

5.55 All vaccinators will need training to use the Covid-19 Immunisation Register, as well as training specific to Covid-19 and the Pfizer vaccine. This includes training on vaccine safety, the vaccination process, and how to respond to common concerns. The Ministry has contracted the Immunisation Advisory Centre to deliver this specific training. More than 4000 people have now been trained to administer the Pfizer vaccine, most of which are from the current vaccinator workforce.

5.56 Securing enough vaccination staff without diverting people from their roles in ways that will affect other health programmes (such as other immunisation programmes or public health work) is a challenge. The Ministry has been considering options for increasing the number of vaccinators by drawing from other groups and has approved additional health professions to participate in the vaccinator workforces. These different groups, which will all have different training needs, include:

- existing vaccinators (the practising regulated workforce);
- retired health workers and those who can currently vaccinate as part of their current roles, such as midwives, paramedics, registered nurses, pharmacists, and dentists (the non-practising regulated workforce); and
- those who are part of regulated workforces but who do not vaccinate as part of their current practice (such as physiotherapists and occupational therapists).

5.57 The Ministry has also decided to use the kaiāwhina workforce (which includes people working in non-regulated roles in the health and disability sector, such as health care assistants) as vaccinators.[15] A tailored training pathway for this group is being finalised and is expected to start by the end of May 2021. In our view, this is good progress, but there is little lead-in time before the nationwide roll-out to recruit and train people from this workforce.

5.58 We heard that some in core health care workforces, such as nurses, felt they had not been properly engaged to be a core vaccinator despite their vast experience in vaccination and links with a wider range of communities. This was seen by them as an effect of the lack of early engagement with primary health care providers and Māori and Pasifika health care providers in the planning for the vaccine roll-out.

5.59 Part of supporting equity is ensuring that the vaccinator workforce is representative of the population it serves, and that vaccinations are administered by people trusted in the communities they work in. The lack of diversity in the vaccinator workforce has been identified as a problem, particularly its ability to reach and engage Māori and Pasifika communities.

5.60 Use of the kaiāwhina workforce in both vaccinator and support roles will likely support equitable uptake of the vaccine. At the time we completed our audit, specific funding for Māori and Pasifika workforce development had been promised, including $1.5 million for Māori workforce training and $24.5 million for a Māori vaccine support service. For Pasifika health care providers, the Ministry has set aside $750,000 for workforce training and $10.5 million for vaccination support. Although funding had been given to Pasifika health care providers, decisions were still to be made about how funding for Māori workforce development will be used. Funding to Māori health care providers is expected to be released by 1 July 2021, which is not long before group four is scheduled to start being vaccinated.

5.61 There has been good progress on training parts of the existing vaccinator workforce. We also acknowledge the efforts the Ministry is making to support district health boards in their workforce planning. However, at the time of our audit, the Ministry was still not clear on the overall workforce that will be required. In our view, identifying and securing sufficient and suitable workforce for the nationwide roll-out remains a key risk.

15 A 12 March 2021 update to the Governance Group noted that the current legislation does not restrict kaiāwhina health professionals from administering vaccines.

Information technology systems

5.62 Information technology systems are required to support identifying and inviting people to be vaccinated and getting the vaccine to the right locations. Four critical information systems are needed:

- an inventory and distribution system that organises and tracks the distribution of the vaccine and other consumables;
- a national booking system that supports people being invited and booked for a vaccine;
- a register that records all the clinical details of the vaccination; and
- a system that records any incidents of adverse events after vaccination.

5.63 To be fully effective, these systems need to be integrated with each other. For example, an immunisation register will record when someone needs their second vaccine dose, and the booking system will use that information to schedule the second appointment. For the inventory system to know how many doses of the vaccine to send, it needs to know how many people are scheduled to be vaccinated at a particular location. The adverse events system needs to be connected to the distribution system so it is ready for situations such as recalling batches of the vaccine.

A new Covid-19 Immunisation Register is now being used

5.64 The existing national immunisation register records patient data about immunisation programmes. The Ministry identified early on that this system would not be able to support the immunisation programme because it is not designed to handle the volume of people accessing it concurrently and it cannot collect all of the data required. Planning has been under way for an improved national immunisation register for several years but has not progressed.

5.65 The Ministry has now developed the Covid-19 Immunisation Register to hold a central record of who has been vaccinated. It can be accessed on the internet, which means it can be easily used in workplaces and community and mobile sites. The Covid-19 Immunisation Register is already being used to record vaccinations and it continues to be improved based on user feedback.

5.66 The Covid-19 Immunisation Register uses the National Health Index's data to link to an individual's health record. The National Health Index's data includes a person's National Health Index number, name, address, date of birth, gender, and ethnicity.

5.67 The immunisation programme also requires a system to invite people to be vaccinated and schedule their vaccinations. A national invitation and booking system that links with the Covid-19 Immunisation Register is being built. This system is expected to be completed by the end of May 2021, in time for the roll-out for group four.

5.68 In the meantime, district health boards are using their pre-existing booking systems. In some cases, these systems are rudimentary, for example, one is paper-based and others are simple Excel® spreadsheets. These systems are not designed for large-scale vaccinations. We were told that some district health boards have purchased new software for this purpose. There have been problems with some of these systems. In late March 2021, a privacy breach was discovered in the system Canterbury District Health Board used, which leaked the personal details of more than 700 people. We understand that the Ministry has carried out a review into the breach. It is unclear how district health boards' systems might integrate with the national booking system, if at all. It is also anticipated that GP clinics will continue to use their own systems. In our view, the Ministry needs to work this through in more detail. If information is not brought together in one system, there could be co-ordination issues.

There will be challenges in identifying the right people to be vaccinated

5.69 It has been relatively straightforward so far to identify managed isolation and quarantine and other border workers to be vaccinated. This is because the Ministry of Business, Innovation and Employment holds a lot of this information through the Border Workers Testing Register.[16] Even so, there have been some challenges. Some people may have become border workers since the roll-out started. For example, we were told that now that the travel bubble with Australia is operating, more staff at airports accepting international flights are classified as border workers. Since the first vaccine was administered, the number of people classified as border workers has increased from about 12,600 to 16,500. The Ministry of Health told us it relies on data supplied by employers to identify people in this group to be vaccinated.

5.70 As the vaccine is rolled out to more groups, there will be much less information about who those people are and how many are in each group. This will add to the challenge of monitoring progress with vaccine uptake and targeting areas where uptake is lower. We understand that the Ministry is developing a set of indicators to monitor progress towards equitable delivery.

16 This is the register that is used to record regular Covid-19 testing for border workers.

5.71 The Ministry told us that it will monitor the uptake of different ethnic groups using the National Health Index. Ethnicity is recorded in the National Health Index and the Ministry told us it is sufficiently accurate for this purpose.

5.72 However, the National Health Index does not record information on whether a person has a disability or specific health condition. The Ministry is currently looking at whether a disability flag can be added to vaccination information using other existing datasets, and engaging with disability groups to try to estimate total numbers. This will need to be resolved if monitoring of uptake by specific groups, particularly people with disabilities, is to be effective. The Ministry and district health boards need to monitor uptake by priority groups to ensure that the vaccine is reaching them and address any gaps identified. It is important for people from priority groups to be represented in the uptake data so they have trust in the immunisation programme.

5.73 We were told that, when it is functional, the booking system will use email and text to invite people to be vaccinated. The Ministry is aware that this will make it difficult to reach some people and expects Māori and Pasifika health care providers and community groups to take the lead in inviting people in their communities to be vaccinated.

A distribution and inventory system will be deployed at the end of May 2021

5.74 At the time of our audit, the distribution and inventory system consisted of manual data entry into Excel® spreadsheets. The Ministry has recognised that this will not be sufficient for the roll-out to groups three and four. In our view, robust inventory management systems are essential to ensure appropriate supply to vaccination sites and to minimise wastage of vaccine.

5.75 A new distribution and inventory management platform is scheduled to be deployed at the end of May 2021. The proposed solution will support managing the distribution of vaccines and equipment from the -70˚C freezers located in one or more main hubs through to district health boards and other vaccination providers.

5.76 Planning for the number of doses of the Pfizer vaccine has factored in a wastage rate of up to 15% of the vaccine. This is a higher rate of wastage than normally expected on account of the difficult distribution and storage logistics for the Pfizer vaccine. The main methods district health boards have currently to manage the risk of wastage is planning for how surplus vaccine will be distributed and allowing walk-ins. It is expected that when a new distribution model is in place it will be easier to move the vaccine between sites at short notice, which will help with

managing excess. Vaccine wastage can be calculated nationally, and at the end of April 2021 was estimated to be at 3.7%. It is intended that the new inventory management system will also allow wastage to be calculated at a local level.

The adverse reaction monitoring system is also being upgraded

5.77 Adverse reactions to medicines and vaccines in New Zealand are monitored by the Centre for Adverse Reactions Monitoring. The New Zealand Pharmacovigilance Centre (NZPhvC), which is a contracted service provider to the Ministry, manually receives and manages each report of an adverse drug reaction. The Ministry determined that this service would not be able to keep pace with the speed and scale of the vaccine roll-out.

5.78 The Ministry initiated a programme to bolster the service and made investments to create a separate Covid-19 adverse event management service within NZPhvC. The Ministry told us that this service is secure, scalable, and digitised, with full reporting and diagnostic capabilities and is integrated with the Covid-19 Immunisation Register.

There is a challenging time frame for finalising the information technology systems

5.79 Developing the final design of the information technology systems has relied on decisions made elsewhere in the immunisation programme, particularly decisions about sequencing and vaccination event types.

5.80 Although systems can be developed relatively quickly after these decisions are made, it puts a strain on the time frames. Some aspects of information technology systems are being finalised "just in time" for each stage of the roll-out. For example, the national booking system and new distribution systems are both scheduled to be deployed shortly before the roll-out to group four, which leaves little time for addressing any issues that arise. At the time of our audit there was still a lot of work to do to integrate these systems.

5.81 The Ministry has identified a range of risks relating to the security and privacy of information. It told us controls were in place to manage these risks now, and that further controls would be added. Our work has not included testing of the controls the Ministry has in place.

5.82 We understand that the controls in place relate to the national information technology systems. If district health boards and the other organisations involved use their own systems to support vaccinations, they will be responsible for having the necessary privacy and security protections in place for their own systems. This includes any booking systems used by district health boards in advance of a national booking system being available.

5.83 It is not clear how the Ministry is assessing the robustness of systems to address vaccination volumes and load, although we note that cloud-based systems are scalable. The volume the systems will need to be able to manage and how the information technology will work will also be influenced by sequencing decisions. Although decisions have been made about the overarching sequencing framework, decisions still need to be made about whether and how vaccinations for the rest of the population will be sequenced. The approach that is taken (for example, based on different age groups or locations) could influence aspects of the booking system design.

6 Communications

6.1 In this Part, we set out the approach that has been taken to communicating the roll-out to people involved with the immunisation programme, key stakeholders, and the public.

6.2 The all-of-Government response to Covid-19 has demonstrated how an effective communications strategy can engage the public and encourage people to keep themselves and others safe. In our view, clear communication about the vaccine roll-out is an important part of maintaining trust and confidence in the immunisation programme. This is important for various reasons, including how it could affect the number of people choosing to be vaccinated.

6.3 At this point in the immunisation programme, we expected to see mechanisms in place to communicate effectively across the immunisation programme with internal and external stakeholders about decisions that have been made and, where appropriate, how their advice has been considered.

6.4 We also expected a clear public communications strategy that included information about when the public could expect to hear more about the roll-out to groups three and four, where they can get a vaccine, and how to make a booking. In line with public announcements in February 2021, we expected that a publicity campaign to raise public awareness and to promote understanding of the importance and safety of getting vaccinated would have started.

6.5 We expected that some consideration would have been given to how best to communicate with different communities, and what were the best communication approaches to encourage uptake of the vaccine.

Summary of findings

6.6 The delay in decisions about core aspects of the immunisation programme, in particular the delivery models, affected communications with the wider health and disability sector and with the public. Adequate communications channels between the Ministry, district health boards, and primary health care providers were not set up early enough. This has meant that key stakeholders have not always felt properly informed about their roles in the programme.

6.7 Early on, the Ministry focused on targeted communications with the groups currently being vaccinated, such as border workers. This made sense in some respects, but it also created a vacuum of information about the immunisation programme more generally, and meant opportunities for Māori and Pasifika health care providers to be involved and communicate early with their communities might have been missed.

6.8 We were told that key communications workstreams were under-resourced, and there was confusion about responsibilities between the Ministry of Health and the Covid-19 Group, a business unit within the Department of the Prime Minister and Cabinet.

6.9 Since our audit, the Ministry has made good progress. Responsibilities have been clarified and more resources have been assigned to the communications team. Significantly more data and information is now available on the Ministry's website. A public awareness campaign has been launched. The Ministry has also made progress in its plans for communicating with Māori and Pasifika communities.

6.10 We encourage the Ministry to continue to improve communications to ensure that there is a good uptake of the vaccine across all communities.

Communicating with those involved in the immunisation programme

6.11 The pace at which the immunisation programme has had to get organised has made keeping people well informed a challenge. If people involved in the programme (or across the Ministry) do not all have the same information about decisions that have been made, this can create confusion. We saw some evidence of this.

6.12 Some district health boards we spoke to felt that although they were receiving information from the Ministry, the information and messages were frequently changing and they were being told different things by different parts of the Ministry.

6.13 Some groups in the wider health and disability sector were struggling to get information about their role in the immunisation programme. Some told us that they approached the Ministry for clarity about their involvement and were told to go to their district health board, while district health boards were asking them for information. Primary health care providers felt reliant on district health boards for information but told us they did not always get it. The Ministry told us it was aware of these issues and is working on a stakeholder engagement plan.

6.14 Since our audit, the Ministry has made several changes to improve communication with district health boards and the wider health and disability sector. These changes include introducing an accountability framework to clarify key roles and responsibilities and appointing a Sector Engagement Lead to support better engagement with the health and disability sector. The Ministry has also publicly stated it has stepped up engagement with GPs about their role in the immunisation programme.

Communicating with the public

Communications have not kept pace with the roll-out

6.15 People working both within and externally to the immunisation programme commonly described a situation in which the public communications have not kept pace with the vaccine roll-out. As the vaccine started to be rolled out, there was a lack of information on important safety matters, for example, whether people undergoing chemotherapy could get the vaccine. More information about the vaccine and who it is available for is now on the Ministry's website.

6.16 We also heard that the communications team was under-resourced, and the speed at which the immunisation programme was moving made it challenging to produce communications material in a timely way.

6.17 When we started our audit, the Ministry was responsible for strategy, public health messaging, and health and disability sector engagement. The Covid-19 Group was going to drive the public information campaign, public messaging, and engagement with the public sector. We heard that, in practice, these accountabilities were often confused.

6.18 Since our audit, we understand that a new communications and engagement team has been established and the level of resource has been increased. Some work related to the roll-out that was previously carried out by both the Ministry and the Department of the Prime Minister and Cabinet has been centralised into the new team under a single general manager.

District health boards might need additional communications support

6.19 Although the Ministry is responsible for public health messaging nationally, district health boards are responsible for communicating with people in their areas about when and how to get vaccinated.

6.20 We heard that district health boards have different levels of need. Larger district health boards might have dedicated communications staff to lead this work, but others will not. District health boards are not required to submit communication plans to the Ministry (although some have chosen to do so) and district health boards' delivery plans do not have a requirement to separately outline a communications approach.

6.21 In our view, it would be beneficial for communications plans to be included in district health boards' delivery plans to ensure that the Ministry is able to provide support where needed.

Some good work has been done with Māori and Pasifika communities

6.22 The Ministry has recognised the need to ensure that communications are delivered through specific channels for different target groups. A dedicated Māori communications team was established, and $2 million has been set aside to support iwi and Māori communications organisations to work with the immunisation programme. An additional $1 million has been set aside to support communications to Pasifika communities.

6.23 Some good work was under way, even before this specific funding was allocated. From late February 2021, communications were being targeted to specific communities using Māori and Pasifika health professionals, organisations, and other communication channels. The Ministry has been working with Māori health professionals to produce videos challenging misinformation. The Ministry has contracted Māori and Pasifika health care providers to lead the national Māori and Pasifika vaccine campaigns. However, we note that these contracts are nearing their end. Some district health board communication teams have also been active in this area.

6.24 The Ministry has also been working with Te Puni Kōkiri and the Ministry for Pacific Peoples to use their knowledge and networks. For example, the Ministry partnered with the Ministry for Pacific Peoples to develop a joint engagement strategy for Pasifika communities. The Minister for Pacific Peoples hosted a series of fono with Pasifika communities involving Pasifika clinicians to provide information about the vaccine from trusted sources and give people an opportunity to ask questions or discuss any concerns they had. These sessions were reportedly well received.

Opportunities may have been missed because of delay

6.25 At the time of our audit, decisions still needed to be made about the delivery of Māori and Pasifika communications, including how the $3 million of funding would be distributed (see paragraph 6.22).

6.26 Delay means it is likely some opportunities have been missed. We heard that some iwi and Māori organisations were ready to start delivering messages about the vaccine early on but had been held back by the lack of readiness at the Ministry and district health boards

6.27 However, since our audit, we understand that Te Puni Kōkiri and the Ministry for Pacific Peoples have taken responsibility for developing and delivering targeted communications to Māori and Pasifika communities. A process is now under way for distributing the $2 million of targeted funding to Māori organisations.

6.28 During our audit, we also heard concerns about the lack of communications for people with disabilities. Although work on a disability strategy is under way, it is not yet complete. We have been told that the Ministry has now set up a Disability Sector Forum to better understand the sector's needs and find the best ways of providing information about the vaccine to people with disabilities.

6.29 Communicating information about the immunisation programme has been a challenge in an environment where important decisions were still being made. Information was often not available to communicate to the public and health and disability sector stakeholders, and this has caused some frustration.

6.30 In our view, this could have been mitigated had the Ministry chosen to be more transparent about why information was not being communicated and provided some indication of when it would be.

Raising public awareness is critical to the success of the immunisation programme

6.31 Clear communication to the public is a central component of an immunisation strategy. World Health Organisation guidance is that communications planning should occur as early as possible to ensure that there is acceptance and uptake of Covid-19 vaccines.

6.32 Vaccine communications also need to be informed by an understanding of people's perceptions of the vaccine. The Ministry recognised this and commissioned Horizon Research and the University of Auckland to survey New Zealanders' attitudes and sentiment about Covid-19 vaccines. Initial surveys were carried out in September 2020 and December 2020. From February 2021, the surveys have been carried out monthly. There was also a separate survey commissioned in February 2021 that was specifically focused on Māori attitudes to the vaccine.

6.33 The percentage of those who will "definitely not" accept a vaccine has remained steady (about 9.4%) during the past six months. Based on this, the researchers have speculated that it is unlikely to change. The February 2021 survey found that more than two-thirds of respondents who said they are willing to take the vaccine also said they required more information, particularly those aged under 25 years and Māori and Pasifika. The March 2021 survey found that there continued to be a need for more information to be provided to help people decide whether to receive the vaccine. This highlights the importance of providing clear and targeted information.

6.34 The Ministry has only recently developed a communications strategy that sets out roles and responsibilities, an approach to messaging, and how this messaging

would be delivered. The first version of the Covid-19 Vaccine Communications and Engagement Approach was developed weeks after the first vaccinations were given.

6.35 At the time of our audit, the public awareness campaign had not started. We were told that this was because decisions about the sequencing framework and delivery models had not been made. The Ministry told us it did not want to initiate a public awareness campaign urging people to be vaccinated until it could provide clear information about when and how people could do this.

6.36 The Ministry decided to focus instead on targeting each priority group as they neared vaccination. For example, it worked with the employers of border workers to encourage vaccinations. There was an initial focus on media events highlighting the individual stories of high-risk workers and their families.

6.37 Since our audit was completed, the Ministry has developed a new public information strategy and launched a public awareness campaign that we were told will increase in intensity as the roll-out progresses. There have also been specific events designed to increase transparency, such as a recent panel discussion with the Director-General of Health, and increased frequency of media briefings about the immunisation programme from the Director-General of Health and the Minister for Covid-19 Response.

6.38 We also note the Ministry has significantly increased the amount of data and information it is publishing on its website, including how district health boards are tracking to planned targets, daily dose volumes, and cumulative vaccinations by key demographics.

6.39 We encourage the Ministry to continue to progress this work. Where there is an absence of information coming from official sources, the risks of misinformation filling the gap are intensified. This could directly affect confidence in the immunisation programme and uptake of the vaccine.

Recommendation 6

We recommend that the Ministry of Health continue to strengthen efforts to raise public awareness of the immunisation strategy in a way that:

- ensures that communications are co-ordinated with key vaccination events;
- encourages uptake of the vaccine; and
- is tailored to different audiences, in particular Māori, Pasifika, people with disabilities, and harder-to-reach communities.

Appendix 1
Vaccine information

Name	Technology	Number of doses purchased	Number of doses needed for each person	Medsafe status
Pfizer-BioNTech	RNA	10 million	Two	Approved under section 23 of the Medicines Act, with conditions. This is called a provisional approval.
Janssen Pharmaceutica	Non-replicating viral vector	5 million	One	Application received, some data under evaluation, further data to be provided by sponsor.
Novavax	Protein subunit	10.72 million	Two	Has not yet made an application for approval.
AstraZeneca/ Oxford	Non-replicating viral vector	7.6 million	Two	Application received, some data under evaluation, further data to be provided by sponsor.

Appendix 2
Sequencing framework

Group number	Who	How many	When	Where
Group one	Border and managed isolation and quarantine employees and the people they live with.	50,000	February, March	Workers get their vaccine at or near their place of employment. The people they live with are invited to get their vaccination at a range of places.
Group two	High-risk frontline health care workforces. Workers and residents in long-term residential environments. Older Māori and Pasifika cared for by whānau, the people they live with, and their carers. People aged 65 years and older, people with relevant underlying health conditions, and disabled people living in the Counties Manukau DHB area.	480,000	March, April, May	Workers get their vaccine at or near their place of employment. Workers and residents in long-term residential environments get their vaccine at or near their facility. Māori and Pasifika health care providers offer the vaccine at locations in their communities. Different options, including community clinics and pop-up centres in the Counties Manukau DHB area.
Group three	People aged 65 years and older, people with relevant underlying health conditions, and disabled people. Adults in custodial settings.	1.7 million	May onwards	Different options including through Māori and Pasifika health care providers, GPs, pop-up centres, pharmacies, medical and hauora centres, and community clinics.
Group four	People aged 16 years and over.	2 million	July onwards	Different options including through Māori and Pasifika health care providers, GPs, pop-up centres, pharmacies, medical and hauora centres, and community clinics.

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