



Royal College of
General Practitioners

Delivering Mass Vaccinations During COVID-19

A Logistical Guide for General Practice

This document has been written by a number of clinicians with experience of delivering vaccinations at scale. It is written with the understanding that a number of mass vaccination programmes may need to be delivered during mid-2020 to 2021, while COVID-19 continues to be in general circulation; it will address approaches to delivering large-scale vaccination programmes in this context.

This document will not cover clinical aspects of immunisations.

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20 July 2020

Version 1.5

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Scope

This document has been produced to assist GPs, lead practice nurses, Practice Managers, Clinical Directors, GP Federations, PCNs and CCGs/Health Boards in understanding the practicalities and challenges of delivering mass vaccination programmes in a context when COVID-19 remains in general circulation. It sets out key areas that will need to be considered, offers possible solutions and highlights areas where risk assessments are required, particularly where these may differ from normal practice. This document focuses on the needs of general practice but may also be of relevance to other vaccinators, local directors of public health, and colleagues operating in international contexts. The guidance is intended to be generic, and applicable to various potential vaccines which may need to be delivered to a large population in a short time frame.

This document should be read in conjunction with other relevant guidance from the RCGP, national organisations (such as NHS England, Public Health England and equivalent bodies across the devolved nations), and other medical bodies (such as the Royal College of Nursing and Royal Pharmaceutical Society and the BMA).

Introduction and Context

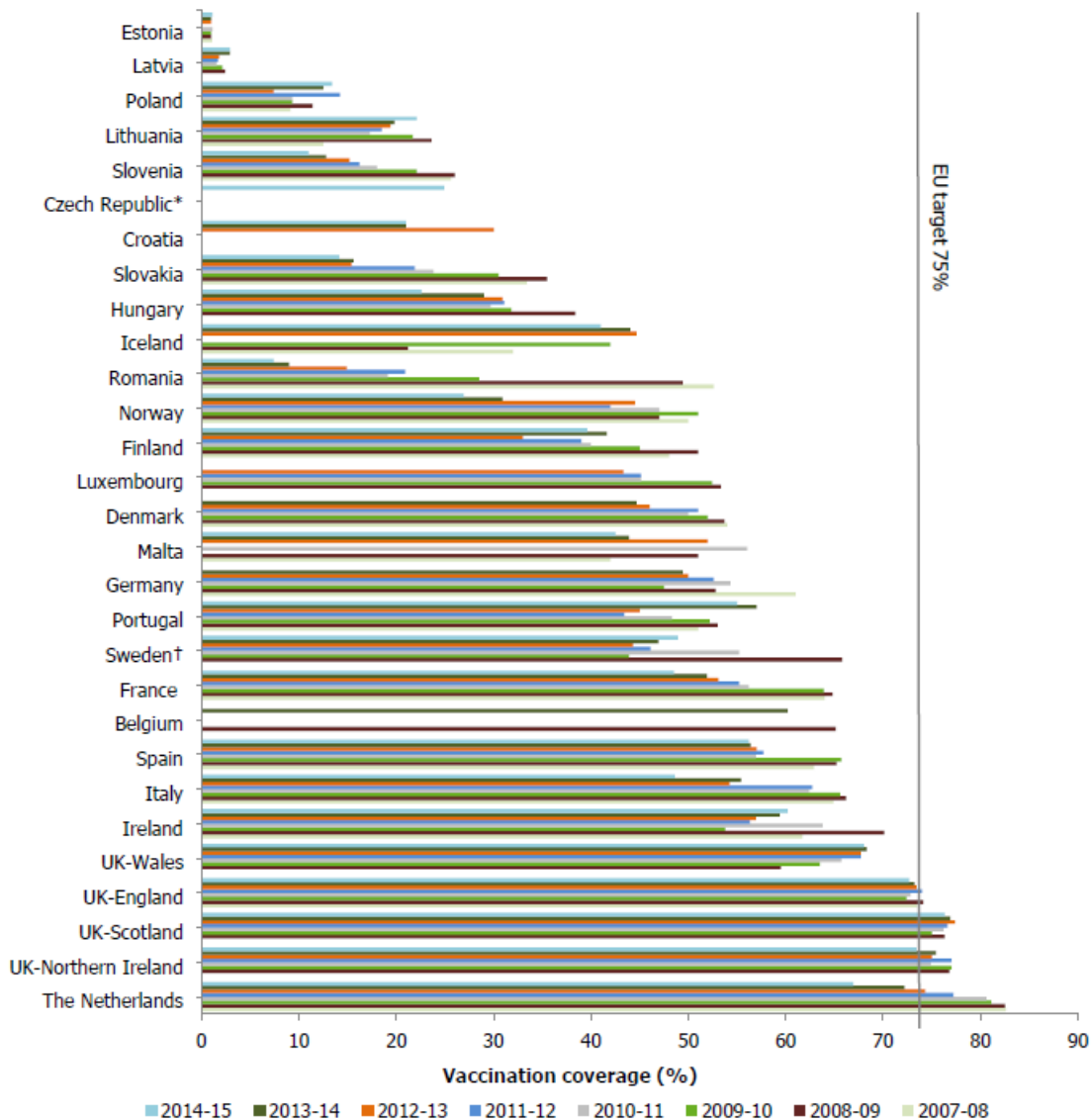
General practice and the delivery of large-scale vaccination programmes

The UK has a long-established system for vaccinating people against infectious disease. As well as programmes of childhood vaccination, the UK delivers a large-scale seasonal influenza (flu) vaccine programme on an annual basis. This is principally delivered in general practice, pharmacies, maternity departments, occupational and school vaccination services. In typical years, this programme is delivered to over 12 million people in England alone, and all four nations of the UK consistently achieve some of the highest vaccination rates in the EU among the over-65s group, (see Figure 1, below).¹

While this programme is delivered in a variety of locations including pharmacy branches, people's homes, workplace and schools, the majority of the programme is delivered in general practice. General practice is particularly well prepared for such large-scale vaccination programmes, with the capacity to effectively reach large numbers of patients quickly and has the appropriate physical and digital infrastructure to deliver the programme (such as reliable cold chains, appropriate stocks of equipment, medical waste disposal facilities and access to patient records). Furthermore, the dispersed nature of general practice means that there is less reliance on any one provider.

¹ Public Health England, *Vaccine uptake guidance and the latest coverage data*, <https://www.gov.uk/government/collections/vaccine-uptake>.

Figure 1. Seasonal influenza vaccination coverage rates in older age groups, 29EU/EEA Member States, 2007–08 to 2014–15 influenza seasons²



Source: National seasonal influenza vaccination surveys, July 2009–December 2015

* Age groups of over 65 years of age and clinical risk groups combined

† Sweden: For the 2009–10 influenza season, reports were received for around 60% of the population.

These factors together mean that general practice can easily deliver large-scale vaccination programmes, with high through-put in a short space of time. This improves productivity, reduces vaccine wastage and has minimised impact upon other clinical services, while maximising vaccination coverage.

² European Centre for Disease Prevention and Control, *Seasonal influenza vaccination in Europe: Vaccination recommendations and coverage rates in the EU Member States for eight influenza seasons, 2007–2008 to 2014–2015*, <https://www.ecdc.europa.eu/sites/portal/files/documents/influenza-vaccination-2007%E2%80%932008-to-2014%E2%80%932015.pdf>.

The challenges posed by COVID-19

In the past primary care has been called upon to provide emergency vaccination to reduce the spread of disease, notably in 1960s (smallpox) and 2010 (swine flu pandemic). It seems likely that a similar scale of emergency vaccination will be needed from primary care, as a result of the COVID-19 pandemic. This may include significantly expanding the seasonal flu vaccination programme and/or delivering mass vaccination against COVID-19, either as part of either a national or local response.


However, the COVID-19 pandemic poses a specific set of challenges to achieving high volume through-put. For example, it is likely that enhanced standards of infection prevention and control will be needed, and larger spaces may be necessary to maintain safe social distancing. Premises normally used to undertake vaccination (GP surgeries, pharmacies, schools) are likely to be impacted by any restrictions of social distancing, if in place. Creating a safe flow of patients to achieve the high throughput to vaccinate large numbers may be difficult and impossible in some.

In the context of social distancing, use of personal protective equipment and increased time necessary for immunisers to prepare for each patient, it is likely that additional time will be required. Under normal circumstances, well organised, properly supported flu clinics may be able to vaccinate patients at rates as high as one patient per vaccinator every one to three minutes, as part of a patient journey around 15 minutes in length.

In these altered circumstances, we estimate that the actual vaccination process may take at least four minutes, and potentially five to six minutes depending on the PPE requirements. This is in comparison with a normal GP throughput of between 1-3 minutes per seasonal flu vaccination. Unless the number of vaccinators is also increased, this will have significant implications for the time taken to vaccinate a population (see Table 2, below). Additional time will be needed to allow for staff breaks. Other elements of the process (registration, queuing etc.) will add to the length of the patient journey, but it likely that the vaccination itself will be the limiting factor.

Table 2: Time taken to vaccinate 100 people

Number of Vaccinators	Time between vaccinations (Minutes)								
	2	3	4	5	6	7	8	9	10
1	200	300	400	500	600	700	800	900	1000
2	100	150	200	250	300	350	400	450	500
3	66	100	133	167	200	234	267	301	334
4	50	75	100	125	150	175	200	225	250



High throughput of patients will also require adequate, reliable supplies of the vaccine itself. Local refrigeration capacity for vaccines and vaccine delivery schedules are crucial components in the seamless steady administration of vaccines to patients.

It is also possible that large numbers of people will be required to be vaccinated, above and beyond the regular annual flu vaccination programme, and that locality vaccination may be required for outbreak control purposes. For example, if the seasonal flu vaccine target population were extended to those aged 50 or over, that could add as many as 12 million people to the target population (the exact numbers will be somewhat lower, as some of those people would already be included in other at-risk groups eligible for the vaccine). A similar population may need urgent vaccination against COVID-19 in the first instance.

Any large-scale vaccination programme will need to be delivered by a workforce which is facing additional demand due to the longer-term impacts of the COVID-19 pandemic and lockdown, and which may have reduced capacity, due to the need to protect vulnerable staff from frontline work and for potentially infected staff to self-isolate.

These factors, taken together, suggest that services and facilities may need to be altered or enhanced to ensure that vaccination programmes are successful. Furthermore, specific requirements, such as social distancing measures, may be subject to rapid change. Plans should therefore be based around a reasonable worst-case scenario for delivering the vaccine.

With sufficiently detailed planning and preparation, however, it will be possible to mitigate these risks and deliver effective vaccination programmes which protect patients without impacting unduly on delivery of other services.



Prior Planning and Leadership

Detailed planning is essential to effectively delivering any large-scale vaccination programme, particularly where this departs from routine practice. This planning should be undertaken well in advance of the likely date of roll-out, to allow time for any challenges to be identified and mitigated.

Planning and delivery should be undertaken across a consistent, pre-agreed footprint. It may be more efficient and cost effective to provide immunisation across a number of providers, pooling resources and sites to deliver the best service possible, and working in coordination with other local stakeholders such as directors of public health and local government. For example, a grouping of GP surgeries/providers (such as a GP federation or Primary Care Network), may work together to jointly immunise a given population. If the footprint is not based on a pre-existing organisational structure, but is created on an ad hoc basis, this may create additional challenges for the governance and management of the vaccination programme, which should be fully considered from the outset.

Across a given delivery footprint, clear structures and lines of accountability are necessary. A single clinical lead (such as a PCN clinical director, a specific GP/nurse partner in a GP federation, or a Senior Practice Nurse) should be appointed to take responsibility for coordinating planning and delivery, ensuring patient safety and where necessary, providing a link to national and subnational governance structures.

It is also likely that mass vaccination may be delivered by multiple organisations and structures working in parallel; significant parts of the seasonal flu vaccination programme are delivered outside general practice (by schools, pharmacies and employers including secondary care). In the event of a programme of COVID-19 vaccination alongside seasonal flu vaccination, it may be necessary for the NHS to develop an additional vaccination infrastructure working with trusts. In these circumstances, coordination will be vital to ensure that vaccines are delivered appropriately, and that the correct patients receive the correct vaccinations in a timely fashion.

Practical Considerations

There are a wide range of practical considerations which should be borne in mind when planning and delivering large-scale vaccination programme.

The following points should be should be addressed early in the planning stage.

Governance and leadership

- Is there a clear leader of the process, who has the authority to make necessary on decisions on delivery including regarding financial and governance issues?
- If this is being delivered at an above practice level does it need its own governance structure (incident reporting), CQC registration and management teams? Such structures may already be in place in certain circumstances.
- What are the financial elements to immunisation delivery?

Programme scale and eligibility

- Is the scale of the requirement clear? Who should receive the vaccination?³ If multiple programmes are to be run (seasonal flu, COVID-19), is it clear how these will overlap, and what impact this will have on delivery.
- Has vaccine be ordered in sufficient quantities and when will it arrive?
- What are the required timeframes for delivery of the programme?
- If the programme is particularly large-scale or particularly urgent, is a system of prioritisation in place to ensure that those most at risk receive the vaccine soonest?
- What is the communication plan to ensure that eligible patients are aware of the immunisation? Does this require the involvement of local/national media?
- How will eligible persons be contacted; how will non-attenders be encouraged to attend? Will patients be cohorted based on age, risk factors or other characteristics? Particular consideration should be given to vulnerable or hard to reach groups, which may be more appropriately vaccinated in 'traditional' settings.

Vaccination process requirements

- Is the vaccine a single dose or multiple doses? If multiple doses, what implications does this have; how will repeat engagement be ensured? This may be further complicated if multiple large-scale programmes are being delivered in parallel or quick succession (e.g. flu vaccine and possible coronavirus vaccine)

³ The Joint Committee on Vaccination and Immunisation has provided interim guidance on priority groups for COVID-19 vaccination. See <https://www.gov.uk/government/publications/priority-groups-for-coronavirus-covid-19-vaccination-advice-from-the-jcvi/interim-advice-on-priority-groups-for-covid-19-vaccination>.

Guidance on the coverage of the 2020 seasonal flu immunisation programme can be found at <https://www.england.nhs.uk/wp-content/uploads/2020/05/national-flu-immunisation-programme-2020-2021.pdf>, however this may be subject to review.

- If multiple vaccines are available, how will patients be cohorted to receive the most appropriate vaccine?
- What are the necessary cold chain requirements and how will they be met?
- What is the format of the vaccine – injectable or nasal? Are there any implications on the format of the vaccine?
- Does the vaccine come in a large vial requiring individual doses to be drawn up or is it in a pre-filled syringe with needle? How does this effect equipment needed, time taken etc? PHE guidance should be considered in this context

Staffing and delivery

- Do staff understand their roles and responsibilities? It may be beneficial to work in teams of two or more, with at least one administrator and one vaccinator. Additional staff may be able to assist with vaccine preparation, and it may be helpful to have multiple vaccinators to each administrator, who rotate to allow for changing IPC measures. Multiple teams may be able to work in parallel.
- Are there sufficient members of staff to deliver vaccination, and to prepare vaccinations and provide logistical, administrative and clinical support?
- If additional staff are needed, where will they come from? What legal or regulatory issues may need to be addressed to allow for safe patient care, including the limitations of Patient Group Directions (PGDs)?⁴
- Are staff trained for their roles, or is training required?

Data and record keeping

- Is there to be a requirement for IT access to view and record patient information, if so how will this be achieved. If WIFI solutions are used can these cope with multiple devices, particularly if all are to be logging on simultaneously? This may affect the preferred location for programme delivery.
- How will immunisation delivery be reported to relevant authorities and by when?

Location, premises and social distancing

A key consideration when delivering a large-scale vaccination programme will be the most appropriate location for vaccination clinics. Under normal circumstances, vaccinations are routinely delivered in surgeries, pharmacies, schools, places of work and other locations. However, many such 'typical' locations may not lend themselves to ensuring rapid through-put, while maintaining social distancing. Model layouts to allow for high through-put in non-traditional settings are included in Appendix B and C. These

⁴ The RCN has produced guidance on the role of nursing associates and healthcare assistants in vaccine administration. See <https://www.rcn.org.uk/clinical-topics/public-health/immunisation/practical-and-clinical-guidance-for-vaccine-administration>.

RCN/RPS high level guidance on medicine administration can be found here: <https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/SSHM%20and%20Admin/Admin%20of%20Meds%20prof%20guidance.pdf?ver=2019-01-23-145026-567>.



models assume multiple teams of vaccinators and parallel queues to maximise through-put, while maintaining social distancing.

Key factors to consider will include the local geography (rural vs urban, and ease of site access), building design, accessibility and occupancy, prevailing social distancing requirements and numbers required to be vaccinated at what speed.

If high through-put is required, indoor and outdoor queuing maybe be considered, however additional consideration may be needed in cold or inclement weather, or when delivering a vaccination to vulnerable groups. It may be appropriate to have a 'fast-track' queue for such patients, perhaps allowing the person to bypass normal queuing arrangements, or to provide specific time-slots (for example 10-15-minute intervals). Other factors include digital infrastructure and record keeping, facilities for infection prevention and control and transport/traffic management.

Delivering a programme at scale across numerous providers may increase the range of available settings. For example, it may be possible to deliver vaccinations in more modern surgery premises (with more capacity for social distancing), while relocating lower through-put routine practice to other settings. Alternatively, operating at scale may facilitate access to other settings such as community centres or schools.

Liaison with local and NHS authorities and potentially local police maybe required to ensure that suitable parking, traffic flow and any site security implications are managed.

Local GP surgery

If suitable flow routes and volumes can be achieved, or this is the most appropriate place for a restricted number who cannot attend elsewhere.

Pharmacy premises

If suitable flow routes and volumes can be achieved, or this is the most appropriate place for a restricted number who cannot attend elsewhere.

Larger community health facility

Larger buildings may offer opportunities for better queueing and circulation of patients but may have multiple occupants whose safe working may be impacted by or limit the numbers of patients who can access a vaccination clinic. These locations offer greater flexibility to individual practices but may provide opportunities for cross-practice (PCN/Federation) working.

Other buildings

These may be made available by schools (such as a school hall/gymnasium) or Local Authorities (council gym or village facilities) to provide larger spaces. They often have reasonable accessibility arrangements and transport arrangements, however there may be challenges relating to managing queues, equipment, technical infrastructure and storage. Use of some buildings (e.g. places of worship), may raise additional cultural issues.

Drive-through facilities

These can provide some safety for the patients whilst queueing, however they require large spaces and well-developed traffic management. If weather is adverse, arrangements should be made to protect clinical, administrative and ancillary staff. Adverse weather may also raise additional barriers to patient access, and drive through facilities may mean patients may also feel less able to raise questions or concerns.

Patients taken ill within a vehicle, fainting, hyperventilating or anaphylaxis may present a potential issue, particularly if they are the driver of the vehicle. Managing this risk may require additional planning and consideration. It may be appropriate to require all patients to wait onsite post-vaccination before departing.

Equipment and layout requirements

Equipment requirements

- Furniture (chairs, tables, screens)
- Crowd barriers
- Refrigeration
- IT (computers, broadband), power supply
- Waste disposal (general, clinical, sharps)
- Personal protective equipment
- Welfare (rest area, catering/refreshments including beverages and lunch provision)
- Vaccination equipment and supplies
- Additional medical equipment (couch, resuscitation and diagnostic)
- Screening and lighting for staff rest areas and for patients taken ill.
- Clear signage both outside a venue and inside, directing patients where to go

Layout requirements for at-scale provision

- Flow of patients (separation of entrance and exits)
- Reception & triage space (to identify patients and assess any who are unwell)
- Queueing space (maintaining social distancing as far as possible)
- Fast track route (for patients with limited mobility or additional requirements)
- Toilets
- Hand washing facilities for both patients and staff
- Emergency / first aid area
- Secure equipment storage, including for vaccine stocks, PPE and IT equipment.
- Cold chain for supply and storage of vaccine
- Waste disposal (requirements will depend upon how PPE is used)
- Rest area
- Transport and traffic management capacity.

Layouts for indoor and drive-through facilities are provided in Appendices B and C.

Personal protective equipment and infection prevention and control

Personal protective equipment and infection prevention and control procedures should follow current guidance from Public Health England and devolved nations bodies.⁵ Plans should take in to account the possibility that guidance may change, and specific guidance for vaccination processes may be published in due course.

Matters to consider include:

- PPE requirements for both immuniser and administrative staff. Requirements for child immunisation, which may entail closer contact and use of nasal vaccines, should be considered separately from the needs of adults;
- PPE requirements for patients and how this will be communicated to patients in advance. Current RCGP guidance recommends that where possible, patients wear face coverings.⁶ If patients arrive without a face covering, will it be provided?
- Ensuring sufficient supply of PPE for an immunisation session;
- Cleaning requirements, where appropriate;
- Disposal of clinical waste, including PPE and sharps containers, particularly if operating in a non-typical setting.

Other practical considerations irrespective of location

Design error out

If multiple types of vaccine are available for an individual disease, it is recommended that, if possible only one type is used in a particular session. This is to reduce the potential for error and will require cohorting of patients in advance. If two vaccines are to be administered, for example seasonal flu and COVID-19, ensure that they are clearly labelled and separated.

Risk Assessment

Has a thorough risk assessment been conducted for the programme as a whole, and for specific vaccination sessions? Are risk assessments regularly reviewed and updated? How will identified risks be mitigated?

Equalities Impact Assessment

It may be appropriate to conduct an equalities impact assessment against protected characteristics to ensure that specific groups are not disadvantaged through mass vaccination programmes. This should consider how patient concerns may be addressed.

⁵ Public Health England, *COVID-19 personal protective equipment (PPE)*, <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/covid-19-personal-protective-equipment-ppe>.

⁶ RCGP, *Guidance on masks and face coverings in primary care*, <https://www.rcgp.org.uk/-/media/Files/Policy/A-Z-policy/2020/covid19/guidance-masks-face-coverings-rcgp.ashx?la=en>.

Infection prevention and control

What infection control requirements such as handwashing/masks/face coverings are needed for both staff and patients? How will these be efficiently implemented? Current guidance from Public Health England and devolved nations bodies should be followed.

Patient assessment and record keeping

Confirmation of the patient's identity may be required. Ensure that that relevant consent has been sought and documented. Ensure that relevant contraindications have been excluded.

If possible enter information into clinical records once and automate the process. GP computer systems allow for the entry of repetitive information using macros and equivalent. Pre-populate macros with relevant vaccine information prior to a session and ensure that vaccinators and administrative staff know how to utilise them. An exemplar patient record form can be found in Appendix A.

Where immediate access to clinical records is not possible, systems should be established to ensure vaccination details are added to patient records and, where necessary, further vaccinations scheduled. It may be necessary to collect information on the reason for vaccination (e.g. over 65, at risk patient, healthcare worker), and on protected characteristics such as ethnicity (particularly given the increased COVID-19 risk for BAME individuals). These should be based on official lists of eligible cohorts and protected characteristics. Systems should also be established to share coverage information with relevant local and national authorities.

Advanced communication

Provide clear information and guidance to the patient in advance. Key information includes:

- Type of vaccination. It may be appropriate to share the patient information leaflet and provide opportunities for patients to ask questions, discuss side-effects etc in advance;
- Process for vaccination;
- Location and setting (including awareness that vaccine may be delivered in an open plan venue, rather than a private consulting room).
- When to arrive for their designated slot to prevent backlogs (patients should not present early or late);
- What type of clothing to wear;
- What PPE to wear;
- What paperwork to bring;
- To attend alone if possible;
- Not to attend if unwell.

Provide relevant information such as Patient Information Leaflets

In accordance with normal practice patients should be provided with a Patient Information Leaflet of the vaccination(s) they receive. This information could be provided in paper form or electronically by text/ email.

Prepare the patient

If a patient is queuing, encourage them to remove outer layers of clothing/roll up sleeves and fill out necessary paperwork to ensure that they can be immunised speedily.

Cold Chain

Ensure that refrigerators contain sufficient stock of vaccine for a session and that necessary cold chain requirements have been met.

Potentially unwell patients

Patients should be advised in advance not to attend if feeling unwell. Nonetheless, some patients may present to the vaccination location unwell, or may become unwell whilst attending the vaccination location. Facilities must be in place for the assessment and management of patients who are unwell, this must include resources to manage fainting and anaphylaxis/cardiac arrest to a primary care level of skill. Reliance on 999 Paramedics is not appropriate.

Consideration should be given as to how patients who are unwell would be isolated and assessed, and what implications that might have (e.g. five-year-old child with cold symptoms, can they continue to be vaccinated?). Consideration should also be given to ensuring attendance at future session if vaccination is not administered.

Post-vaccination observation

Recipients of any vaccine should be observed for immediate Adverse Drug Reactions. There is no evidence to support the practice of keeping patients under longer observation in the GP surgery. (Green Book Ch 4)

There is a common misconception that individuals should wait 20 minutes after receiving a vaccine. Most reactions will occur within two minutes and some occur hours later. The advice from the RCN is that there is no need to keep patients waiting unless this is specifically indicated in the summary of product characteristics for a given vaccine.⁷ It is currently unknown whether a potential COVID-19 vaccination will require a period of observation following administration.

⁷ RCN, *Practical and clinical guidance for vaccine administration*, <https://www.rcn.org.uk/clinical-topics/public-health/immunisation/practical-and-clinical-guidance-for-vaccine-administration>.



Patient groups with additional requirements

Hard to reach groups

When designing services, consider those who may be hard to reach and require additional support or immunising at different times/locations especially given that such patients may be more at risk, and may face barriers in accessing vaccination (for example travel limitations).

Additional requirements

There are several groups who will need specific access arrangements or support to be able to access vaccination. These may include those with limited mobility including wheelchair use but also hidden disabilities such as hearing loss, poor vision or learning difficulties including autism.

Services should consider how these groups will be supported to access vaccination. Consideration may be given to the use of Hidden Disability lanyards and training. Consider implementing a “fast track” route for patients unable to queue and their carers/family, equivalent to an airport whereby they can be immunised quickly.

Home visiting

There will be several groups, including care home residents, who will need domiciliary vaccination and services should consider how this can be achieved (including how cold chain requirements can be maintained).

The Patient Journey

Pre-Vaccination

- Patients stratified by risk, type of vaccination (where applicable), additional needs;
- Patient cohorts contacted to book vaccination slot at one of a number of sessions (if multiple injections for one vaccine, both may be booked at once to ensure full schedule is delivered);
- Patient provided with information on vaccine, guidance on what to wear, what to bring, what to do if feeling unwell;
- Patient given opportunity to address any concerns through follow-up telephone appointment if necessary;
- Patients reminded of booking a few days beforehand.

Arrival at Vaccination Site

- Patients arrive during specified time-slot (with some capacity for early/late arrivals);
- Traffic flows managed by marshal;
- Patients directed to hand-wash station by entrance;
- Patient directed to reception, where they are registered and triaged;
- Patients join socially distant queue (fast-track or seated queue for patients with additional needs).

Vaccination

- Patients reach front of the queue
- Patient confirms details with administrator, while vaccinator prepares vaccine
- Patient vaccinated
- Patient moves to rest area
- Vaccinator changes over with alternate for infection control purposes
- Patients who are taken ill may be moved to a rest area

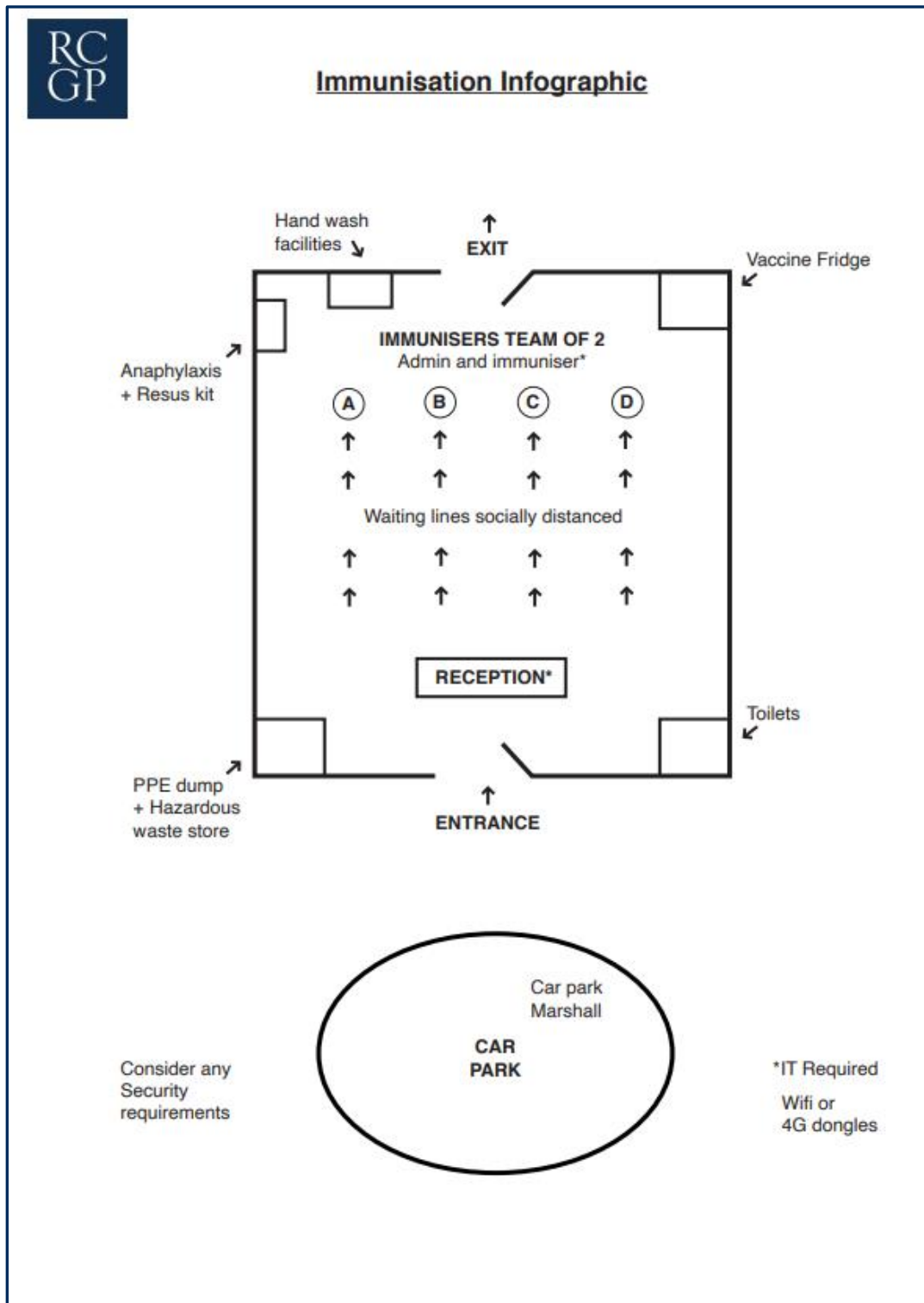
Post-Vaccination

- Patients provided with information leaflet, either in person or via email
- Patients free to depart
- Follow-up text/call to confirm date of subsequent injection if needed

Further Information

- Department for Health and Social Care Joint Committee on Vaccination and Immunisation, *Interim advice on priority groups for COVID-19 vaccination*, June 2020. <https://www.gov.uk/government/publications/priority-groups-for-coronavirus-covid-19-vaccination-advice-from-the-jcvi/interim-advice-on-priority-groups-for-covid-19-vaccination>.
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Appendix B: Vaccination centre layout



Appendix C: Drive-through vaccination layout

