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PRECISION PSYCHIATRY LAB

UNIVERSITY OF OXFORD

Vaccine uptake and vaccine hesitancy

All questions within each section are linked to each other and should be read in conjunction. Below each question is the weblink to the source of evidence to support the guidance recommendation. This table covers an evolving and fast-moving area. Where guidance is available we have included this, and will update the table with more guidance as this becomes available. Readers may also find further relevant information on COVID-19 vaccine prioritisation at *https://oxfordhealthbrc.nihr.ac.uk/our-work/oxppl/vaccine-prioritisation-and-mental-health/*

The following table was created in collaboration with Professor Daniel Freeman and Dr Sinéad Lambe, Department of Psychiatry, University of Oxford. We thank them for their helpful contributions and guidance.

Clinical question	Guidance

1. What is vaccine 'hesitancy'
[link1]
[link2]
	• The success of a safe, efficacious COVID-19 vaccine will depend on **uptake**.
	• Uptake will be limited if there are individuals who are **reluctant or unwilling to be immunised**.
	• The concept of hesitancy is the '**behavioural delay in acceptance or refusal of vaccines despite availability of vaccine services**' (SAGE Working Group on Vaccine Hesitancy, 2014).
	• In 2019, the World Health Organization (WHO) had already identified **vaccine hesitancy as a top threat to global health** (https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019).
	• **There is a continuum from acceptance to refusal of all vaccines**, with vaccine hesitancy lying between the two poles, and potential variation within individuals in attitudes to vaccination for different diseases.
	• A working group on vaccine hesitancy in the UK Scientific Advisory Group for Emergencies describes vaccine hesitancy as a behaviour influenced by several factors including:
	  ○ **confidence** [e.g. do not trust vaccine or provider],
	  ○ **complacency** [e.g. do not perceive a need for a vaccine, do not value the vaccine]
	  ○ **convenience** [e.g. access].
	Vaccine hesitancy can have effects for both the **individual** (a greater risk of having the disease) and potentially the **community** (greater virus transmission).

2. What do we know about vaccine hesitancy and the COVID-19 vaccine? [link3] [link4]	Vaccine hesitancy in the context of the COVID-19 vaccine is an evolving area and so official guidance has yet to be developed. However, there have been some recent surveys which assessed **potential acceptance rates specifically for the COVID-19 vaccine:** **Freeman and colleagues** (https://pubmed.ncbi.nlm.nih.gov/33305716/) assessed provisional willingness to receive a COVID-19 vaccine in 5,114 UK adults (matched to the general population) during September-October 2020.

- The researchers developed and used the **Oxford COVID-19 Vaccine Hesitancy Scale** (https://www.psych.ox.ac.uk/files/research/oxford-covid-19-vaccine-hesitancy-scale), a validated measure that assesses intention to take a COVID-19 vaccine.
- 71.7% of participants were willing to be vaccinated, 16.6% very unsure, and 11.7% strongly hesitant.
- Hesitancy was associated with younger age, female gender, lower income, and ethnicity, (but socio-demographic information explained little variance) and with lower adherence to social distancing guidelines.

The authors concluded that:

- COVID-19 vaccine hesitancy is relatively evenly spread across the population.
- Willingness to take a vaccine is closely bound to recognition of the collective importance, as well as beliefs about the likelihood of COVID-19 infection and the efficacy, speed of development, and side effects of the vaccine.
- Vaccine public information that highlights prosocial benefits may be especially effective.
- Factors such as conspiracy beliefs that foster mistrust and erode social cohesion will lower vaccine up-take.

Lazarus et al (https://www.nature.com/articles/s41591-020-1124-9) surveyed 13,426 people in 19 countries in June 2020, to determine potential acceptance rates and factors influencing acceptance of a COVID-19 vaccine.

- 71.5% of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine, and 48.1% reported that they would accept their employer's recommendation to do so.
- Differences in acceptance rates ranged from almost 90% (in China) to less than 55% (in Russia).
- Respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so.

3. How will we monitor or assess vaccine coverage?
[link5]

PHE guidance notes the following:

- Monitoring of vaccine coverage of most routine immunisation programmes **relies on data extracted from primary care systems.**
- If there are specific inclusion health or vulnerable groups that are **not flagged in information systems** (such as rough sleepers or vulnerable migrants), this will limit the ability to identify and address inequalities in vaccine uptake.
- For example, PHE's national immunisation equity audit in 2019 identified inequalities in uptake by age, geography, socioeconomic status, ethnicity, religion, disability and health status, travellers, migrants, prisoners, and parental factors. However, no assessment could be made on adults with learning disability, children or adults with physical disability, mental illness or chronic physical illness, homelessness, sexual orientation, and gender reassignment due to a lack of systematically collected data.
- **Locally relevant data sources** and intelligence need to be used, by collaborating with public health organisations to identify specific population groups and target specific activity to improve access and more effective delivery.
- PHE's immunisation equity audit also highlighted the **complexity** of the situation: existing programmes had **inequalities not just for overall coverage, but also for timing of vaccines and completion of vaccine schedules, which varied by vaccine programme, geographic locality, and geographic unit of analysis. The extent of a particular inequality varies when it intersects with one or more other domains.**
- **In addition, lower vaccine coverage in high-risk groups does not always equate to low impact of the vaccine programme.** For example, in a study in Merseyside looking at rotavirus vaccine uptake and acute gastroenteritis hospitalisations; vaccine impact (reduction in hospitalisation rates) was greatest among the most deprived populations, despite lower vaccine uptake, because the

	baseline absolute risk was so high. **In the context of a COVID-19 vaccine programme, even if vaccine uptake falls short in some high-risk groups, health benefits may still be realised in terms of disease burden reduction.**

4. What level of uptake is needed, and how can this be improved over the whole population?
[link2]
[link6]
	The Royal Society and the British Academy completed a rapid review (21 October 2020) of the behavioural aspects of vaccine uptake and misinformation about the COVID-19 vaccine and concluded that:
	
	• A **community-level vaccine coverage of 80+%** will be required to protect the community from infection, dependent on the vaccine efficacy. duration of protection, and the extent to which vaccines reduce transmission.
	• Public expectations urgently need to be managed to prepare for a **longer-term transition** where non-pharmaceutical interventions remain in place.
	• Behavioural factors underpinning vaccine uptake are:
	  ○ **complacency**
	  ○ **trust and confidence** in efficacy and safety
	  ○ **convenience**
	  ○ **sources of information**
	  ○ **socio-demographic variation**
	• **COVID-19 vaccine deployment faces an unprecedented degree of uncertainty and complexity, which is difficult to communicate**. For example, information on immune response, duration of immunity, repeated vaccination, transmission dynamics, microbiological and clinical characteristics, and multiple vaccines.
	• There are **genuine knowledge voids**, necessitating public dialogue about vaccine concerns and hesitancy.
	• **Misinformation often fills the knowledge void**.
	• Priority groups for vaccine deployment **need transparent public debate** to build support.
	• Current seasonal flu uptake is low in certain groups, suggesting vaccination challenges, which include **high risk groups under the age of 65 (40 - 50%), support staff in health care organisations (as low as 37%) and even variation amongst key workers such as doctors (40 - 100%).**
	• **Deployment and tracking should build on existing immunisation programmes** such as primary care by GPs to identify comorbidities, track vaccinations and reminders for additional boosters.
	
	The Social Science in Humanitarian Action Platform (SSHAP) have produced a guide for those involved in vaccine development, communication, and deployment to boost confidence in COVID-19 vaccines.
	
	They identify **particular challenges for COVID-19 vaccine confidence**:
	
	1. Expedited development and novelty of COVID-19 vaccines
	• Vaccine safety and effectiveness testing.
	• Novel platforms.
	• Lack of longer-term safety records for approved vaccines.
	• Uncertainties around COVID-19.

- Uncertainties about new vaccines (e.g. the duration of immunity, preventing disease versus preventing transmission, including in different demographic groups)
- Lack of transparency on vaccine development and trials.
- Small and unknown vaccine developers.

2. Information and communication environments and efforts
- Social media and exposure to false information.
- Storytelling and emotion versus facts and traditional authority.
- Misinformation that sounds scientific, or hesitancy expressed by people with expert knowledge.
- Challenge of communicating vaccine complexities.

3. The politicisation of COVID-19 vaccine development and deployment
- Harmful politicisation of vaccine development.
- Political attempts to control COVID-19 narratives.
- Governments' previous handling of COVID-19 response.
- Marginalised and other communities.
- Worries about being experimented on.

They suggest **ways to increase COVID-19 vaccine confidence**:

1. Development and approval
- Engage a 'good politics' around vaccine development, approval, and deployment.
- Exercise transparency as far as possible in trial processes.
- Pledges to vaccine safety. For example, in September 2020, 9 pharmaceutical companies which manufacture vaccines pledged not to submit vaccine candidates for FDA review until their safety and efficacy is shown in large clinical trials (https://www.jnj.com/biopharma-leaders-unite-to-stand-with-science). Pledges like this could be scaled and/or adapted, including among different stakeholder groups to add an additional layer of reassurance for the public.

2. Creative communication and honest dialogue
- Be imaginative and compelling with communications.
- Use a wide range of platforms, both off and online, for clear communication about the types of vaccines and the process of deploying them.
- Use all languages spoken, and visual imagery from the platforms people trust.
- Build on local terminologies and understandings of vitality, strength, and immunity in communications about vaccination.
- Remind the public to act responsibly and think about accuracy prior to posting or sharing.
- Use open dialogue.
- Be honest about uncertainties.

3. Acting together

- Work with trusted influencers in and beyond public health.
- Co-design and discuss vaccination strategies with citizens.
- Work with frontline healthcare workers, including non-biomedical health providers.

4. Monitoring vaccine confidence

- Different types of monitoring efforts should reinforce one another.
- Quantitative surveys to assess vaccine hesitancy and confidence, monitor for changes. Extra focus and resourcing are required for surveys in low- and middle-income countries (LMICs).
- Qualitative research of vaccine hesitancy and confidence.
- Continuously collect and analyse feedback from communities.
- In parallel, monitor perceptions of the vaccination campaigns and of the vaccination experience.
- Track (and address) dis- and misinformation on and offline.

5. Vaccine deployment

- Rapidly increase communication, dialogue and planning with communities.
- Manage expectations of likely vaccine effectiveness, who will be prioritised, and that life may not go 'back to normal' for some time after vaccines are deployed.
- Avoid coercive strategies.
- Ensure vaccines are administered by trusted staff such as local healthcare providers, including non-biomedical practitioners, and avoid deploying the military. Use existing infrastructures as far as possible.
- Ensure everyone that needs the vaccine is included in vaccination plans.
- Take vaccination to places people are comfortable.
- Ensure surveillance systems for adverse medical events are in place.
- Engage independent monitoring bodies at national and regional level.

5. What strategies have been suggested in the guidance to address potential inequalities in vaccine uptake?
[link7]

In the UK, **PHE guidance** has focussed on the **potential lower uptake of vaccines amongst those from BAME** (**Black, Asian and Minority Ethnic) groups**:

- Within previous national vaccination programmes in the UK, reported vaccine uptake was lower in areas with a higher proportion of minority ethnic group populations.
- There is a significant risk that vaccine uptake for COVID-19 will also be lower.
- Primary care data analysed by QResearch indicates that, for several vaccines, Black African and Black Caribbean groups are less likely to be vaccinated (50%) compared to White groups (70%).
- Furthermore, for new vaccines (post-2013), adults in minority ethnic groups were less likely to have received the vaccine compared to those in White groups (by 10-20%).
- Recent representative survey data from the **UK Household Longitudinal study** shows:
    - **overall high levels of willingness (82%) to take up the COVID-19 vaccine**.
    - **marked differences existed by ethnicity,** with **Black ethnic groups** the most likely to be COVID-19 vaccine hesitant followed by the **Pakistani/Bangladeshi group**.

    - other White ethnic groups (which includes Eastern European communities) also had higher levels of COVID-19 vaccine hesitancy than White UK/White Irish ethnicity.
- Barriers to vaccine uptake include perception of risk, low confidence in the vaccine, distrust, access barriers, inconvenience, socio-demographic context and lack of endorsement, lack of vaccine offer or lack of communication from trusted providers and community leaders.

To overcome these barriers, PHE suggest:

- Use multilingual, non-stigmatising communications, including vaccine offers and endorsements from trusted sources.
- Aim to increase awareness and understanding and to address different religious and cultural concerns (e.g. whether the vaccine is compliant with dietary practices of major faiths, or with their ethical positions around medical interventions).
- Communication should consider the "whole communication journey" for vaccine rollout.
- Community engagement is essential, including with trusted sources such as healthcare workers, GPs, and scientists from within the target community.
- There may be benefits of emulating the independent stand-alone vaccination websites created in the US, Canada, Denmark, and Australia as a single, trusted source of information.
- Vaccines should be administered by trusted health practitioners in familiar and convenient locations which will also reach groups who may not be registered with primary care.
- Training would help healthcare staff to recognise the importance of their role as a trusted source of health information for minority ethnic groups.
- Practical support will be required to ensure no financial disadvantage is incurred through vaccine uptake (such as loss of earnings or travel costs).
- Transparent and regular reporting of progress on the vaccination offer, including uptake by minority ethnic groups and actions taken to address inequalities, will help to build confidence in the fairness, safety, and efficacy of the vaccines.
- Evaluation of interventions is essential to identify strategies that work well or are less effective.
- Communication approaches must recognise the evolving evidence situation, incorporating new and emerging evidence about COVID-19 and vaccines.

There is no specific guidance in addressing inequalities in reaching those with mental health difficulties, although PHE recognise that this is a high-risk group who should be monitored.

In the absence of formal guidance, there is discussion in primary papers:

For example, Warren et al (https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2774106) investigated the need to maximise the uptake of the COVID-19 vaccination by those with severe mental illness (SMI).
Historically the uptake of similar vaccines such as the influenza vaccine in the US in those with SMI, can be as low as 25%. They suggest the following as potential solutions:

- Mental health professionals should begin discussions with consumers about vaccinations for preventative health, addressing safety concerns and vaccine misconceptions.
- Develop vaccine education and awareness programs for people with SMI.

- Discuss physical health comorbidity and risks of COVID-19 in an open and supportive manner with people with SMI.
- Advocacy for vaccination programs within mental health services.
- Early discussion within health care service networks about distribution and administration processes.
- Emergency legislation or governmental recommendations to allow for short-term increases in clinicians to administer vaccinations.
- Commence vaccination programme for influenza while COVID-19 vaccine is being developed.
- Align with existing preventative health programs such as smoking cessation and metabolic monitoring.
- Engage peer workers to provide education about the vaccine, including their own personal experiences about receiving vaccines.
- Rollout of vaccination programme at, or in parallel with, public mental health clinics and mental health professionals' offices.
- Training for mental health professionals to deliver vaccine, where appropriate.
- Outreach to at-risk individuals, where safe and feasible, including home-based visits to administer the vaccine and/or transportation support for people with SMI to attend vaccination clinics.
- Government and/or health insurance subsidy for the vaccine with no cost to the patient.
- Adequate resourcing for mental health services if they are tasked with vaccine rollout.
- Work with immunization registries to identify people with SMI who are at risk or have not yet received vaccination (subject to local data sharing laws).

6. Sources of information for the public on COVID-19 vaccines

[link8]
[link9]
[link10]

PHE have information for the public at https://www.gov.uk/coronavirus (under the 'vaccines' tab).

The Oxford vaccine group '**Oxford Knowledge project'** has resources for the public on the COVID-19 vaccine, answering common questions about COVID-19 vaccines:

- How can I get the COVID-19 vaccine?
- How will the vaccine 'feel' when I receive it?
- Will I get side effects from the vaccine?
- Can I take multiple different types of vaccine, as an insurance policy?
- Should I get the COVID-19 vaccine if I've already had COVID-19?
- How long will I be protected from the virus with these vaccines?
- Can life go back to normal now?
- Will I still need to follow social distancing rules and wear a mask after having the vaccine?
- How much will the COVID-19 vaccines cost?
- Can you guarantee that no-one will fall seriously ill or even die by taking the COVID-19 vaccines?
- Can I get COVID-19 from these vaccines?
- These vaccines have been developed so quickly; how do I know that they have been tested properly?
- Are the COVID-19 vaccines safe?
- What does safe mean?
- Can these genetic vaccines alter my DNA?
- Do the COVID-19 vaccines contain human or animal products?
- Do the COVID-19 vaccines contain human foetal cells?
- What if the coronavirus mutates: will the vaccine still work?

	• Can COVID-19 vaccines affect fertility? • After having the vaccine, will I have a positive result from an antibody test? There is also a section specifically about the Oxford-AstraZeneca Vaccine. **Take the COVID-19 Vaccine Campaign** (https://takethecovid19vaccine.com/) is a non-profit community-based campaign providing information and resources to encourage people to take the vaccine. **Rethink mental illness** also has an accessible collection of resources at https://www.rethink.org/advice-and-information/covid-19-support/covid-19-vaccine-and-people-living-with-severe-mental-illness/
7. Information for nurses	• https://www.rcn.org.uk/get-help/rcn-advice/covid-19-and-vaccination
8. General information for clinicians	• Resources on COVID-19 at https://www.england.nhs.uk/coronavirus/ • The UK COVID-19 vaccination programme: https://www.gov.uk/government/collections/covid-19-vaccination-programme • PHE/JCVI guidance: https://www.gov.uk/government/publications/priority-groups-for-coronavirus-covid-19-vaccination-advice-from-the-jcvi-30-december-2020/joint-committee-on-vaccination-and-immunisation-advice-on-priority-groups-for-covid-19-vaccination-30-december-2020 • The 'Green book': https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/943663/Greenbook_chapter_14a_v3.pdf • Signpost to resources: https://www.rcpsych.ac.uk/about-us/responding-to-covid-19/responding-to-covid-19-guidance-for-clinicians/covid-19-vaccination • Different types of vaccine: https://www.gov.uk/government/collections/mhra-guidance-on-coronavirus-covid-19#vaccines-and-vaccine-safety