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## Viewpoint

# Maximising benefit, reducing inequalities and ensuring deliverability: Prioritisation of COVID-19 vaccination in the UK

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The urgent deployment of novel vaccines during a global pandemic inevitably comes with limitations in initial vaccine supply, which requires prioritisation of population groups. Hassan-Smith and colleagues recently argued that it is essential to develop a plan “that takes the growing body of evidence on the effect of comorbidities, occupational, and socioeconomic factors on COVID-19 severity into account” [1].

Prioritisation means endorsing unequal access to a potentially lifesaving intervention, which has implications for health inequalities and raises fundamental ethical questions. Deciding how to prioritise is not easy: reasonable disagreement can be expected, and debate encouraged. The Joint Committee on Vaccination and Immunisation (JCVI) is the expert body responsible for providing advice to the UK Government on immunisation. Following appraisal of scientific evidence, ethical principles and programme deliverability, the Committee’s advice for the first phase of the programme is to protect – directly or indirectly – those individuals at highest risk of severe illness and mortality from COVID-19, by prioritising care home residents, older people, health and social care workers, and people with underlying medical conditions [2]. The Committee advises that this will likely be followed by two further phases, the details of which will be informed by emerging data as they become available [2].

## 1. Scientific evidence

Science provides the evidence on risk of COVID-19 severe morbidity and mortality for different population groups, which underpins prioritisation decisions. Prioritisation of people in older age groups

and with clinical risk factors is based on strong evidence that the absolute risk of serious disease and death is higher among those with underlying health conditions and increases exponentially with age [3,4]. Individuals with underlying health conditions at highest risk are those considered ‘clinically extremely vulnerable’ [5] and are determined by a clinical panel independent of JCVI. Frontline health and social care workers are at increased risk of exposure and of transmitting the infection to vulnerable patients. Protecting them will also help maintain resilience in the National Health Service (NHS) and social care services, thereby further protecting the most vulnerable.

Other population groups with poorer COVID-19 outcomes include men and people from Black, Asian and Minority Ethnic (BAME) groups. The association of these and other characteristics with poorer COVID-19 outcomes is complex with co-morbidities, occupation, living conditions, deprivation, household composition and behavioural factors playing a role. For instance, some of the increased risk observed with male sex may relate to a higher baseline mortality in men [6] and the social and cultural factors related to gender rather than the biology of sex [7]. Similarly, genetic factors are unlikely to be a major explanation for the association of ethnicity with mortality from COVID-19 and the association with other factors, including structural social inequalities, are likely to make a larger contribution [8]. For example, 24% of people of Bangladeshi ethnicity live in overcrowded households compared to 2% of White British ethnicity [9]; 74% of people of Black ethnic groups are overweight or obese, compared to 63% of White British ethnic groups [10]; and approximately 15% of people of Black and Asian ethnic groups live in the most deprived neighbourhoods of the country, compared to 9% of people of White ethnic groups [11].

The committee also considered evidence on the risk of exposure and mortality in other occupations and did not advise further prioritisation by occupation during the first phase of the programme. The

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current prioritisation captures almost all preventable deaths from COVID-19, including those associated with occupational exposure. Occupational prioritisation could form part of a second phase, based on factors such as critical nature of work, reserve capacity of workforce and risk of exposure to infection.

## 2. Ethical principles

Prioritisation for COVID-19 vaccination should be informed by ethical principles which are congruent with other ethical frameworks applied to similar situations in the UK. In formulating its advice, JCVI follows a process akin to accountability for reasonableness, a framework that focusses on fair processes for making public decisions in circumstances in which there is reasonable disagreement about what the relevant values are and how they should be reconciled [12]. According to this framework, for a process to be considered fair, the grounds for decisions need to be transparent, the rationale for decisions must be relevant for stakeholders, and there must be procedures in place to revise these decisions [13]. A similar process is used by the National Institute for Health and Care Excellence (NICE) to incorporate social value judgements into its recommendations [14].

As a result of its process, JCVI agreed that COVID-19 vaccination should be prioritised in a way that maximises benefit and reduces harm, reduces health inequalities, and can be implemented at pace whilst maintaining public trust. Transparency is promoted by publishing each iteration of its interim advice [2], the membership and the minutes of JCVI's meetings [15].

Benefit is understood to be maximised during the first phase of the programme by providing the vaccine to those who are most likely to die from COVID-19. Modelling indicated that prioritisation based on quality-adjusted life years (QALY) arrives at a similar position [16]. This assumes a vaccine which is safe and effective in older age groups, preventing severe disease and death, but only has a moderate impact on transmission.

Health inequalities can be conceptualised across three dimensions: wider determinants of health, protected characteristics and social exclusion [17]. The currently proposed prioritisation supports the reduction of health inequalities between age groups by actively targeting those of older age. It is recognised that prioritisation of some groups over others based on sociodemographic factors, such as ethnicity, can have unintended consequences. A similar discussion happened with regards to occupational risk, and whether risk assessment for workers of some ethnic groups should be different to others. A consensus led by Public Health England (PHE), the Faculty of Occupational Medicine and the Health and Safety Executive agreed that "risk assessments should be applied equally and consistently across the workforce" and that "singling out all ethnic minority members of staff for additional risk assessments could be stigmatising" [18]. This view is supported by the findings of PHE's Beyond the Data report, which highlighted how some communities reported increased experiences of stigma and discrimination as they were viewed as being more likely to be infected with the disease [19]. It is paramount that efforts at prioritisation do not inadvertently reinforce these negative stereotypes nor increase stigma and discrimination. In a context of low trust among some communities, being given early access to a new vaccine may feel like exploitation or experimentation rather than inclusivity.

## 3. Deliverability and implementation

The ability to operationalise prioritisation into a new national immunisation programme delivered at an accelerated pace is key to success, and a unique opportunity to address health inequalities across all groups. The programme should be simple and intuitive enough for both health care professionals and the public to understand and accept. A prioritisation approach that builds public trust

over time, with some flexibility but minimal changes, is critical for deliverability. JCVI, as a source of independent advice to the UK government, can hopefully stimulate the building of trust by supporting other agencies and ensuring transparency in its work.

Good quality data are essential to identify and contact eligible individuals and monitor vaccine uptake to evaluate the programme. Primary care systems, which hold information for most of the population, including care home residents, form the basis of call and recall operations. However, data on socially excluded groups or protected characteristics tend to be poorly recorded, ethnicity being a case in point. Inaccurate data creates delays in reaching people, risks reducing public confidence and slows the pace of vaccine roll out.

While sex is almost universally recorded, prioritising on the basis of sex should be weighed against the impact of adding complexity to the programme. Experience from influenza vaccination programmes reveals higher vaccine uptake in elderly married men compared to their single counterparts, suggesting there are benefits in offering vaccination to both men and women simultaneously [20]. A gender-neutral programme is therefore considered more deliverable at pace.

Implementing a national mass immunisation programme during a pandemic while addressing health inequalities will be a challenge. PHE's immunisation equity audit [21] highlighted the complexity of inequalities in coverage, timing and completion of vaccine schedules in existing immunisation programmes. These inequalities vary by community, protected characteristics and vaccine. Variation in uptake is driven by multiple inter- and intra-personal, community, policy and programmatic factors such as beliefs, accessibility of vaccination, call-recall systems, messaging and cultural competence of public communications.

Mitigating the health inequalities so starkly highlighted by this pandemic will require local intelligence-driven implementation approaches. Tackling these implementation challenges is a fundamental role of local PHE Screening and Immunisation Teams embedded in NHS England. These teams provide local leadership and are responsible for ensuring that screening and immunisation services locally meet national service specifications. They have the requisite knowledge of their local population and systems, are experienced in implementing immunisation programmes at pace, and addressing inequalities through a collaborative approach with stakeholders including local authorities, advocacy and provider networks for socially excluded groups. It is essential that their skills, knowledge and experience are utilised to reduce health inequalities throughout all phases of the COVID-19 vaccination programme.

## Authors' contributions

ICM and SM drafted the manuscript. JY, MR, JW and WSL provided comments, reviewed and approved the final manuscript.

## Declaration of Competing Interests

MR reports that the PHE Immunisation and Countermeasures Division has provided vaccine manufacturers with post-marketing surveillance reports on pneumococcal and meningococcal infection which the companies are required to submit to the UK Licensing authority in compliance with their Risk Management Strategy. A cost recovery charge is made for these reports.

WSL reports grants from Pfizer, grants from National Institute for Health Research (NIHR), outside the submitted work. WSL is Chair of COVID-19 Immunisation, Joint Committee of Vaccination and Immunisation (JCVI). He is a member of the New and Emerging Respiratory Viral Threats Advisory Groups (NERVTAG) to the Chief Medical Officer, and attends meetings of the Scientific Advisory Group for Emergencies (SAGE).

Other authors have no COI to report.

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## Ethics committee approval

Not applicable.

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