

# Lessons from the United Kingdom's COVID-19 vaccination strategy

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The predominantly age-based structure of the British vaccination program has enabled a rapid delivery with high vaccine uptake



The United Kingdom has been profoundly affected by the coronavirus disease 2019 (COVID-19) pandemic. In our population of over 66 million, to date we have had over 4.3 million confirmed infections with over 127 000 deaths (10 April 2021).<sup>1</sup> Vaccination has provided an opportunity to limit the impact of COVID-19 on our population and hopefully reduce the risk of significant mortality in any third wave.



As other countries roll out their immunisation programs, what lessons are to be learned from the British experience? The Joint Committee on Vaccination and Immunisation (JCVI) advises the UK Government on vaccination policy. The government asked the JCVI to advise on a program that would lead to the greatest reduction in hospitalisations and deaths. The committee met regularly from May 2020 to examine data to

decide which groups would most benefit from early vaccination.

Public Health England, primary care networks, and other datasets determined that the predominant risk factor for severe disease and mortality was increasing age, with patients aged over 50 years at the highest risk of mortality.<sup>2</sup> Residents at aged care facilities were disproportionately affected during the first wave of COVID-19 and were considered a very high priority for vaccination.<sup>3</sup> Moreover, individuals with underlying health conditions, many of whom were in ethnic minority and socially disadvantaged groups, were also shown to be at risk.<sup>4</sup>

Therefore, the first phase of the program comprised nine priority groups predominantly structured by age, including individuals with certain underlying health conditions.<sup>2</sup> The JCVI also recognised that front-line health and social care workers had significant COVID-19 exposure risk and were essential to keep the health service functioning during the COVID-19 health crisis. In addition, the exposure risk to multiple vulnerable people in their care was reflected in the advice to prioritise this group. Front-line health and social care workers were therefore placed at the top of the priority group list.<sup>2</sup>

The UK Medicines and Healthcare products Regulatory Agency (MHRA) gave regulatory approval to the Pfizer–BioNTech



vaccine on 2 December 2020.<sup>5</sup> The initial approval was for a two-dose schedule, with the second dose administered after 3 weeks. JCVI's advice was published on the same day, allowing the vaccination program to begin almost immediately in hospitals, with the first primary care vaccination sites opening on 7 December.

On 30 December 2020, the MHRA approved the Oxford–AstraZeneca vaccine for use in a two-dose schedule and, again, the advice from the JCVI was published on the same day. Given the rapid increase in confirmed COVID-19 infections in the UK in late 2020, the JCVI advised that there was a need for rapid, high levels of vaccine uptake among vulnerable persons. Given that data for the Oxford–AstraZeneca vaccine indicated that a longer interval between doses led to a stronger boost response and higher efficacy<sup>6</sup> and that data from both vaccines indicated high vaccine efficacy from a single dose,<sup>6,7</sup> the JCVI advised that the Oxford–AstraZeneca and Pfizer–BioNTech vaccines could be offered with an interval of up to 12 weeks.<sup>8</sup> Prioritising delivery of the first vaccine dose was considered highly likely to have a greater public health impact in the short term and reduce the number of preventable deaths from COVID-19.

The JCVI published interim advice on the second phase of the vaccination program on 26 February 2021,<sup>9</sup> advising a continuation of the age-based strategy with the vaccination of all adults aged 18–49 years, who were not eligible in the first phase of the program. It is advised that vaccination in this group proceed in descending age order, as evidence shows that increasing age is the single most important factor in determining the risk of hospital admission.<sup>9</sup> An age-based program is considered the fastest and most equitable way of delivering mass vaccination in order of risk, and modelling indicates that speed is of paramount importance in delivering benefits to the population.

There is evidence that some groups, including males, certain black, Asian and minority ethnic groups, and those with a body

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mass index of 30 or more, are at increased risk of hospitalisation for COVID-19.<sup>10</sup> The JCVI has therefore strongly advised that individuals in these groups promptly take up the offer of vaccination when it is their turn, and that deployment teams should use the experience and understanding of local health systems and demographics, combined with clear communications and outreach activity by local clinical, community and faith leaders, to promote vaccination in these groups.<sup>9</sup>

Primary care in the UK has been at the centre of the vaccine program and teams have worked tirelessly in delivering vaccines at speed. Local clinical commissioning groups have supported and coordinated the arrival of vaccines to practices. Primary care network leads and practice managers have organised and facilitated the administration of vaccines within the practices. Vaccinators include general practitioners, nurses, practice pharmacists, and recently retired doctors and nurses. Local patient participation groups have helped with signage, marshalling and attending car parking. One of the reasons that this program has been so successful was the existing primary care infrastructure in the UK, which has experience in delivering 15 million influenza immunisations annually. A well developed primary care structure with the majority of the population registered with a single practice has been important in identifying at-risk patients and provided a quality platform to deliver most of the vaccinations to date.

The UK Government has also developed mass vaccination centres, staffed by trained vaccinators, including health care professionals, paramedics, volunteers and, in some centres, members of the armed forces. Vaccines are also being delivered in local hospitals, pharmacies and community centres. In order to improve access in disadvantaged communities, there have been vaccination sites in religious buildings such as churches and mosques as well as “pop-up” and mobile sites.

The UK's vaccine program has been a huge success. Thirty-two million vulnerable individuals have been vaccinated with their first dose of either the Pfizer–BioNTech or the Oxford–AstraZeneca vaccines (10 April 2021),<sup>1</sup> and we hope to offer at least a single dose to all adults before the end of July 2021. These vulnerable individuals include those over the age of 50 years and those with underlying health conditions. Coverage has been very high among older people, with a 90% coverage in people aged over 70 years, which is truly remarkable.<sup>11</sup> However, there are some geographical and ethnic disparities: vaccine coverage is lower in London, among black and Asian minority groups, and among white Eastern European groups.<sup>11,12</sup> The British National Health Service (NHS) and the devolved national leaders are working hard at trying to address both concerns about vaccination and access to vaccination in these communities.

Early data from Public Health England indicate that a single dose of either vaccine is about 80% effective at preventing hospitalisation and a single dose of the Pfizer–BioNTech vaccine is 85% effective at preventing death from COVID-19.<sup>13,14</sup> This high vaccine effectiveness from a single dose justifies our approach to program delivery, allowing the benefits of vaccination to be rapidly offered to a wider proportion of the population.

The key lesson is that the simple, predominantly age-based structure of the vaccination program has enabled a rapid delivery with high vaccine uptake. The aim of the program has been clear: to prevent deaths by vaccinating individuals most at risk first. There has been a communication strategy from the start, including press conferences and media appearances to explain the rationale behind the prioritisation strategy. The public have

understood when it was their turn to be called and responded to invitations promptly. The bold decision to delay the second dose, allowing for more people to be immunised with a first dose has proved highly effective.

However, there remain many challenges. The widespread use of social media has contributed to vaccine hesitancy, enabling the rapid spread of unfounded claims about efficacy and safety, such as a recent claim about the vaccines causing infertility. But the emerging evidence of the strong possibility of a causal link between the Oxford–AstraZeneca vaccine and thrombotic thrombocytopenia has fuelled safety concerns.<sup>15</sup> Moreover, this has led to a policy change in many countries, including the UK and Australia, restricting its use in younger populations with reduced risk of COVID-19 complications.<sup>16,17</sup> Vaccine supply has been and will continue to be uneven. While the UK Government had the foresight to put in place vaccine contracts at an early stage, some European countries signed agreements later, which, combined with hesitancy over the administration of the Oxford–AstraZeneca vaccine to older people at the beginning of 2021, has in part led to lower vaccination rates in Europe and to the emergence of a third wave in a number of countries. Higher infection rates lead to more transmission and the potential for the emergence of COVID-19 variants of concern. These variants could have an impact on the effectiveness of the vaccination program and the length of immunity protection the vaccines offer. Future data on the effect of the vaccines on variants, mixed vaccine schedules, the prevention of transmission, and the efficacy and safety in children will be important in determining future vaccination strategies, including the possibility of an autumn booster campaign. The virus continues to evolve and we will ensure that our UK vaccination program appropriately evolves to stay ahead of it.

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