EVIDENCE SYNTHESIS BRIEFING NOTE

TOPIC: GUIDANCE AND JURISDICTIONAL EVIDENCE REGARDING THE USE OF VACCINE PASSPORTS

Information finalized as of June 8, 2021.[a]

This Briefing Note was completed by the Research, Analysis, and Evaluation Branch (Ministry of Health).

Purpose: This note provides a summary of both the expert and jurisdictional guidance, and jurisdictional experiences, regarding the implementation of vaccine passports.

Key Findings:

- **Use Cases**: Vaccine passports are used to facilitate and regulate international travel, for the domestic purpose of regulating access to certain public spaces or services, or allowing participation in large events. In general, the uses specified depend on whether the certificate/passport is intended to certify that an individual is vaccinated or to indicate that they are unlikely to contract or transmit the virus.
- **Eligibility and Validity**: Adults become eligible for vaccination or immunity passports if: 1) they have been fully vaccinated; 2) they have recovered from a previous SARS-CoV-2 infection; or 3) they have recently received negative SARS-CoV-2 test results. The most common period of validity for a pass based on negative test results is 72 hours. For certificates based on recovery from previous infection or vaccination, validity periods vary between jurisdictions. Children are typically either included in their parents' passports or are issued passports separately that are managed by their parents.
- **Design/Development**: Key design principles identified include: ensuring interoperability between jurisdictions; providing both digital and paper versions of the passport; and protecting users' personal data. In most existing vaccine passport programs, QR codes are used to verify authenticity.
- **Impact**: There is no direct evidence of the impact of vaccine passports on either vaccine coverage or virus spread. In addition, limited data regarding the degree and duration of protection from vaccination against the virus, including emerging variants of concern, constrains what can be known about the impact of these programs.
- **Ethical/Equity Risks**: Most expert and jurisdictional guidance noted that without mitigation efforts, vaccine passports risk exacerbating existing racial or socioeconomic inequalities. Depending on the use cases, vaccine passports also risk unintentionally coercing people into getting vaccinated. Many experts also noted, however, that there are ethical risks associated with maintaining restrictions on mobility that are not necessary for limiting the spread of the SARS-CoV-2 virus.
- **Legal Considerations**: The implementation of vaccine passports needs to be consistent with various legal standards, including: international, regional, and domestic human rights laws; data protection laws; equality and discrimination laws; COVID-19 legislation; and labour/occupational health and safety laws.

Analysis for Ontario: Vaccination records are part of a health record and issued within provincial and territorial health care jurisdictions, yet a Canadian certificate is expected to be required for international travel. A vaccination passport developed in Ontario would likely need to be interoperable with those of other Canadian jurisdictions.

Implementation Implications: Due to both the recent development of vaccine passport programs and the uncertainty regarding vaccine effectiveness (especially with respect to emerging variants of concern), the public health benefits of such programs are unclear. The ethical and equity risks vary significantly depending on the specified use cases. If a vaccine passport program is developed, a privacy impact assessment would be warranted.

[a] This briefing note includes current available evidence as of the noted date. It is not intended to be an exhaustive analysis, and other relevant findings may have been reported since completion.

Supporting Evidence

Table 1 below describes scientific evidence and jurisdictional guidance/experiences regarding the design and implementation of vaccine passports, immunity passports, and proofs of vaccination/immunity during the COVID-19 pandemic. In the Appendix, Table 2 provides detailed summaries of Canadian/international guidance. Table 3 provides a summary of Canadian/international implementation strategies for vaccine passports and proofs of vaccination/immunity. Table 4 provides a summary of the jurisdictions that either accept or have prohibited the use of vaccine passports for entry into their jurisdiction. Table 5 provides a summary of the scientific literature and expert guidance regarding the benefits and risks associated with the implementation of vaccine passports. The majority of the information presented is taken directly from the identified sources.

The following limitations should be noted:

- The majority of the information presented contains jurisdictional and expert guidance; these recommendations are those of the authors of the original studies and the Research, Analysis, and Evaluation Branch does not have the expertise to evaluate such recommendations.
- Because of the relative novelty of vaccine passports aimed at such a broad target population, there was no direct evidence of the impact such programs have on either vaccine coverage or virus spread.

Table 1: Summary of Scientific Evidence and Jurisdictional Guidance/Experiences Regarding the Implementation of Vaccine Passports

Scientific Evidence	• **Design/Development**: Several recommendations for the format and design of vaccine passports were identified across nine sources, including: determining whether the passport covers only vaccination status or all possible sources of immunity; determining whether the passport is merely a certificate or proof of vaccination or whether it also functions as a license; introducing a digital version of the passport; and identifying standards for reliable documentation. ○ One paper suggested that an advantage of introducing vaccine passports rather than passports or certificates covering immunity resulting from either vaccine or previous infection would be the avoidance of perverse incentives to seek out infection for the sake of immunity certification.[1] ○ The terminology used may have an impact on behaviour. One study found that using the term “Immunity” (vs. “Antibody”) to describe antibody tests for SARS-CoV-2 increases the proportion of people believing that an antibody-positive result means they have no risk of being infected in the future. The study found, however, that the terms “passport” and “certificate” had no such impact.[2] ○ One review emphasized the importance of differentiating between certification (providing reliable proof of vaccination or immunity) and licensing (issuing a permit, or permission, from an authority to engage in a particular activity once vaccinated/immune). The authors cautioned that immunity certificates issued by governments should not specify the level of protection that may be conferred by vaccination or previous infection, at least until our scientific understanding of immunity to and protection from COVID-19 matures.[3]

- One source observed that if a digital passport is issued, there would need to be a non-digital (e.g., paper) version made available so as not to exclude those who do not have access to a smartphone.[4]
- One source cautioned against the use of the International Certificate of Vaccination or Prophylaxis framework for requiring vaccination against yellow fever in the case of SARS-CoV-2, as the cases are meaningfully different, both because of the variety of vaccines and the limited information available regarding their respective effectiveness.[5]

- **Impact**: Findings from four sources suggest that the implementation of vaccine passports may incentivize individuals to get vaccinated, though there is no direct evidence of such an impact. While there was no evidence of the impact vaccine passports might have on the spread of the SARS-CoV-2 virus, multiple sources indicated that the impact likely depends on the durability of immunity from vaccines, and – where certificates are issued for either natural immunity or SARS-CoV-2 test results – the durability of natural immunity, the risk of transmission, and the sensitivity and accuracy of available tests, much of which is presently uncertain.
  - One research article examined the impact of Israel's Green Pass program on vaccine coverage in the country, citing poll results that found that 31% of respondents said the offer of a Green Pass and the associated benefits would possibly or definitely persuade them to get vaccinated.[6] A review of the same program likewise suggested that the introduction of the Green Pass likely incentivized vaccine uptake.[7]
  - Seven articles suggested that where rapid antigen or PCR test results can be used in place of proof of vaccination, the accuracy, reliability, and/or sensitivity of the available tests would partly determine the impact of such a policy.[8,9,10,11,12,13,14]
  - Three articles also mentioned the value of additional benefits of incentivizing vaccine uptake for those populations made especially vulnerable by social isolation or at elevated risk of severe disease (e.g., lonely and isolated individuals could be visited by immune friends and relatives; small businesses could be reopened by staff who are immune and will not risk the health of colleagues and customers; immune health care staff could care for patients with COVID-19).[15,16,17]
- **Ethical/Equity Risks**: Findings from 13 sources indicated that vaccine or immunity passport programs would introduce ethical and/or equity risks related to: limited or inequitable vaccine and test availability; existing racial and socioeconomic inequalities; unintended coercion; and stigmatization or reduced social cohesion. Several sources noted, however, that there is an ethical cost to maintaining mobility restrictions on individuals who present a small risk of infection to others or of being infected themselves. In general, while certification discriminates by design, discrimination is not legally or ethically problematic unless it lacks good rationale.
  - The risk of exacerbating existing social, racial, or economic inequalities was discussed in six sources, with one paper noting that the reported racial disparities in rates of death from COVID-19 underscore the need to prevent further health care inequities.[18]
  - One article suggested that inequality in vaccine access caused by lack of trust could be mitigated through community-led approaches to promoting vaccine uptake executed by trusted community leaders, organizations, and local health care institutions.[19]
  - The ethical risks of a vaccine passport program may depend on the use cases. One article noted that when a government conditions participation in essential activities such as work or education, certification can result in unintentional coercion, essentially functioning as a mandatory vaccination program.[20]

	• **Data Privacy/Security**: Five sources identified data privacy concerns related to the implementation of vaccine passports. In particular, there is a concern that digital vaccine passports may put sensitive personal health information at risk. While privacy and security measures would be important, one paper observed that these risks are not unique to a vaccine passport program (conventional passports and contact tracing measures also encounter such problems).[21] • **Enforcement/Fraud**: One source recommended stiff penalties to discourage the production/use of fraudulent passports.[22] Another source noted that forgery of Israel's Green Pass is regarded as a criminal act punishable by fine or incarceration.[23] ○ Five sources identified fraud as a concern with the implementation of vaccine or immunity passports. One source suggested that the likelihood of fraud could be mitigated by including some form of digital signature in the passport;[24] another suggested the use of biometric data or a protected digital identity.[25]

International Scan	Jurisdictional guidance was identified from the World Health Organization (WHO), the European Commission, and the Royal Society in the United Kingdom (UK). Information regarding jurisdictional experiences was identified from Israel, the European Union (EU), Denmark, Estonia, Norway, Hungary, China, Bahrain, New York, Hawai'i, the UK, and the African Centers for Disease Control and Prevention (CDC). In addition, information regarding private sector vaccine passport development was identified from the International Air Transportation Association, The Commons Project Foundation, and IBM.
	• **Use Cases**: The international guidance is mixed with regard to the best use cases for vaccine passports. Some guidelines suggest that helping allow for international travel or improving continuity of care may be a beneficial use case,[26,27] though the WHO recommends against adoption altogether at present.[28] Among jurisdictions that have implemented vaccine passport or certificate programs, the programs are either used for: 1) facilitating and regulating inter-jurisdictional travel;[29,30,31,32,33,34,35,36,37,38] 2) the domestic purpose of regulating access to certain public spaces or services;[39,40,41,42] or 3) allowing participation in large events.[43,44] In general, the uses specified depend on whether the certificate/passport is intended to certify that an individual is vaccinated or to indicate that they are unlikely to contract or transmit the virus. The UK Royal Society included the need to ensure that use cases are understood and accepted by the general public as one of its key principles for vaccine passports.[45]
	  ○ Certificate of Vaccination vs. Certificate of Immunity: Most developed vaccine certificate/passport programs are intended to indicate that an individual is relatively free of risk of either infection or transmission of SARS-CoV-2. As such, proof of having recovered from COVID-19, or a negative rapid antigen or PCR test result, can be used in place of the vaccine certificate/passport in many contexts. However, some jurisdictions have only established a system to provide individuals with a proof of vaccination, and accordingly do not specify use cases (e.g., Québec's proof of vaccination program),[46] suggest that proof of vaccination may only be useful for international travel (e.g., UK's COVID-19 vaccination status program),[47] or only use proof of vaccination for limited cases of travel and require that the vaccine have been delivered locally (e.g., Hawai'i's Safe Travels Hawai'i Program).[48]
	  ○ International Travel: The following jurisdictions mention international travel as a use for their vaccine passport/certificate: Israel (either their Vaccination Certificate or Proof of Recovery),[49,50] the European Union,[51] Estonia,[52] Norway,[53] Hawai'i,[54] the UK,[55] the

African Union Commission and the African CDC,[56] China,[57] and Bahrain.[58] In addition, three prominent private-sector digital applications have been developed to manage individuals' vaccine and test information with an explicit aim of facilitating international travel: the International Air Transportation Association's (IATA) Travel Pass App,[59] IBM's Digital Health Pass,[60] and The Commons Project Foundation's CommonPass.[61]
    - Domestic: The following jurisdictions mention domestic uses for their vaccine passport/certificate, including regulating access to certain public spaces or services and allowing participation in large events: Israel,[62] Denmark,[63] Norway,[64] and New York.[65]
    - Public Health: The African Union Commission and the African CDC's My COVID Pass digital application may be used to monitor vaccine effectiveness, but no further details were provided.[66]
    - Entry Requirements: Many jurisdictions (e.g., Denmark, Iceland, and the EU) now either require all foreign travelers' proof of vaccination for entry or allow fully vaccinated travelers with adequate proof to avoid some or all of the testing and quarantine requirements in place. By contrast, many states in the US have now passed laws either prohibiting governments from issuing vaccine passports or public/private entities from requiring them.
- **Eligibility and Validity**: Across jurisdictions, there are up to three cases where adults become eligible for vaccination or immunity passports: 1) they have been fully vaccinated; 2) they have recovered from a previous SARS-CoV-2 infection; or 3) they have recently received negative SARS-CoV-2 test results.
    - The most common period of validity for a pass based on negative test results is 72 hours. For a certificate based on either recovery from previous infection or a full course of vaccination, validity periods vary between jurisdictions: Denmark's Corona Pass remains valid for eight months,[67] Israel's Green Pass remains valid until the cut-off date of Dec. 31, 2021,[68] and the EU's pass is at present valid indefinitely, pending further scientific evidence as to the length of protection of the different vaccines.[69]
    - Children are typically either included automatically in their parents' passports, or, as is the case with the EU Digital COVID Certificate, children can be issued certificates independently, but they can be stored in their parents' digital certificate manager.[70]
    - Israel implemented an alternative for individuals who could not receive vaccines due to contraindications, requiring that they present a note from their insuring Health Maintenance Organizations that they have a contraindication to the COVID-19 vaccine, according to the criteria determined by the Ministry of Health, a negative test result taken within the preceding 72 hours, and personal ID.[71]
    - The UK Royal Society recommended that vaccine passports accommodate differences between vaccines in their efficacy, and changes in vaccine efficacy against emerging variants.[72]
- **Design/Development**: The two most common design features across all identified jurisdictions were: 1) the inclusion of both a paper version and a digital version of the certificate (delivered through a smartphone application); and 2) the use of scannable QR codes[b] as a means of verification. Interoperability between jurisdictions was also a significant design feature among European jurisdictions. For example:
    - The EU's Digital COVID Certificate, as well as the vaccination certificates developed in Denmark, Estonia, and Norway, were designed in accordance with the EU's standards for

[b] A quick response (QR) code is a two-dimensional barcode.

	interoperability. In the case of Norway's vaccination certificate, there were two versions developed: one for domestic use, which contains less personal information (since in domestic use cases it will rarely be necessary to display information other than that the certificate is valid), and one designed to be compatible with EU standards for international travel.[73] ○ New York's Excelsior Pass requires that adults aged 18+ years present a matching photo ID with name and birth date alongside each unique pass.[74] • **Impact**: Reports from the World Health Organization (WHO), European Commission's eHealth Network, and the Royal Society in the United Kingdom (UK) identify the following variables that affect the impact of vaccine passport programs on public health, all of which remain uncertain: degree and duration of vaccine effectiveness; whether and to what extent vaccines reduce the risk of transmission; degree and duration of protection resulting from prior infection; and the impact of new variants of concern and others that may yet emerge.[75,76,77] ○ For this reason, the WHO advises that that national authorities and conveyance operators should not introduce requirements of proof of COVID-19 vaccination for international travel as a condition for departure or entry, given that there are still critical unknowns regarding the efficacy of vaccination in reducing transmission.[78] • **Ethical/Equity Risks**: International guidance from WHO, European Commission's eHealth Network, and the UK Royal Society identifies a number of ethical/equity concerns related to the implementation of vaccine passports, including: the risk of exacerbating existing inequalities, especially related to vaccine access; ensuring that vaccine passports are accessible to all in their design and implementation, and that they are affordable by all; developing equivalent certificates for those who cannot be vaccinated on medical grounds; and defining use cases to avoid harms to those without vaccine passports and to protect the personal information of those with them.[79,80,81] ○ The WHO specifically recommends that where vaccine passports are developed, they should be made accessible to all, including through the use of open standards.[82] ○ The UK Royal Society identifies use cases as a particular concern: the acceptable sectors in which vaccine passports can be used must be specified in advance as they carry the risk that they could be used to discriminate in hiring or access to restaurants, health care centres, sporting or cultural events, insurance companies, housing applications, or other services.[83] ○ By contrast, the WHO raises the concern that introducing a requirement of vaccination as a condition for travel has the potential to hinder equitable global access to a limited vaccine supply and would be unlikely to maximize the benefits of vaccination for individual societies and overall global health.[84] • **Legal Considerations**: The implementation of vaccine passports needs to be consistent with various legal standards, including: international, regional, and domestic human rights laws; data protection laws; equality and discrimination laws; COVID-19 legislation; and labour, occupational health, and safety laws.[85] ○ The WHO additionally observes that Member States[c] who have agreed to the provisions of the International Health Regulations (IHR) are expected to abide by its stipulations concerning the introduction of a requirement for proof of vaccination for outgoing or

[c] Canada is one of the 196 states parties to the *International Health Regulations (2005)* (Canada, 2016).

	incoming international travellers. At present, yellow fever is the only disease mentioned in the IHR for which countries can require proof of vaccination for international travellers (Annex 7 of the IHR).[86] • **Data Privacy/Security**: Many digital vaccine passport programs allow for the inclusion of personal data, including name, date of birth, and health information related to vaccines received, without making them available to third parties when the pass is verified. For example, the EU Digital COVID Certificate contains the above-mentioned data along with the date of issuance and a unique ID; only the validity and authenticity of the certificate is checked by verifying who issued and signed it. All personal health data remains with the Member State that issued an EU Digital COVID Certificate.[87] The passport programs of both Denmark and New York likewise emphasize that personal information is not stored when the passes are scanned or verified.[88,89] ○ Denmark produced a Data Protection Impact Assessment while their passport program was in development to describe the risks relating to user data and the measures applied to mitigate these risks.[90] Many jurisdictions, however, did not specify any data protection principles adhered to in the development of their certificate programs. ○ The importance of maintaining the privacy and security of personal data (including health data) was discussed in guidance documents produced by the European Commission's eHealth Network, the WHO, and the UK Royal Society.[91,92,93] Particular principles mentioned included: ▪ Data Minimization: Both the European Commission's eHealth Network and the UK Royal Society mention the importance of minimizing the amount and kinds of data that need to be collected and used in the development of vaccine passports.[94,95] ▪ Purpose Limitation: The eHealth Network and the Royal Society likewise discuss the importance of limiting the purposes for which the data that is collected could be used.[96,97] • **Enforcement/Fraud**: Only the State of Hawai'i described enforcement principles, although protecting against fraud was also mentioned as a relevant concern by the WHO. ○ Hawai'i's Safe Travels Hawai'i Program will be enforced by the Department of the Attorney General. Potential violations will be reported to law enforcement if it appears information is fraudulent, false, or misleading and used to qualify for the program. County and state law enforcement also have been actively engaged in the enforcement of Safe Travels requirements with the issuance of citations, arrests, and prosecution of violators.[98]
Canadian Scan	The following guidance was drawn from reports from the Chief Science Advisor of Canada, the Privacy Commissioner of Canada, the Québec Government's Comité D'éthique De Santé Publique, and the Canadian Civil Liberties Association.[99,100,101,102] Information was also identified regarding Québec and Manitoba's implementation of proof of vaccination resources.[103,104] • **Use Cases**: Both the Chief Science Advisor of Canada and the Comité D'éthique De Santé Publique note the possible benefits from using vaccine certificates to allow for increased travel. While Québec is offering digital vaccination certificates, they do not establish immunity and at present have no specified use cases apart from conveying information about the vaccines an individual has received.[105] Manitoba's immunization card allows for inter-provincial travel without being required to self-isolate on the return to Manitoba. Additionally, Manitoba health care facilities, including hospitals and personal care homes, will permit

expanded visitation if both the patient/resident and visitor are fully vaccinated. The Province of Manitoba has also indicated that further benefits may be announced in the future.[106]
    - Specific ethical/equity risks depend on the use cases for vaccine certificates. For instance, requiring certification of vaccine status to access work may be advisable in higher-risk workplaces where mask wearing and/or maintaining physical distance is difficult or impossible, but doing so may affect job opportunities for those who do not have access to the vaccine or who are exempt for medical reasons.[107]
    - The Comité D'éthique De Santé Publique recommends against using vaccine passports to regulate access to work.[108]
- **Eligibility and Validity**: Consideration must be given to individuals not eligible to be vaccinated (e.g., children under 16 years of age, or those with medical conditions) and alternatives offered.[109] Manitoba's immunization card requires that individuals have a Manitoba health card and be at least 14 days removed from their second dose.[110]
- **Design/Development**: Québec's digital proof of vaccination contains the individual's personal information, details regarding the vaccine that they received, and a QR code containing this information.[111] Manitoba's immunization cards only show the individual's first and last names and a QR code, which, when scanned, indicates their vaccination status.[112] The Chief Science Advisor of Canada's report identified three key considerations for the development and design of vaccine certificates:
    - Authenticity: There will be a need to ensure authenticity and minimize fraud.
    - Standardization: It will be important to establish standards for what counts as "vaccinated," the data that can be used, and the ways in which the relevant personal data can be used.
    - Monitoring: It will be important to maintain consistent post-vaccine monitoring, ongoing research, and epidemiologic data-sharing, all of which provide the essential scientific basis for the utility of vaccination certificates within and outside the health care context.[113]
- **Impact**: The use of COVID-19 vaccination certificates to ease mobility restrictions is predicated on the effectiveness of the different vaccines to mitigate the risk of importing or spreading SARS-CoV-2 and its emerging variants.
    - Compared to vaccination certificates for yellow fever, COVID-19 vaccination certificates present more complexity due to the multiplicity of available COVID-19 vaccines and the uncertainty regarding their efficacy against the different and emerging virus variants.[114] Moreover, unlike with yellow fever vaccination certificates, the use of COVID-19 vaccination certificates would not be targeted, specific, and auditable, but pervasive, variable, and diffuse.[115]
- **Ethical/Equity Risks**: Any use of vaccination certificates must respect human rights. There are, in addition, concerns about inequitable impacts on disadvantaged communities and unintended coercion.
    - Equity: Special attention needs to be directed to certain racialized, Indigenous, and disadvantaged communities, as they may lack both equitable access to vaccines and trust in governments and some medical institutions. Clearly defining in law, the contexts in which vaccination certificates must be presented could avoid vaccination certificates becoming a predicate for harassing racialized populations. It is essential that vaccine certificates be obtainable in both electronic and paper form to ensure that those who do not have cell phones are not discriminated against. [116]

	○ Coercion: Policies that require vaccination status as a precondition to full participation in public life run the risk of rendering a voluntary vaccination regime *de facto* mandatory.[117] • **Legal Considerations**: In the Canadian context, there are distinct jurisdictional challenges: 1) vaccination records are considered part of a health record, issued within provincial and territorial health care jurisdictions, yet a Canadian COVID-19 vaccine certificate may be required for international travel; and 2) vaccine certificates/passports necessarily involve the disclosure of personal health information and so must be designed in accordance with the relevant privacy laws. ○ There is at present no standardized, secure technology system in place upon which an interoperable, interprovincial/territorial vaccine registry could be built.[118] ○ According to the Privacy Commissioner of Canada, the significant privacy risks involved mean that the necessity, effectiveness, and proportionality of vaccine passports must be established and continually monitored for each specific context in which they will be used. In addition, they advise that consent alone is not a sufficient basis upon which to proceed under existing public sector privacy laws for vaccine passports introduced by and for the use of public bodies. [119] ○ There is currently no legal basis for vaccine passports in Canada,[120] and public and private sector entities that require or request individuals to present a vaccine passport in order to receive services or enter premises must ensure that they have the legal authority to make such a demand or request.[121] • **Data Privacy/Security**: Manitoba's immunization card contains only the bearer's name and a QR code (which indicates vaccination status only) in order to limit the amount of personal information it makes available.[122] While there are data privacy and security concerns related to vaccine certificates/passports regardless of their format, the digitization of personal information presents special risks. The Canadian Civil Liberties Association raised a series of questions regarding the handling of personal data,[123] including: ○ What data are collected and used, and where do the data come from? ○ Where do the data live – each individual's device or a central server? ○ How are the data transferred to a requestor/authenticated/updated/secured? ○ Are the data used to simply display a credential (much like flashing a paper certificate or ID card) or scanned and recorded, and does the scan connect to a personal identifier accessible to the requestor? ○ Is the credential tied to a central digital identifier, and is that identifier (e.g., health card number) shared or kept private after it is used to authenticate the user and vaccination status? ○ Who certifies the authentication for external requestors? ○ What kinds of data linkages are created and what linkages are made possible that may be undesirable? ○ Will there be risk scores/artificial intelligence-driven analysis as part of a system?
Ontario Scan	Provincial guidance on the use of immunity passports was identified in an environmental scan produced by Public Health Ontario.[124] • **Impact**: The scan noted that the degree and duration of protection provided by vaccines is not well understood and that there is still a paucity of data regarding an individual's ability to transmit the virus once vaccinated, all of which would determine the impact of implementing a vaccine passport.

	• **Ethical/Equity Risks**: A vaccine passport program has the potential to increase social stigmatization and exacerbate existing inequalities, particularly among marginalized groups, including racialized populations who have been disproportionately impacted by the COVID-19 pandemic. ○ A risk-decision framework in the context of equity needs to be considered when considering individual- versus population-level public health measures in the context of immunity status, whether through vaccination or infection.[125]

Methods

Individual articles were identified through PubMed and JAMA Network. Full-text results extracted were limited to those available through Open Access. Jurisdictional information was identified using Google, relevant government and private sector websites, and relevant news outlets.

The Medical Subject Heading Term "Vaccine" was used in combination with keywords to identify relevant articles for this review, including: "passport," "certificate," "immunity passport," and "immunity certificate."

For more information, please contact the Research, Analysis and Evaluation Branch (Ministry of Health).

APPENDIX

Table 2: Summary of Jurisdictional Guidance Regarding Vaccine Passports/Certification

Jurisdiction/Organization	Summary of Findings/Recommendations
Ontario	
Public Health Ontario COVID-19 Immunity Status and Considerations for Public Health Measures Mar. 18, 2021	**Overview** • The purpose of this scan is to describe: 1) jurisdictions identified at this time that have implemented adjustments to public health measures specific for individuals who have received their full COVID-19 vaccine; and 2) ethical considerations related to documentation of immunity (e.g., immunity passports). **Scientific Considerations** • Scientific considerations for policies relating to immunity status or the use of 'immunity passports' include: ○ COVID-19 vaccines are not 100% effective and the protection offered from vaccination or previous SARS-CoV-2 infection is not yet well-understood; ○ The duration of immunity conferred from infection/vaccination is not known at this time; and ○ There is still a paucity of data regarding an individual's ability to transmit the virus despite being protected themselves. **Ethical Considerations** • Ethical considerations for adjusting measures based on immunity status and/or the use of 'immunity passports' include the potential to increase social stigmatization and exacerbate existing inequalities, particularly among marginalized groups, including racialized populations who have been disproportionately impacted by the COVID-19 pandemic. **Recommendations** • When implementing public health measures specific to an individual's immunity or vaccination status, it is important to consider the epidemiological context in which these measures are taking place. ○ This includes taking into account the incidence and burden of disease, pathogen transmissibility and the proportion of the population that has been vaccinated, especially given the variants of concern (VOC). • A risk-decision framework in the context of equity needs to be considered when considering individual versus population-level public health measures in the context of immune status, whether through vaccination or infection.[126]
Québec	
Comité D'éthique De Santé Publique (CESP) Avis sur les passeports immunitaires 2021	**Overview** • This publication reports the CESP's opinion regarding possible justification of the use of vaccine passports. **Findings** • The CESP explored three possible areas of application of vaccine passports: work, travel and leisure. • The CESP considers that, in the areas of travel and leisure activities, the expected social and economic benefits, and the benefit of additional liberty, resulting from a progressive reopening made possible by vaccine passports are slightly greater than the disadvantages. • The CESP considers that the expected benefits are not greater than the disadvantages when considering the use of vaccine passports as a condition for access to work.[d]

[d] https://www.inspq.qc.ca/sites/default/files/publications/3123-passeports-immunitaires.pdf

Jurisdiction/Organization	Summary of Findings/Recommendations
	• Consequently, for the CESP, a vaccine passport based on a safe and effective vaccine and applied to certain specific sectors of activity would be justifiable as a complementary and temporary measure, allowing a quicker return to normal life pending the achievement of herd immunity.[127]
Canada	
Chief Science Advisor of Canada Scientific Considerations for Using COVID-19 Vaccination Certificates Mar. 31, 2021	**Overview** • The Chief Science Advisor Expert Panel on COVID-19 convened with additional experts to review the scientific, ethical, social, legal considerations and potential uses of COVID-19 vaccination certificates. This report is informed by discussions held on February 26 and March 5, 2021, as well as the special meeting on SARS-CoV-2 infection, vaccination and immunity held on March 18, 2021. **Scientific Considerations** • The use of COVID-19 vaccination certificates to access crowded venues is predicated on the effectiveness of the different vaccines to mitigate the risk of importing or spreading SARS-CoV-2 and its emerging variants.[e] • Currently unknown/unclear: ○ The ability of vaccines to reduce/eliminate SARS-CoV-2 transmission; ○ The duration of immunity; ○ The correlates (indicators) of protection; ○ Vaccine efficacy/effectiveness in specific populations and in individuals with prior infection; and ○ Protection against infection/reinfection by different virus variants. **Usage Considerations** • In all instances, consideration must be given to individuals not eligible to be vaccinated (e.g., children under 16, or those with medical conditions) and alternatives offered. ○ For example, some countries are considering including information on immunity from natural infection and recent negative COVID-19 diagnostic tests in their COVID-19 certificates. • Possible use cases include: ○ Facilitation of travel: COVID-19 vaccination certificates could facilitate travel to countries that demand proof of vaccination, similar to those for yellow fever or polio vaccinations, where an International Certificate of Vaccination is required under the WHO's International Health Regulations (IHR). If vaccination certificates increase safety and ease some costs, this could be a significant benefit for Canadians, many of whom have been unable to visit their families within and outside Canada for some time. ○ Access to public spaces and services: Vaccination certificates could be used to congregate in larger gatherings such as sporting events, music concerts and festivals. They could also be used to physically return to work, especially in higher-risk workplaces where mask wearing and/or maintaining physical distance is difficult or impossible. **Ethical/Social Considerations** • Special attention needs to be directed to certain racialized, Indigenous and disadvantaged communities. ○ These communities may lack trust in established medical institutions and/or their governments due to historical harms, such as experimentation without consent in residential schools and persistent inequitable care experienced in the medical system, leading to comparatively low vaccination intentions.

[e] Some concepts of vaccine effectiveness are discussed/reviewed in the previously completed Evidence Synthesis Briefing Note #62: COVID-19 POST-VACCINE RISKS, ACTIVITIES, AND PUBLIC HEALTH MEASURES (May 12, 2021)

Jurisdiction/Organization	Summary of Findings/Recommendations
	• Access to vaccines also requires consideration of the disproportionate impact that COVID-19 is having on population groups with pre-existing social and medical vulnerabilities. ○ Essential workers who face the public directly, but who may not have been prioritized for vaccination, could be temporarily disadvantaged by vaccination certificates. ○ The use of vaccination certificates in workplaces could affect job opportunities for those who do not have access to the vaccine or who are exempt for medical reasons. **Legal Considerations** • **Jurisdictional:** Vaccination records are considered part of a health record, issued within provincial and territorial (P/T) health-care jurisdictions, yet for international travel, a Canadian COVID-19 vaccine certificate may be required. ○ Provinces lack interoperable vaccine registries and there is no standardized, secure technology system in place yet that could be built upon. • **Privacy:** The concept of vaccination certificates is premised on individuals sharing sensitive information about their health in order to gain access to certain spaces. ○ Clarity and transparency with respect to how these data are managed, including storage and sharing, will be essential to maintain public trust and privacy rights. • **Authenticity:** There will be a need to ensure authenticity and minimize fraud. ○ It will be essential that such certificates be obtainable in both electronic and paper form to ensure that those who do not have cell phones are not discriminated against. • **Legitimacy:** Some groups or communities who have suffered historic biases and profiling may face increased scrutiny. Clearly defining in law the contexts in which vaccination certificates must be presented could avoid vaccination certificates becoming a predicate for harassing racialized populations. **Implications** • **Vaccine Effectiveness:** Compared to other vaccination certificates, such as that for yellow fever, COVID-19 vaccination certificates present more complexity due to factors such as the multiplicity of available COVID-19 vaccines and the uncertainty regarding their effectiveness against the different virus strains spread across the globe, among others. • **International Travel:** Issues such as the state of local epidemics (of the home and destination countries) and acceptability of vaccines approved by different regulators will have to be considered in determining pre- and post-arrival measures. • **Human Rights:** When using vaccination certificates beyond an immunization record, equity, human rights and privacy must be respected to achieve the delicate balance of necessity and proportionality, especially in the context of the evolving COVID-19 vaccine science. **Recommendations** • All levels of government could work together to develop a framework that: ○ Defines who is considered "vaccinated" in a two-dose vaccine regimen when the dosing interval deviates significantly from what was used to determine efficacy; ○ Provides guidance on data standardization for vaccination certificates within Canada and aligns where possible with international standards; ○ Minimizes fraud, inappropriate use and potential negative impacts on vulnerable populations of vaccination certificates; and, ○ Maximizes consistent post-vaccine monitoring, ongoing research, and epidemiologic data-sharing, all of which provide the essential scientific basis for the utility of vaccination certificates within and outside the healthcare context.[128]

Jurisdiction/Organization	Summary of Findings/Recommendations
Office of the Privacy Commissioner of Canada Joint Statement by Federal, Provincial and Territorial Privacy Commissioners May 19, 2021	**Privacy** • **Personal Health Information:** At its essence, a vaccine passport presumes that individuals will be required or requested to disclose personal health information – their vaccine/immunity status – in exchange for goods, services and/or access to certain premises or locations. • Vaccine passports must be developed and implemented in compliance with applicable privacy laws. **Public Health Use Case** • Above all, and in light of the significant privacy risks involved, the necessity, effectiveness and proportionality of vaccine passports must be established for each specific context in which they will be used: ○ Necessity**:** vaccine passports must be necessary to achieve each intended public health purpose. Their necessity must be evidence-based and there must be no other less privacy-intrusive measures available and equally effective in achieving the specified purposes. ○ Effectiveness**:** vaccine passports must be likely to be effective at achieving each of their defined purposes at the outset and must continue to be effective throughout their lifecycle. ○ Proportionality**:** the privacy risks associated with vaccine passports must be proportionate to each of the public health purposes they are intended to address. Data minimization should be applied so that the least amount of personal health information is collected, used or disclosed. • The necessity, effectiveness and proportionality of vaccine passports must be continually monitored to ensure that they continue to be justified. • When contemplating the introduction of vaccine passports, it is recommended that governments and businesses adhere to the following privacy principles: ○ Legal authority**:** Public and private sector entities that require or request individuals to present a vaccine passport in order to receive services or enter premises must ensure that they have the legal authority to make such a demand or request. ○ Consent and trust**:** For vaccine passports introduced by and for the use of public bodies, consent alone is not a sufficient basis upon which to proceed under existing public sector privacy laws. • The necessity, effectiveness and proportionality of vaccine passports must be continually monitored to ensure that they continue to be justified.[129]
Canadian Civil Liberties Association FAQ: Vaccine Passports Apr. 13, 2021	**Overview** • This publication reports the CCLA's opinion regarding the possible justification of, and legal/ethical concerns associated with, the use of vaccine passports. • Although the terms are sometimes used interchangeably, a vaccine passport is similar but slightly different than an "immunity passport" which would include information about past COVID-19 infections, on the theory that those who were infected and have recovered have some immunity from re-infection. **Precedents** • There are a few "almost similar" precedents that apply in particular contexts: ○ The most commonly cited is the yellow paper card created by the World Health Organization that travellers must carry and show when entering some countries to demonstrate they have been vaccinated against yellow fever. Currently yellow fever is the only disease mentioned in the *International Health Regulations* (to which Canada is a signatory) for which countries can require proof of vaccination for international travellers. ○ There are some Canadian provinces (Ontario, New Brunswick and BC) in which schools require proof of vaccination for children for contagious or dangerous diseases including measles, mumps, rubella (the MMR vaccine) and diphtheria, tetanus, and whooping cough (the DTaP vaccine). In all cases, there are options for parents to opt out of providing such proof based on religious grounds or conscientious objections.

Jurisdiction/Organization	Summary of Findings/Recommendations
	• Neither of these is quite the same as a vaccination passport as currently proposed, to the extent that the intervention would not be targeted, specific, and auditable, but pervasive, variable, and diffuse. **Legal/Ethical Concerns** • **Privacy**: allowing private entities to collect and use personal health information is invasive. • **Mobility**: Canadians have experienced unprecedented restrictions on moving around within Canada, from province to province, during the pandemic. A provincial/territorial patchwork of vaccination proof tokens or apps would make the problem worse. • **Equality**: the choice to be vaccinated is not open to all. There are some people with pre-existing medical conditions or disabilities where vaccination would be counter-indicated, and it is unclear how many people that affects because the vaccines were generally (or primarily) only tested for emergency authorization on healthy adults. ○ Socially sorting people based on personal decisions about their health, which they are legally and ethically entitled to make, runs the risk of creating different levels of freedom for different "categories" of people, a risk that is likely to intersect with other systemic inequalities and affect some groups more than others. • **Liberty**: policies that facilitate vaccination status as a precondition to full participation in public life run the risk of rendering a voluntary vaccination regime *de facto* mandatory, via diffuse coercive impacts. **Digitization Concerns** • All the privacy and other rights-based concerns identified above continue to apply regardless of whether the passport is paper, plastic or digital, but going digital adds complexity to the concerns due to the potential for data collection, combination, and breach. • Questions include: ○ What data is collected and used? ○ Where does it come from? ○ Where does the data live–each individual's device or a central server? ○ How is it transferred to a requestor/authenticated/updated/secured? ○ Is it used to simply display a credential (much like flashing a paper certificate or ID card) or scanned and recorded, and does the scan connect to a personal identifier accessible to the requestor? ○ Is the credential tied to a central digital identifier? ○ Is that identifier–such as a health card number–shared or kept private after it is used to authenticate the user and vaccination status? ○ Who certifies the authentication for external requestors? ○ What kinds of data linkages are created and what linkages are made possible that may be undesirable? ○ Will there be risk scores/AI-driven analysis as part of a system? **Legal Basis** • There is currently no legal basis for vaccine passports in Canada. • A mandate for requiring an individual to display a vaccine passport could be created in a similar way to the masking requirements many provinces or territories have enacted.[130]
International/Other	
World Health Organization (WHO) Interim Position Paper: Considerations regarding proof of COVID-19 vaccination for international travellers Feb. 5, 2021	**Overview** • The paper presents scientific, ethical, legal and technological considerations regarding the possible introduction of requirements by States Parties[f] of proof of COVID-19 vaccination for outgoing or incoming international travellers, pursuant to provisions of the International Health Regulations (2005) (IHR).

Jurisdiction/Organization	Summary of Findings/Recommendations
	• At the present time, it is WHO's position that national authorities and conveyance operators should not introduce requirements of proof of COVID-19 vaccination for international travel as a condition for departure or entry, given that there are still critical unknowns regarding the efficacy of vaccination in reducing transmission. • In addition, considering that there is limited availability of vaccines, preferential vaccination of travellers could result in inadequate supplies of vaccines for priority populations considered at high risk of severe COVID-19 disease. • WHO also recommends that people who are vaccinated should not be exempt from complying with other travel risk-reduction measures. **Scientific Considerations** • A number of scientific unknowns remain concerning the effectiveness of COVID-19 vaccines: ○ Efficacy in preventing disease and limiting transmission, including for variants of SARS-CoV-2; ○ Duration of protection offered by vaccination; timing of booster doses; ○ Whether vaccination offers protection against asymptomatic infection; ○ Age and population groups that should be prioritized for vaccination, specific contraindications, how long before travel vaccines should be offered; and ○ Possible exemption of people who have antibodies against SARS-CoV-2. **Ethical Considerations** • WHO has expressed concern that the inequitable distribution of COVID-19 vaccines could deepen already existing inequalities and introduce new ones. • In the current context, introducing a requirement of vaccination as a condition for travel has the potential to hinder equitable global access to a limited vaccine supply and would be unlikely to maximize the benefits of vaccination for individual societies and overall global health. • In the context of unequal vaccine distribution, individuals who do not have access to an authorized COVID-19 vaccine would be unfairly impeded in their freedom of movement if proof of vaccination status became a condition for entry to or exit from a country. **Legal Considerations** • States Parties,[f] who have agreed to the provisions of the International Health Regulations, are expected to abide by its stipulations concerning the introduction of a requirement for proof of vaccination for outgoing or incoming international travellers. • Currently, yellow fever is the only disease mentioned in the IHR for which countries can require proof of vaccination for international travellers (Annex 7 of the IHR). • Should the requirement of proof of COVID-19 vaccination for international travellers be introduced in future in accordance with IHR provisions, vaccines must be approved by WHO, and be of suitable quality and universally available, for the protection of all people from international spread of disease. **Technological Considerations** • Although vaccination status can easily be captured via digital means, the ability to uniquely identify an individual and validate vaccination status requires international cooperation, orchestration across complex systems and widespread adoption of open interoperability standards to support secure data access or exchange. • Regardless of any technology implemented in future, the COVID-19 vaccination status of international travellers should be recorded through the International Certificate for Vaccination and Prophylaxis based on the model presented in Annex 6 of the IHR.[131]

[f] Canada is one of the 196 states parties to the International Health Regulations (2005): https://www.who.int/ihr/legal_issues/states_parties/en/

Jurisdiction/Organization	Summary of Findings/Recommendations
World Health Organization (WHO) Interim guidance for developing a smart vaccination certificate Mar. 19, 2021	**Overview** • The WHO has developed this guidance and technical specifications document, in collaboration with a multi-disciplinary group of partners, in order to support WHO Member States in adopting interoperability standards for Smart Vaccination Certificates (SVC). • An SVC can be purely digital and stored, for example, on a smartphone application or a cloud-based server. Alternatively, it can be a "digital twin" of a traditional paper home-based record. ○ A smartphone is not required to have an SVC. ○ The link between the paper SVC record and the digital record can be established by a barcode, for example, that is printed on the paper vaccination card. • The SVC only documents that a vaccination event has occurred. It is not intended to serve as an "immunity passport". **Proposed Benefits** • SVCs can enhance existing paper home-based records and the international certificate of vaccination or prophylaxis by combining the functionality of both. • SVCs can provide a way to mitigate fraud and falsification of "paper only" vaccination certificates by having a "digital twin" that can be verified and validated in a reliable and trusted manner, for health, occupational, educational, and travel purposes (as per national and international policies). • Once an individual's vaccination record is available in a digital format, additional functionality can be built to support things like automated reminders for the next dose or linkages to other immunization information systems (though these are outside the scope of this document). • An SVC is intended to allow for multiple types of use without requiring an individual to hold multiple vaccination records. **Key Design Principles** • In order to guide the creation of a globally interoperable SVC, WHO has adopted the following key design principles: ○ Equity: Ensuring that SVCs do not further pre-existing inequities or create new ones; ○ Accessibility: Ensuring that SVCs are accessible to all, including through the use of open standards; ○ Privacy protecting: Ensuring that individual privacy rights are respected and protected; ○ Scalability, flexibility and sustainability: Ensuring that SVCs can reach global scale, are sustainable beyond the COVID-19 pandemic, are adaptable for other contexts and uses, and take into account environmental sustainability of the various solutions implemented. **Use Cases** • The scope of this document currently covers two scenarios of use of the SVC: ○ Continuity of Care: A vaccination certificate provides individuals with a record of which vaccinations they have received, helping to ensure they are able to make informed decisions on the health services they receive and can provide that information to a health worker as part of their medical history. ○ Proof of Vaccination: This allows for public health officials to help manage and minimize the impact of acute public health events that endanger people's health across geographical regions and international boundaries.[132]
European Commission, eHealth Network Guidelines on verifiable vaccine certificates – basic interoperability elements Mar. 12, 2021	**Overview** • These guidelines aim at preparing for interoperability between proofs of vaccination (also known as vaccination certificates), whereby Member States or other parties can decide to implement or use them. • These guidelines establish a minimum dataset, including a unique identifier for vaccination certificates. They also set out the basis for a trust framework.

Jurisdiction/Organization	Summary of Findings/Recommendations
	Key Principles • These guidelines are underpinned by the following principles: ○ **Simplicity** through a scheme that can accommodate both paper and digital means; ○ **Flexibility** and compatibility with existing national solutions; ○ **Rigorous protection of personal data,** for which necessary instruments need to be developed; ○ **Step-wise approach**, with agreement among Member States at each step of the way. **Interoperability** • The basic interoperability elements for a COVID-19 vaccination certificate are: ○ A **minimum dataset** with the essential information included in a vaccination certificate, including personal information, vaccine information and certificate metadata (including a unique identifier, certificate issuer, and possibly dates of validity); ○ A **unique Vaccination Certificate/assertion identifier (UVCI)**, referring to a completed or partial vaccination course, that is globally unique and verifiable, and that can accommodate the coexistence of paper and digital versions of certificates; and ○ A **trust framework**, including digital infrastructure, that is needed for establishing the authenticity and validity of certificates presented by certificate holders. **Other Notes** • If a person cannot be vaccinated due to a medical reason, or cannot receive the next dose of the ongoing vaccination course, a separate certificate stating so should be implemented for such cases.[133]
European Commission, eHealth Network Interoperability of health certificates: Trust framework Mar. 12, 2021	**Overview** • The Guidelines adopted by the eHealth Network rest on three pillars: a minimum data set, a standard unique identifier for such proofs, and a trust framework, which provides the basis for establishing the certificates' authenticity, integrity and validity. • This document outlines the trust framework and provides the basis for discussion with Member States on the implementation of interoperable certificates in EU Member States. • The trust framework defines the rules, policies, protocols, formats and standards needed to ensure that Covid-19 health certificates are issued in such a way that their authenticity and integrity can be verified and trusted. • The trust framework shall be flexible enough to encompass different use cases. • It defines provisions that allow both digital and analogue, off-line and on-line versions of the COVID-19 health certificates, as well as the associated verification. **Trust Framework** • The verifier of a certificate should be able to establish that: ○ The certificate has been issued by an authorised entity; ○ The information presented on the certificate is authentic, valid, and has not been altered; ○ The certificate can be linked to the holder of the certificate; • The design of the trust framework relies on key design principles listed below: ○ Cross-border interoperability; ○ Data protection (including data minimization, purpose limitation, etc.); ○ Data security and privacy by design and default; ○ Inclusiveness (including medium neutrality, i.e. accommodating paper and digital versions of the certificate); ○ Simplicity and user-friendliness; ○ Implementation flexibility (leveraging/reusing existing infrastructures in Member States);

Jurisdiction/Organization	Summary of Findings/Recommendations
	○ Modularity and scalability (i.e. scalable to additional usage scenarios, use cases, types of certificates); and ○ Open standards. • Apart from its governance model and a Public Key Directory/Gateway, the EU Trust Framework aims to avoid centralisation where possible because of the divergent structures and approaches within the EU Member States. • 2D barcodes, such as QR codes, were recommended as the presentation format for the certificate.[134]
European Commission, eHealth Network Guidelines on: COVID-19 citizen recovery interoperable certificates – minimum dataset Mar. 15, 2021	**Overview** • According to the current evidence, individuals who recover from COVID-19 can continue to test positive for SARS-CoV-2 for some time after no longer being infectious. • However, for the purposes of free movement, those individuals are unable to present a negative test result, and would thus be prevented from crossing borders. • Under the proposal for a Digital Green Certificate, a framework for interoperable certificates on COVID-19 recovery should be established. **Scientific Unknowns** • Some scientific unknowns remain regarding the infectiousness of a person infected with COVID-19: ○ There is insufficient information on levels of immunity conferred by previous infection, and reinfection in persons recently recovered from COVID-19 has been documented; and ○ The exact duration of the protection conferred by a previous infection, in particular in view of the increased transmission in EU/EA Member States of the new variants of concern, is unknown, and the protected status of people who have recovered from COVID-19 should be revised as new evidence is collected.[135]
The Royal Society 12 Challenges for Vaccine Passports Feb. 19, 2021	**Overview** • This rapid review of vaccine passports is from the Royal Society to assist in the understanding and control of COVID-19. • The report sets out 12 criteria that need to be satisfied in order to deliver a vaccine passport. **Key Criteria** • **Meet benchmarks for COVID-19 immunity:** ○ A passport could serve two purposes. To certify that passport holders: ▪ Are protected from illness so they can carry out the activities for which the passport is needed and avoid additional burdens on health services; and, ▪ Cannot become infectious and transmit SARS-CoV-2 to others. ○ At present, there are only two viable passporting tests, neither of which is entirely satisfactory: ▪ A recent negative RNA (PCR) test within a particular time-specified interval to certify that subject is unlikely carrying a transmissible infection; and ▪ Vaccination to signify immunity. • **Accommodate differences between vaccines in their efficacy, and changes in vaccine efficacy against emerging variants:** ○ More information is needed about both: ▪ Vaccine efficacy in preventing infection and transmission by the currently circulating viruses, including genetic variants; and, ▪ The duration of protective immunity (both to illness and infectiousness) to determine frequency of vaccine passport renewal. • **Be internationally standardised:** ○ The International Certificate of Vaccination or Prophylaxis (ICVP) or the 'yellow card' is a precedent in this area.

Jurisdiction/Organization	Summary of Findings/Recommendations
	• **Have verifiable credentials:** ○ The Common Pass and COVID-19 Credentials Initiative are consortiums working toward primarily app-based digital solutions using a QR code that can be displayed without releasing personal sensitive information. ○ Technical challenges exist such as those related to form (digital, paper), forgery, and attention to privacy and identify proofing. • **Have defined uses:** ○ The uses of vaccine passports need to be clearly defined as they carry the risk that they could be used to discriminate in hiring or access to restaurants, health care centres, sporting or cultural events, insurance companies, or housing applications or other services. ○ Additional concerns are whether vaccination data could be used for other unintended reasons or data linkage, such as by immigration authorities, and precedents (e.g., commercial accessibility of registers, expanded state health surveillance) it may create. • **Be based on a platform of interoperable technologies.** • **Be secure for personal data:** ○ A fair balance of data protection and privacy requirements must be considered, in particular to guard against the use of such a passport to track populations, and for unrelated additional scrutiny of already marginalised groups, for example by police, employers or health checks. • **Be portable:** ○ There needs to be clarity across multiple aspects such as biometric authentication, QR codes, card readers, or paper copies to provide flexibility for individuals and governments. • **Be affordable to individuals and governments.** • **Meet legal standards:** ○ Certification needs to be consistent with various legal standard, including: ▪ international, regional and domestic human rights laws; ▪ data protection laws; ▪ equality and discrimination laws; ▪ COVID-19 legislation; and ▪ labour, occupational health and safety laws, but considerations need to be weighed against duty of care and commercial freedom to act. • **Meet ethical, equity and non-discrimination standards:** ○ Core ethical concerns require further scrutiny including: ▪ testing whether vaccine passports are inclusive; ▪ have clearly defined uses and minimum data collection; ▪ appropriate sharing and who gains access to the information; ▪ where and how vaccine certification will be linked to other types of data; and, ▪ avoidance of discrimination and exacerbating existing inequalities (e.g., vaccine hesitancy in certain groups, pregnant women, differential roll-out or access, digital divide). • **Have conditions of use that are understood and accepted by the passport holders.**[136]

Table 3: Implementation Strategies for Vaccine Passports and Proof of Vaccination/Immunity Across Jurisdictions

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
Canada		
Quebec	Proof of Vaccination • In Québec, when people are vaccinated, they are given a paper copy of their proof of vaccination. • A digital proof of vaccination is also available after they have received a COVID-19 vaccination. • The application and use of this digital proof in Québec have yet to be defined.	**Eligibility and Validity** • People vaccinated outside Québec must first record their vaccination in the Québec Vaccination Registry. Once they have done so, they will receive their digital proof of vaccination. **Use Cases** • The digital proof of vaccination is designed to provide information regarding the vaccine received. • It is not proof of an individual's immunity. **Format** • As of May 13, 2021, individuals will **automatically** receive a digital proof of vaccination if they provided the following information when making an online appointment (Clic Santé): ○ A valid email address and phone number; and ○ The individual's health insurance number. • The digital proof of vaccination is a PDF document that can be downloaded onto a computer or smart phone. • The document contains the individual's personal information, the vaccine that they received and a QR code containing this information. **Data Protection, Privacy and Security** • Information not available.[137]
Manitoba	Secure Immunization Card • Fully immunized Manitobans will receive a secure immunization card that will be available to people two weeks after they have received both doses of a COVID-19 vaccine.	**Eligibility and Validity** • To be eligible to receive an immunization card, Manitobans must: ○ Have a Manitoba health card; ○ Have received two doses of a vaccine; and ○ Wait 14 days after getting the second dose of vaccine, so it can take full effect. **Use Cases** • The card allows for inter-provincial travel without being required to self-isolate on the return to Manitoba. • Manitoba health care facilities, including hospitals and personal care homes, will permit expanded visitation if both the patient/resident and visitor are fully vaccinated. ○ This benefit is expected to be extended to health care facility visitation in the coming week (as of June 8, 2021). • Individuals also will continue to be exempt from self-isolation if they are an identified close contact of a COVID-19 case if they are fully vaccinated, with direction provided from public health officials. • Additional benefits are expected to be added in the coming weeks. **Format** • Two weeks after receiving a second dose of a COVID-19 vaccine, Manitobans may apply for the card using the new online portal at https://immunizationcard.manitoba.ca/. • The digital and physical cards contain no personal health information or data. • The cards only show the person's first and last names and a QR code. • When scanned, the QR code will show the person is fully vaccinated.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		• Once someone has successfully completed the online request, they will automatically receive access to a digital card. ○ There is also an option to request a physical card that will be mailed to the address on the applicant's Manitoba health card. ○ If a physical card is requested, it can be expected in the mail within 14 days. • People who would like to request their card but do not have internet access can contact the insured benefits branch of Manitoba Health and Seniors Care at 204-786-7101 or 1-800-392-1207 (toll-free) to request a card. **Data Protection, Privacy and Security** • The immunization card contains only an individual's name for privacy purposes.[138]
International		
Israel	Green Pass • Issued by the Ministry of Health. • Intended to be used as an entry permit for recovered and vaccinated individuals into establishments and places. • Introduced Feb. 21, 2021.[g] • No longer required as of Jun. 1, 2021.[h]	**Eligibility and Validity** • The following people are eligible for the Green Pass: ○ Individuals who have been fully vaccinated for COVID-19, whose pass will be valid until Dec. 31, 2021; ○ Individuals who have recovered from COVID-19, whose pass will be valid until Dec. 31, 2021; and ○ Individuals aged 16 and younger who tested negative for SARS-CoV-2, whose pass will be valid from receipt of test results for 72 hours, extended until end of day on the day the pass expires. • Children younger than one year do not require a Green Pass to be admitted to any places complying with Green Pass restrictions. • When parents are issued a Green Pass, children under 18 will be included in their pass. • Individuals with contraindications to the COVID-19 vaccine may be admitted to places that comply with the Green Pass restrictions upon presenting the following documents: ○ A note from their insuring HMOs that they have a contraindication to the COVID-19 vaccine, according to the criteria determined by the Ministry of Health; ○ Negative test results to a coronavirus test taken up to 72 hours prior to the time of presenting the note; and ○ Identification document. **Use Cases** • The Pass only applies within Israeli territories, in accordance with the Ministry of Health's policy, allowing access to services that are required to comply with the Green Pass restrictions. ○ Upon entering a place that complies with the Green Pass restrictions, you are required to present your Green Pass, along with identification (identification document, driver's license, passport). • Vaccination and recovery certificates may be used as substitute for the Green Pass, but it is preferred that you use the Green Pass as much as possible. • The Green Pass does not include individuals who tested in rapid tests. **Format** • Passes can be presented either via the app or as a printed QR code. • Minors who do not have an identification document yet may present their parent's identification document (or a photocopy thereof), including the slip, and their Green Pass (either on the application or in printed form).

[g] https://www.technologyreview.com/2021/03/01/1020154/israels-green-pass-is-an-early-vision-of-how-we-leave-lockdown/
[h] https://corona.health.gov.il/en/directives/green-pass-faqs/

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		Data Protection, Privacy and Security • Information not available.[139]
Israel	Vaccination Certificate • Issued by the Ministry of Health.	**Eligibility and Validity** • Any person who receives both doses of the vaccine through the HMO or through any other accredited vaccination service, even if the two doses have been administered by two different vaccination services. • The certificate takes effect one week after receiving the second dose and expires after six months. • The certificate is valid only when presented together with identification documents (identity card, passport, driver's license). **Use Cases** • People who have the certificate are exempt from isolation, so it is recommended that individuals have it before international travel. **Format** • Example provided suggests that the certificate includes a QR code. **Data Protection, Privacy and Security** • Information not available.[140]

Israel	Certificate of Recovery
	• Issued by the Ministry of Health.
		Eligibility and Validity
		• A certificate of recovery is given to a person who no longer has COVID-19.
		• Confirmed cases will be considered recovered patients without recovery testing, if both prerequisites below are met:
		  ○ It has been at least 10 days since the positive (or borderline-positive) test was performed, the individual has been considered a confirmed case within seven days of that test; and
		  ○ In the last three days, the individual had no symptoms, including: fever of 38 degrees Celsius or higher, difficulty breathing or shortness of breath, cough or any other respiratory symptom, which is not improving, vomiting or diarrhea. (Nose discharge as a single symptom, loss of taste or smell and ongoing cough do not prevent assignment as a recovered patient.)
		• The certificate is valid according to the following criteria:
		  ○ For recovered, non-vaccinated individuals and serologically-confirmed recovered individuals**:** until June 30, 2021;
		  ○ For recovered individuals after the first dose of the COVID-19 vaccine**:** for six months from the day of the first dose; and
		  ○ For recovered individuals after two doses of the COVID-19 vaccine: for six months from the day of the second dose
		Use Cases
		• Could have been used in place of a Green Pass while Green Passes were required to enter certain locations.
		• Recovered patients cannot receive a vaccine administration record. The Certificate of Recovery serves as proof instead.[i]
		Format
		• Example provided suggests that the certificate includes a QR code.
		Data Protection, Privacy and Security
		• Information not available.[141]

[i] https://www.gov.il/en/departments/general/corona-recovered-patients

European Union	EU Digital COVID Certificate (EUDCC)
	• The certificate will be introduced in EU Member States.
	• Additionally, Liechtenstein, Switzerland, Iceland and Norway will be able to connect to the EUDCC system.
	• Countries can start issuing and using it already and it will become available in all EU Member States as of July 1st, 2021.
	• National authorities are in charge of issuing the certificate. It could, for example, be issued by test centres or health authorities, or directly via an eHealth portal.
		Eligibility and Validity[j]
		• An EU Digital COVID Certificate is a digital proof that a person has either:
		  ○ Been vaccinated against COVID-19;
		  ○ Received a negative test result; or
		  ○ Recovered from COVID-19.
		• Certificates will be issued to any person who received a COVID-19 vaccination in an EU Member State, irrespective of the number of doses.
		  ○ The number of doses will be clearly stated in the EU Digital COVID Certificate to indicate whether the vaccination course has been completed.
		  ○ It is also for Member States to decide whether they accept a vaccination certificate after one dose or after a full vaccination cycle has been completed.
		• The Commission has proposed that people who have received a single dose of a two-dose vaccine after having previously been infected with COVID-19 should be considered fully vaccinated for the purpose of travel.
		• Children can get an EU Digital COVID Certificate.
		  ○ Children can also receive a test or recovery certificate.
		  ○ These certificates could also be received by their parents and stored in the parents' smartphone app.
		• There is no maximum validity foreseen for vaccination certificates, as this will depend on emerging scientific evidence as to the length of protection of the different vaccines.
		• The EUDCC Regulation sets the maximum validity period of the certificate of recovery at 180 days.
		• The European Commission proposed to update the Council recommendation on the coordination of the travel measures, which includes standard validity periods for tests: 72 hours for PCR tests and, where accepted by a Member State, 48 hours for rapid antigen tests.
		Use Cases
		• The EU Digital COVID Certificate will be accepted in all EU Member States. It will help to ensure that restrictions currently in place can be lifted in a coordinated manner.
		• The EU Digital COVID Certificate should facilitate free movement inside the EU. It will not be a pre-condition to free movement, which is a fundamental right in the EU.
		• When travelling, the EU Digital COVID Certificate holder should in principle be exempted from free movement restrictions.
		  ○ Member States should refrain from imposing additional travel restrictions on the holders of an EU Digital COVID Certificate, unless they are necessary and proportionate to safeguard public health.
		  ○ In such a case – for instance as a reaction to new variants of concern – that Member State would have to notify the Commission and all other Member States and justify this decision.
		• Member States will have to accept vaccination certificates for vaccines which received EU marketing authorisation.
		  ○ Member States may decide to extend this also to EU travellers that received another vaccine.
		Format
		• The digital version can be stored on a mobile device; citizens can also request a paper version.
		• Both will have a QR code that contains essential information, as well as a digital signature to make sure the certificate is authentic.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		• Member States have agreed on a common design that can be used for the electronic and paper versions to facilitate the recognition. • Each issuing body (e.g. a hospital, a test centre, a health authority) has its own digital signature key. All of these are stored in a secure database in each country. • The European Commission has built a gateway through which all certificate signatures can be verified across the EU. ○ The personal data of the certificate holder does not pass through the gateway, as this is not necessary to verify the digital signature. ○ The European Commission also helped Member States to develop national software and apps to issue, store and verify certificates and supported them in the necessary tests to on-board the gateway. **Data Protection, Privacy and Security** • The EU Digital COVID Certificate contains necessary key information such as name, date of birth, date of issuance, relevant information about vaccine/ test/ recovery and a unique identifier. • For verification purposes, only the validity and authenticity of the certificate is checked by verifying who issued and signed it. ○ All health data remains with the Member State that issued an EU Digital COVID Certificate. • The certificates will only include a limited set of information that is necessary. **Development and Interoperability**[j] • Interoperability is achieved by making sure that the different types of EU Digital COVID Certificates (vaccination status; test results; recovery status) are standardised according to commonly agreed policies, rules and specifications. • In practical terms, the Commission has set up a gateway through which digital signature keys can be exchanged between Member States, so that the EU Digital COVID Certificates can be verified across the EU. • The Commission has provided Member States with open source software and apps to easily develop their national solutions for the issuance and verification of EU Digital COVID Certificates and for citizens to store them on their smartphones (e.g., a wallet app). • The Commission is working to make sure that the certificates are compatible with systems in countries outside the EU.[142]
Denmark	Corona Passport (Coronapas) • A corona passport proves that an individual has been vaccinated against, has previously been infected with or has tested negative for COVID-19 within the past 72 hours. • The Danish government, together with the parties to the framework agreement	**Eligibility and Validity** • There are several ways to be eligible for a valid corona passport: ○ After vaccination ▪ Individuals receive a valid corona passport 14 to 42 days after the date of their first vaccination. ▪ In addition, they receive a valid corona passport immediately after they have been fully vaccinated. ▪ Once fully vaccinated, a corona passport is valid for eight months. ○ After a negative test result: ▪ Individuals also receive a valid corona passport if they have had a negative test result (either PCR or rapid antigen test (RAT)). ▪ The corona passport is valid 72 hours from the time of the test.

[j] https://ec.europa.eu/commission/presscorner/detail/en/QANDA_21_2781

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
	for the 22 March reopening, has decided to introduce the requirement to present a corona passport as a way of helping keep the pandemic under control in Denmark as society reopens.	○ After a previous infection: ▪ Individuals also receive a valid corona passport if they have been infected with COVID-19 within the past 14 days to 8 months. • Children under the age of 15 and those who, either for medical reasons or because of disability, should not have a COVID-19 test are exempt. **Use Cases** • **Culture and attractions**: Individuals must show their corona passport as proof that they have been vaccinated against, previously infected with or have tested negative for COVID-19 within the past 72 hours. • **Sport and fitness:** Corona passports are required in gyms for people over the age of 15, and for indoor sports for people aged 18 and over. ○ Individuals must show a corona passport when attending football matches in the Danish Superliga and a number of other league and division matches. • **Churches and religious activities:** For church activities with more participants than the current ban on gatherings allows, individuals must show a corona passport. • **Services:** Individuals are required to show a corona passport if going for a haircut, massage etc. • **Restaurants, cafes etc.:** Individuals must show a corona passport when served inside restaurants, bars, cafés etc. • **Travel:** The passport is compatible with EU requirements, so it can be used at border crossings within the EU. **Format** • The corona passport involves a scannable QR code. • The corona passport is available digitally, either through the corona passport app, the MinSundHed (Ministry of Health) app, online through the Ministry of Health's website, or through some other apps. • Non-digital versions are also available: ○ Individuals who have been vaccinated against COVID-19 and who are exempt from receiving digital post will receive documentation of their vaccination (vaccination passport) directly via ordinary mail. ○ Individuals who are vaccinated against COVID-19 can also order a printed vaccination passport from sundhed.dk by phone. • If using the corona passport app, individuals are not required to present ID as well. • Denmark's corona passport app was developed to meet the EU requirements so it can be used at border crossings within the EU. **Data Protection, Privacy and Security** • The information in the corona passport is stored in the corona passport app on the phone itself. Besides this, an individual's health data will only be stored in central health registers. • Scanned results are not stored in the app nor with the passport checker who scans the app's QR code. • The checker can briefly see on his/her scanner whether your corona passport is valid (the checker can see the information for a maximum of 120 seconds). If individuals have chosen to display their name and date of birth (this can be switched on/off in the app), the checker will also be able to see this information on their scanner. • The information is not stored on the checker's smartphone or alternative scanning device. • Among other things, a comprehensive security test of the app was conducted by an internationally recognised IT security company.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		• In addition, when the app development process was launched, a Data Protection Impact Assessment (DPIA) was prepared to describe the risks relating to user data and the measures applied to mitigate these risks. • Denmark's Health Data Agency (Sundhedsdatastyrelsen) is responsible for developing, managing and maintaining the corona passport app and is thus the data processor for the app.[143]
Estonia	Vaccination Certificate (VaccineGuard) • Secure Vaccination Certificates, issued through the VaccineGuard platform are available as of April 30, enabling Estonian citizens to cross borders with proof of vaccination status.	**Eligibility and Validity** • Information not available. **Use Cases** • Estonia's vaccination certificates were issued to facilitate international travel. **Format** • VaccineGuard vaccination certificates, issued through the national patient portal, will comply with the proposed EU digital vaccine certificate standards. • VaccineGuard is a distributed data exchange platform for vaccination campaign management and pharmacovigilance for use cases as diverse as counterfeit and diversion detection, vaccine allocation prioritization, just in time stock and supply, pinpoint recall and rapid adverse reaction detection. • The platform is based on a year long collaboration with the Estonian, Hungarian, and Icelandic governments, the World Health Organization and AstraZeneca Estonia. • The VaccineGuard vaccination certificates are issued through the Estonian national patient portal, digilugu, and enable Estonian citizens to have proof of their vaccination status on their mobile phones via a QR code.[k] **Data Protection, Privacy and Security** • Information not available.[144]

Norway	Vaccination Certificate
	• The vaccination certificate will be available June 11.
	• The certificate will be for both domestic use and for international travel.
		Eligibility and Validity
		• Information not available.
		Use Cases
		• There will be two different views for the corona certificate: a simple view for domestic use and one for border crossing in the EU and EEA area.
		  ○ Privacy is the reason why the corona certificate is divided in two. This way, users do not have to give up more information than necessary.
		  ○ In the case of domestic use, it will rarely be necessary to display information other than that the corona certificate is valid.
		  ○ Minister of Health and Care Services Bent Høie suggested that the certificate may allow individuals to participate in larger events than is otherwise allowed.
		Format
		• The certificate will involve a scannable QR code.
		• Non-digital users can use the system for power of attorney at Helsenorge, where they can give others the authority to print a corona certificate.
		• The government is also working on a solution for those who do not use a mobile, tablet or PC, so that they can receive a printout of the corona certificate.

[k] https://estonianworld.com/technology/estonia-introduces-vaccine-passport/

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		Data Protection, Privacy and Security • Information not available.[145]
Hungary	Immunity Certificate (EESZT) • Hungary has launched an app that serves as a COVID immunity certificate.	**Eligibility and Validity** • Gergely Gulyás, the prime minister's chief of staff, said the certificate will be issued to people who have received the second shot of the vaccine, indicating the date on which the second dose was administered. • The document will not have an expiry date as there is not enough information available as to how long immunity lasts after a person has been vaccinated. • Further, another kind of certificate will note relevant dates such as a recovered COVID-19 patient's release from hospital or the tenth day after their first positive PCR test result. **Use Cases** • Information not available. **Format** • The EESZT app is running in test mode as of May 17, 2021.[146] • Earlier, Hungary started issuing plastic COVID-19 immunity certificate cards to vaccinated citizens. **Data Protection, Privacy and Security** • Information not available.[147]
New York (US)	Excelsior Pass • The pass serves as digital proof of COVID-19 vaccination or negative test results. • Excelsior Pass supports a safe reopening of New York by providing a free, fast and secure way to present digital proof of COVID-19 vaccination or negative test results.	**Eligibility and Validity** • There are currently three types of Passes: ○ COVID-19 Vaccination Pass (available 15 days after the final dose of the vaccine was administered; valid for 365 days) ○ COVID-19 PCR Test Pass (valid until midnight on the third day after a test) ○ COVID-19 Antigen Test Pass (valid for 6 hours from the time of a test) **Use Cases** • Participation in Excelsior Pass is voluntary. • Excelsior Pass is a free, fast and secure way to present proof of your COVID-19 vaccination or negative test results to businesses that may require it as part of State reopening guidelines or for other purposes. **Format** • The Pass is generated based on data provided by an individual's provider or testing laboratory to the secure New York State and New York City immunization and COVID-19 testing databases. • Participation in Excelsior Pass is designed to be inclusive of all New Yorkers, regardless of access to a smartphone. Individuals can print a paper Pass via the Excelsior Pass website at https://epass.ny.gov. • When individuals visit a business or venue that accepts Excelsior Pass, the QR Code on their Pass will be scanned using the Excelsior Pass Scanner app to ensure that the Pass is valid. • For adults aged 18+, a matching photo ID with name and birth date is required to be presented alongside each unique Pass. • Adults can hold Passes for accompanying minors. **Data Protection, Privacy and Security** • Personal data will not be used for sales or marketing purposes or shared with a third party, other than for the sole purpose of validating COVID-19 vaccination or test results. • The Pass contains cryptographic signatures that ensure that it is genuine and that no data-tampering has occurred.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		• Stored Passes contain individuals' name, birth date, Pass type and Pass expiration date. • If an individual chooses to use the Excelsior Pass Wallet app or their smartphone's native wallet to store their Excelsior Pass, no personal health information is stored on their device. • Passes may be deleted at any time. • When the Pass is scanned, the Excelsior Pass Scanner app collects analytics about the type of Pass and the result of the scan. No personal information from Passes is collected or stored. • The Excelsior Pass codebase is private and is not available to any external developers, but is built around open standards.[148]
Hawai'i (US)	Safe Travels Hawai'i Program • The State of Hawai'i Safe Travels Hawai'i program is a multilayered process designed to mitigate the spread of COVID-19 in the community from trans-Pacific visitor and resident passengers arriving at airports/ports across the Islands. • This enhanced entry into Hawai'i includes a vaccination exception program.	**Eligibility and Validity** • In order to be eligible for the vaccine exemption, individuals require the following: o A CDC COVID-19 Vaccination Record Card issued in the State of Hawai'i with the individual's name, birth date, type of vaccine, date(s) vaccine was administered, and lot number(s) for each of the vaccine doses. o An online account with the State of Hawai'i's Safe Travels Hawai'i web platform. • Individuals must then additionally complete the required Safe Travels Hawai'i forms and upload their Vaccination Record Card in the digital platform. • Note that the program is only available to individuals who were vaccinated in Hawai'i.[I] • The program is voluntary. **Use Cases** • **Travel:** Individuals must bring the original CDC Vaccination Record Card, VAMS printout, VAMS printout with DOH header and endorsement, or DD 2766C with you when they travel to show the screeners. **Format** • Hawai'i is only accepting the "CDC COVID-19 Vaccination Record Card" issued in the State of Hawai'i or a printout from the Vaccine Administration Management System. **Data Protection, Privacy and Security** • Information not available. **Enforcement** • The program will be enforced by the Department of the Attorney General to ensure travellers follow the rules. • Potential violations will be reported to law enforcement if it appears information is fraudulent, false or misleading and used to qualify for the vaccine exception. • County and State law enforcement also have been actively engaged in the enforcement of Safe Travels requirements with the issuance of citations, arrests, and prosecution of violators.[149]
UK	COVID-19 vaccination status • Demonstrating COVID-19 vaccination status allows individuals to show others that they have had a full	**Eligibility and Validity** • COVID-19 vaccination status is available to people who: o Live in England; and o Are registered with a GP. • Children cannot get COVID-19 vaccination status, as children are not currently being vaccinated against COVID-19.

[I] Individuals are considered fully vaccinated on the 15th day after the completion of their vaccine.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
	course[m] of the COVID-19 vaccine when travelling abroad to some countries or territories.	**Use Cases** • **Travel:** Individuals can show their COVID-19 vaccination status as proof of their status when travelling abroad. **Format** • Vaccination status is available in digital or paper format. • Individuals can access their COVID-19 vaccination status through the free NHS App. • Proof of COVID-19 vaccination status will be shown within the NHS App. • The NHS App will continue to be developed with further updates in the future. This will include the ability to show COVID-19 test results. • Individuals can also view their COVID-19 vaccination status online and download or print it as a PDF document. • Individuals who do not have access to a smartphone, computer or tablet and know that the country they are travelling to requires COVID-19 vaccination status can call 119 and ask for a letter to be posted to them. **Data Protection, Privacy and Security** • An individual's COVID-19 vaccination status is held securely within the NHS App, and can only be accessed via the NHS login service. • The COVID-19 vaccination service only shows the COVID-19 vaccination status in the form of a vaccination record. • All the information displayed is derived from the National Immunisation Management System (NIMS) database operated by NHS England. The COVID-19 vaccination status service does not capture any new information.[150]
African Union Commission and the African Centers for Disease Control and Prevention (CDC)	My COVID Pass • The My COVID Pass was introduced by the African Union Commission and the African CDC as part of the Saving Lives, Economies and Livelihoods campaign to promote hassle-free travel across Africa while, at the same time, preventing cross-border spread of COVID-19 infection. • The tool is designed to simplify verification of public health documentation for travellers during exit and entry across borders.	**Eligibility** • Information not available. **Use Cases** • Africa CDC "mutual recognition protocol" for COVID-19 testing and test results, and vaccination certificates (including yellow fever and a future COVID-19 vaccine). • **Travel:** Cheaper immunity certificates for cross-border movement. • Vaccine effectiveness monitoring. **Format** • Individual immunization record storage across health systems. • Regional harmonization and integration. **Data Protection, Privacy and Security** • Information not available.[151]

[m] A full course is currently two doses of any vaccine approved for use in the UK.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
China	Digital health code • China unveiled a vaccine passport in March 2021 to tens of millions of residents who have received their COVID-19 shots.	**Eligibility** • Eligibility is determined in part by type of vaccine: ○ Previously, China said it would facilitate entry only for those who have received Chinese vaccines. ○ The Chinese Embassy in Washington said in an online notice in April 2021 that Pfizer-BioNTech, Moderna and Johnson & Johnson vaccine records can be submitted as part of an application for a COVID-19 QR "health code". **Use Cases** • **Travel:** China's version of a digital certificate appears to be for international travel rather than domestic movement and talks are already underway with some other countries about recognising it. **Format** • According to China's Foreign Ministry, the app would allow people both in China and overseas to verify the certificate by scanning a QR code, potentially freeing up the movement of the 52 million people in China vaccinated as of Mar. 2021. • The QR code can be accessed through WeChat, an app used by most Chinese residents. • Chinese provinces already have their own widely used health tracking programs within WeChat that can store vaccine information. **Data Protection, Privacy and Security** • Information not available.[152,153]
Bahrain	'BeAware' Vaccine Passport app • Bahrain has launched a digital COVID-19 vaccine passport, one of the first countries to do so, the Gulf state's media office said on February 17, 2021.	**Eligibility** • Users must have received two doses of a vaccine, separated by 21 days, and then wait for two weeks for antibodies to develop, the statement said. **Use Cases** • Israel will recognize Bahraini vaccine passports not only for entry, but also to gain access to an Israeli domestic vaccine pass, called the Green Pass, which allows those who are vaccinated against COVID-19 or recovered from the virus to access restaurants, gyms, theaters and other venues. **Format** • Bahrain's 'BeAware' app displays a green shield alongside an official certificate detailing the person's name, date of birth, nationality and which vaccine was received. • Authorities can verify its validity by scanning a QR code linking to the national vaccine register. **Data Protection, Privacy and Security** • Information not available.[154,155]
Private Sector		
International Air Transportation Association (IATA)	Travel Pass App • IATA Travel Pass is a health app for passengers to manage both COVID-19 testing and vaccination certificates for travel.	**Use Cases** • IATA has launched IATA Travel Pass to: ○ Inform passengers on what tests, vaccines and other measures they require prior to travel; ○ Inform passengers about details on where they can get tested; and ○ Give passengers the ability to share their tests and vaccination results in a verifiable, safe and privacy-protecting manner is the key to giving governments the confidence to open borders. • As of 26th April, close to 50 airlines have signed up to trial IATA Travel Pass, with 30 airlines publicly announcing their decision.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
		• IATA Travel Pass complements the EU Green Certificate (a.k.a. the EU Digital COVID Certificate) and other such initiatives. **Format** • IATA Travel Pass is a mobile application and is available for download for passengers traveling on airlines trialing the app with an access code provided to them by the airline. • There will be paper-based alternatives for people who do not have mobile phones. • IATA does not verify the test or vaccine results. IATA provides the means for registered labs to send test results and vaccine details to travellers in a secure manner whereby the details can be verified to guarantee authenticity of origin and integrity of the content. **Data Protection, Privacy and Security** • The IATA Travel Pass does not store any data centrally. It simply links entities that need verification (airlines and governments) with the test or vaccination data when travellers permit. • Verified certificates for COVID-19 tests or vaccinations will be stored on the traveller's phone. • When needed, the traveller will be prompted to release their certificates to authorities and other stakeholders. If the passenger chooses to do so the data is sent by them from their phones directly to the other entity.[156]
The Commons Project Foundation	CommonPass • The Commons Project has developed CommonPass to address countries' need to be able to validate a traveller's record of a COVID PCR test or vaccination administered in another country.	**Use Cases** • The Commons Project has developed CommonPass to address countries' need to be able to validate a traveller's record of a COVID PCR test or vaccination administered in another country. **Format** • To use CommonPass, individuals can access their lab results and vaccination records through existing health data systems, national or local registries or personal digital health records and either scan (if a QR code is available) their results or enter them manually by logging in to the COVID-19 test lab portal. • The CommonPass platform then assesses whether the individual's lab test results or vaccination records: ○ (1) come from a trusted source, and ○ (2) satisfy the health screening requirements of the country they want to enter. • If they meet the requirements of their destination, CommonPass generates a simple "yes" or "no" certificate with a QR code that they can share without revealing any personal health information. **Data Protection, Privacy and Security** • **Agency**: Data are stored or shared only with explicit, informed consent. • **Data Minimization**: Only the minimum amount of personal data are used for any transaction. • **Data Security**: Personally identifiable health information is stored only at the source or on the user's phone. • **Use**: Data are only stored to the extent necessary and never used for any other purpose.[157]
IBM	Digital Health Pass • Digital Health Pass is designed to enable businesses and other organizations to verify health credentials for employees, customers,	**Use Cases** • Individuals can manage their own health information with an encrypted smartphone app. • Allows organizations to verify credentials without having access to an individual's underlying information. **Format** • Digital Health Pass only accommodates verification of COVID-19 vaccination records issued digitally through participating Digital Health Pass entities, such as pharmacies, labs and providers.

Jurisdiction/Organization	Certificate Type/Status	Summary of Implementation
	fans and travellers entering their site based on their own criteria. • New York's Excelsior Pass was developed by IBM after running a pilot program based on the Digital Health Pass.[158,159]	• Users can manage COVID-19 health credentials in an encrypted wallet on their phone or as printed records in the form of secure QR codes. **Data Protection, Privacy and Security** • When a participating business scans an individual's secure QR code, they should only see if the pass is valid, along with any personal information the individual has consented to be used for your COVID-19 test result or vaccination verification. o Information provided may vary depending on an organization's requirements and how the COVID-19 health credential was generated. • Digital Health Pass represents personal health information only by a unique set of numbers and letters – shown as a QR code. • IBM does not collect or process any personal information without the individual's consent and does not store any personally identifiable information (PII) on the Digital Health Pass blockchain platform. • Digital Health Pass is built on IBM Blockchain technology. Digital Health Pass uses a decentralized identity architecture underpinned by W3C Open Software Standards. o Decentralized identity can allow pharmacies, labs and providers to issue verifiable data to an individual. o It allows individuals to share that data or subset and a receiving organization to verify validity of the credential. o Trust in the data exchanged is achieved through a distributed ledger, with strict governance practices and verification of signatures. o No personal information (PII) is stored in the ledger.[160,161,162]

Table 4: Jurisdictional Requirements for Entry – Vaccination/Immunity Status

Acceptance of Vaccine Certificates/Passports[n,163]	Jurisdictions
• Provision of a vaccine certificate/passport required for entry	• Denmark • Iceland ○ Iceland provides details on specific vaccine certificate requirements; certificates of immunity based on previous infection are allowed.[164] • St. Kitts and Nevis
• Provision of a vaccine certificate/passport not required but removes some testing and/or quarantine obligations	• Anguilla • Armenia • Bahamas • Bahrain • Barbados • Bermuda • British Virgin Islands • Croatia • Cyprus • Dominica • El Salvador • European Union[165,o] ○ Vaccines must be approved by the European Medicines Agency. • French Polynesia • Georgia • Grenada • Guatemala • Lebanon • Montenegro • Nepal • St. Lucia • St. Vincent and the Grenadines • Tunisia • Uganda

[n] As of June 8, 2021.
[o] The EU voted to reopen its borders to fully vaccinated travelers from outside the EU as of July 1, 2021, but have allowed Member States to impose further testing or quarantine restrictions on visiting travelers.

Acceptance of Vaccine Certificates/Passports[n,163]	Jurisdictions
• Prohibition on vaccine passport/certification requirements	• **United States**: The following states have prohibited the government issuance and/or requirement of vaccine passports: ○ Alabama;[166] ○ Arizona;[167] ○ Arkansas;[168] ○ Florida;[169] ○ Georgia;[170] ○ Idaho;[171] ○ Indiana;[172] ○ Iowa;[173] ○ Michigan;[174] ○ Montana;[175] ○ South Carolina;[176] ○ South Dakota;[177] ○ Texas;[178] and ○ Wyoming.[179]

Table 5: Summary of Expert Guidance Regarding Vaccine Passports: Impact, Implementation, Ethical, and Equity Considerations

Source	Type of Source	Summary of Findings
Katz GM, Born KB, Balicer RD, et al. Lessons Learned from Israel's Reopening During a Nationwide COVID-19 Vaccination Campaign. *Science Briefs of the Ontario COVID-19 Science Advisory Table.* 2021;2(33).	Evidence Review	**Overview** • This brief describes how Israel maintained an overall decrease in SARS-CoV-2 cases and COVID-19 hospitalizations, ICU admissions, and deaths throughout all phases of reopening. • In particular, this brief discusses the role of Israel's 'Green Pass'. **Green Pass** • The Green Pass was a vaccination certificate which was introduced from February 21, 2021 to June 1, 2021 to allow fully vaccinated or COVID-19 recovered individuals to enter higher SARS-CoV-2 transmission risk settings. • Temporary Green Passes were also granted to children with a negative COVID-19 PCR test within 72 hours. • A goal of the Green Pass was to motivate vaccine uptake among younger or vaccine hesitant groups. ○ Full vaccination enabled citizens to hold a green pass, and have access to cultural venues, sports events, and concert halls. ○ When SARS-CoV-2 infection levels were higher, restaurants, hotels, gyms, and other higher transmission risk indoor settings also required a Green Pass to enter. ○ Green Pass and Purple Badge standard requirements expired on June 1, 2021 — corresponding with low nationwide SARS-CoV-2 infection numbers and high COVID-19 vaccine coverage. • These were key initiatives to incentivize COVID-19 vaccine uptake and facilitate Israel's safe reopening. **Implications** • Vaccine passports or certification systems such as Israel's Green Pass can incentivize vaccine uptake, emphasize outdoor activities and support a safe return to social and communal events in the arts and recreation.
Brown, Rebecca C H, Julian Savulescu, Bridget Williams, and Dominic Wilkinson. Passport to Freedom? Immunity Passports for COVID-19. *Journal of Medical Ethics* 46, no. 10 (October 2020): 652–59.	Opinion	**Overview** • In this paper, the authors seek to review the challenges relating to various practical considerations, fairness issues, the risk to social cooperation and the impact on people's civil liberties and make tentative recommendations in regards to the ethical introduction of immunity passports. **Key Recommendations** • Weigh the damage of false positives (and negatives) with the damage from alternative policies (e.g., continued full lockdown, general easing of lockdown), including economic, social and health impacts. • Attend to the risks of undermining social cohesion for infection control and well-being; conduct further research and track developing evidence. • Facilitate free testing to ensure that access is not limited by personal wealth. • Ensure redistribution of benefits created by immunity passports; provide additional support to ease costs to those remaining in lockdown and avoid incentivising non-compliant behaviour. • Consider introducing additional punishments for non-compliant behaviour; balance these with the expected harms of such behaviour and ensure they are proportionate to the risks they aim to discourage. • Produce guidance regarding the use of antibody testing/immunity passports by employers.

Brown, Rebecca C H, Dominic Kelly, Dominic Wilkinson, and Julian Savulescu. The Scientific and Ethical Feasibility of Immunity Passports. *The Lancet Infectious Diseases* 21, no. 3 (March 2021): e58–63.	Opinion	**Overview** • In this article the authors reviewed the scientific feasibility of immunity passports, responded to the ethical arguments against immunity passports and provide positive ethical arguments. **Scientific Considerations: Natural immunity** • Important immunological issues for such passports are: ○ (1) the degree of immunity induced (an immune response might only attenuate disease severity, or might prevent any symptomatic disease and even pathogen carriage, which is necessary for herd immunity); and ○ (2) the duration of immunity. • Critics of immunity passports point to persisting uncertainties about the immune response to COVID-19. • Concerns also surround the sensitivity and specificity of the tests used to define immunity, especially in populations with a low incidence of previous infection, and the need for impractical numbers of tests to be done to ensure a population remains immune. • Although, like all antibody responses to viral infections, responses to SARS-CoV-2 wane in the weeks after infection, increasing evidence suggests that these responses remain higher than pre-infection levels for at least 4 months (the longest period that has been possible to study). • Perhaps the most important consideration for immunity passports is whether an individual can transmit the infection to others. ○ Evidence from previous work with seasonal coronaviruses and studies of SARS-CoV-2 vaccines in macaques suggests that previous infection or vaccination might protect from severe disease but an individual might nevertheless carry the virus at similar levels, and for a similar duration, to those previously uninfected, with an unchanged potential for transmission. • In the absence of an immunological correlate of protection, confirmed infection itself could be used to certify immunity. ○ However, there are likely to be complexities to this approach because, for SARS-CoV-2 infection, antibody responses might be less marked in individuals with asymptomatic or mild disease than in those with severe disease. ○ Furthermore, several individuals with evidence of reinfection within a short period of a first illness have been described, with at least one individual being more symptomatic with the second illness than with the first. • Challenges for this approach include: ○ the heterologous nature of the initial infection, reflected in the variation in quality and duration of the subsequent immune response; ○ the almost complete absence of information about an individual's ability to still transmit virus to others even if protected from disease; and ○ the need to undergo the risk of infection to acquire immunity. **Scientific Considerations: Vaccine-induced immunity** • Basing immunity passports on a vaccine has advantages: the stimulus is uniform and is therefore likely to have a more predictable pattern and duration of immunity than is infection, and vaccination makes immunity potentially available to the whole population. **Ethical Considerations** • There are several key ethical advantages to immunity passports. ○ It is unethical to require someone to avoid contact with others if they pose no or minimal risk of spreading the virus.

Source	Type of Source	Summary of Findings
		○ People will know the reduced risks and are likely to become less compliant with lockdown restrictions if they believe themselves to be immune anyway. ○ The possibility of broader benefits: Lonely and isolated individuals could be visited by immune friends and relatives; small businesses can be reopened by staff who are immune and will not risk the health of colleagues and customers; immune health-care staff can care for patients with COVID-19; and immune care workers can protect vulnerable people in residential homes. • Ethical concerns: ○ One study highlighted how, in 19th century New Orleans, LA, USA, presumed immunity to yellow fever was weaponised to justify white supremacy. ○ Others emphasised the ethical risks of immunity passports, speculating that these passports could "create coercive and stigmatising work environments" and are "more likely to compound than redress…structural disadvantages and…social stigmatisation". • **Perverse incentives**: One survey suggested that people are very unlikely to intentionally seek infection. • **Privacy**: Steps must be taken to avoid the production of fraudulent immunity passports, and careful attention must be given to privacy concerns and information governance, but these problems are not unique to immunity passports (conventional passports and contact tracing measures also encounter such problems) and are not insurmountable. • **Equity**: Factors such as race and socioeconomic status influence the healthcare that people can access and the treatment they receive. Yet, this issue is rarely interpreted as a reason to remove healthcare treatments or refuse to introduce new ones, assuming these therapies are considered cost-effective and net beneficial. **Implications** • Immunity passports are a potentially valuable and ethical tool. As further evidence relating to the immune response to COVID-19 accumulates, and the capacity to reliably identify immune individuals develops, immunity passports could be appropriately adopted.
Cash-Goldwasser S, Kardooni S, Cobb L, Bochner A, Bradford E and Shahpar C. Weekly COVID-19 Science Review December 5-11, 2020. Resolve to Save Lives. 2020	Review	**Overview** • This article considers the scientific, legal, administrative and ethical issues surrounding immunity passports. **Implementation Considerations** • The term "immunity passport" conflates licenses and certificates, which are related but distinct legal tools. ○ A license is a permit, or permission, from an authority to engage in a particular activity. ○ A certificate, by contrast, is a document attesting to a set of facts. ○ An effective immunity passport will include both elements: (1) permission to engage in an otherwise restricted activity, based on (2) a trustworthy certification that the person has the expected level of protection. • When determining whether to pursue an immunity passport program, policymakers at all levels should consider the implications of various combinations of licenses and certificates. • **Licenses:** Governments could create an environment that is more conducive to immunization uptake by mandating immunization as a condition for engaging in certain activities, such as employment, education, traveling or enrolling in childcare. ○ Systematic reviews have shown that imposing school vaccination mandates is associated with increased vaccine coverage among children

Source	Type of Source	Summary of Findings
		• **Certificates:** An immunity certificate should not specify the level of protection that may be conferred by vaccination or previous infection. ○ This is the case for certificates of vaccination against other diseases, which state that vaccines were given but not the extent to which the vaccine recipient is protected. ○ It is likely that the vast majority of people have some level of immunity if they (a) have been vaccinated, (b) have recovered from a confirmed natural infection or (c) have had a positive antibody test. ○ Although any of these three situations might indicate some level of immunity, many questions remain about the degree and longevity of immunity and level of protection. ○ At least until our scientific understanding of immunity to and protection from COVID-19 matures, certificates should avoid anything that suggests that any of the above situations is a proxy for protective immunity, that immunity is long-lasting, or that any of the above situations guarantees that disease spread cannot occur. • **Format:** Digital certificates can solve problems of verification and backup associated with paper certificates but create new challenges of data security, privacy standards and equitable access to technology. **Ethical Considerations** • It is unethical, and potentially illegal in some countries, for governments to maintain these overly expansive restrictions if less burdensome alternatives—such as a requirement to prove immunity to COVID-19—could achieve the same health protection. • **Equity**: There are concerns regarding the limited supply and cost of vaccinations and testing. • **Incentives**: When immunity passports are contingent on a vaccine, this creates an incentive to get vaccinated, which is a social good. • **Perverse Incentives:** When certificates depend on *any* form of immunity, this may create a perverse incentive for people to get infected intentionally, especially if they perceive a low personal risk from illness compared to the economic and social benefits of the passport. ○ This concern becomes less likely if everyone has equitable access to the vaccine. • These ethical issues can be minimized by increasing the production of vaccines and prioritizing universal, free, and rapid access to them.
Hall, Mark A., and David M. Studdert. 'Vaccine Passport' Certification — Policy and Ethical Considerations. *New England Journal of Medicine*, March 31, 2021, NEJMp2104289.	Opinion	**Overview** • This article considers the ethical and implementation concerns associated with the introduction of vaccine passports. • The authors argue that the objections raised fall short of justifying a ban on any and all uses of vaccine certification. **Implementation Considerations** • In taking the lead on vaccination-related travel policy, government can start by establishing standards for reliable documentation of vaccination. • Another key role for government is to ensure that architects of certification rules have ready access to the best and most current scientific information on vaccine effectiveness and limitations. • Allowing sports leagues, concert and sporting venues, clubs, restaurants, and bars some latitude to set rules that determine access on the basis of customers' vaccination status would be reasonable; doing so may also serve wider efforts to encourage vaccine uptake.

Source	Type of Source	Summary of Findings
		Ethical Considerations • When government conditions participation in essential activities such as work or education, certification essentially functions as a mandatory vaccination program. • Government can help to mitigate inequities arising from private certification by boosting the supply and distribution of vaccines and redoubling efforts to reach underserved populations. ○ Government guardrails are especially important when private policies affect employment opportunities.

Hall, Mark A., and David M. Studdert. Privileges and Immunity Certification During the COVID-19 Pandemic. *JAMA* 323, no. 22 (June 9, 2020): 2243.	Opinion	**Overview**
		• The authors consider important ethical and policy concerns related to the introduction of immunity certification.
		Equity Considerations
		• Bestowing immunity certification for work, school, worship, romance, or other highly valued human interactions demands fair access to testing.
		• Although certification discriminates by design, discrimination is not legally or ethically problematic unless it lacks good rationale.
		  ○ Indeed, when substantially different circumstances exist, it can be wrong *not* to differentiate.
		• Unlike most other social disparities, immunity advantages are unlikely to create a permanent underclass.
		  ○ They are transitional to an effective vaccine or treatment or to herd immunity.
		• Incentives for deliberate self-infection are a more difficult problem.
		  ○ The behavior is reminiscent of the "pox parties" that some vaccine-opposed parents hold for their children.
		  ○ However, a lethal and unpredictable virus like COVID-19 is very different from childhood chickenpox, so it is questionable how widespread self-infection would become.
		  ○ Ultimately, the US may need to tolerate some level of perverse behavior to realize the benefits of immunity, much as society tolerates but attempts to minimize destructive incentives that arise from other beneficial programs (e.g., fire insurance).
		Implementation Considerations
		• Intelligent design (e.g., digital signatures linked to public records) and physician verification could help to mitigate fraud, especially if accompanied by random confirmation testing and stiff penalties for certification cheats.
		• To be fair and effective, programs will need consensus standards for acceptable sensitivity and specificity of the tests, and systems for gathering test results to aid research and surveillance.

Liew, Chee H, and Gerard T Flaherty. Immunity Passports to Travel during the COVID-19 Pandemic: Controversies and Public Health Risks. *Journal of Public Health* 43, no. 1 (April 12, 2021): e135–36.	Correspondence	**Overview**
		• In this paper, the authors argue that while there may be a future role for immunity passports in limited circumstances in the event that a protective vaccine becomes freely available, in the absence of such the risks of such an approach outweigh the perceived benefits.
		Implementation Risks
		• The authors note that the following information, which would be essential for a valid immunity passport, is currently unknown or unclear:
		  ○ Extent of disease prevalence;
		  ○ Antibody response to infection in mild or asymptomatic cases;
		  ○ Indicators of protective immunity; and

Source	Type of Source	Summary of Findings
		○ Duration of immunity. • Counterfeit yellow fever vaccination certificates are a concern, and fraud could also undermine the biosecurity of a COVID-19 immunity certificate. **Equity Risks** • The authors further note the possibility of equity concerns as travellers are stratified into the 'immuno-privileged' and the 'immuno-deprived'. ○ The authors argue that such societal inequalities could be amplified if an effective vaccine becomes available but is not universally accessible. ○ They further argue that the reported racial disparities in rates of death from COVID-19 underscore the need to militate further healthcare inequities. • Immunity passports could create perverse incentives, such that nonimmune individuals may expose themselves to infection.
Phelan, Alexandra L. COVID-19 Immunity Passports and Vaccination Certificates: Scientific, Equitable, and Legal Challenges. *The Lancet* 395, no. 10237 (May 2020): 1595–98.	Comment	**Overview** • In this paper, the author discusses the scientific, practical, equitable, and legal challenges posed by the introduction of vaccination certificates and immunity passports. **Scientific Considerations** • It is not yet established whether the presence of detectable antibodies to SARS-CoV-2 confers immunity to further infection in humans and, if so, what amount of antibody is needed for protection or how long any such immunity lasts. • The use of seroprevalence data to inform policy making will depend on the accuracy and reliability of tests, particularly the number of false-positive and false-negative results and requires further validation. **Equity Considerations** • Immunity passports would impose an artificial restriction on who can and cannot participate in social, civic, and economic activities and might create a perverse incentive for individuals to seek out infection, especially people who are unable to afford a period of workforce exclusion, compounding existing gender, race, ethnicity, and nationality inequities. • Immunity passports risk alleviating the duty on governments to adopt policies that protect economic, housing, and health rights across society by providing an apparent quick fix. • Existing socioeconomic, racial, and ethnic inequities might be reflected in the administration of such certification, governing who can access antibody testing, who is front of the queue for certification, and the burden of the application process. ○ By replicating existing inequities, use of immunity passports would exacerbate the harm inflicted by COVID-19 on already vulnerable populations. **Implementation Considerations** • Vaccination certificates incentivise individuals to obtain vaccination against the virus, which is a social good. • By contrast, immunity passports incentivise infection.
Schlagenhauf, Patricia, Dipti Patel, Alfonso J. Rodriguez-Morales, Philippe Gautret, Martin P. Grobusch, and Karin Leder. Variants, Vaccines and Vaccination	Editorial	**Overview** • In this editorial the authors broach the complexities of variants, vaccines and vaccination passports and their complex interplay with travel medicine and how these elements will change travel medicine practice. **Scientific Considerations** • SARS-CoV-2 variants add extra complexity to the pre-travel risk assessment and advice.

Source	Type of Source	Summary of Findings
Passports: Challenges and Chances for Travel Medicine in 2021. *Travel Medicine and Infectious Disease* 40 (March 2021): 101996.		• Consideration needs to be given to the clinical implications and country-related responses to emerging variants but is compounded by the lack of genomic sequencing capacity and real-time detection of VOC globally. ○ Clinically, the primary considerations are the transmissibility of the variant, the severity of the disease it causes, its ability to be detected by diagnostic tests, its susceptibility to therapeutic agents, and its ability to evade natural or vaccine-induced immunity. • Moreover, the duration of protection of COVID vaccines is currently unknown. ○ Mutations of the spike protein as the principal virus target complicate the situation further, and vaccine evolution will have to keep pace with virus evolution. **Implementation Considerations** • Vaccination passports differ from 'immunity passports' which involve providing evidence of past infection. ○ 'Immunity passports' are currently not recommended by either ECDC or the WHO as the parameters and duration of immunity post infection are undefined, antibody testing is costly, they may incentivise exposure to infection and there are issues regarding re-infection and susceptibility to new strains. • The authors caution against relying on the framework for requiring vaccination against yellow fever in the case of SARS-CoV-2, as the cases are meaningfully different: ○ Nature of the vaccine rollout: Unlike the vaccine against yellow fever, the COVID-19 vaccine rollout involves the need in many cases for two doses, the variety of vaccines, and the absence of guidelines for homogenous documentation. ▪ Questions to consider: Are all vaccines equal? Would documentation of a receipt of a vaccine not licensed in the country being visited be adequate? If not, equity issues could be compounded. ○ Efficacy: It is not known if any of the currently available vaccines will prevent those who have been vaccinated from transmitting the virus. **Equity/Ethical Considerations** • Vaccination passports are associated with equity issues given current restrictions to vaccine access, resulting in potential exacerbation of discrimination. • Privacy plagues the digital approach, and digital solutions combining health data and identification could exclude those who do not own a smartphone or access to stable internet connections. • If these passports are introduced, it could also be interpreted as making the vaccine compulsory, since those who will not be vaccinated will be deprived of their freedom to travel. ○ The ethical counterargument relates to the restriction of free movement for individuals, potentially including those vaccinated who may be at low risk of transmitting COVID-19 and therefore pose little or no public health risk. ○ The 1950 Convention for the Protection of Human Rights and Fundamental Freedoms is a legal tool that defends individual rights and freedoms in all signatory countries, stating that everyone has a right to freedom of movement that cannot be restricted but 'for the prevention of the spreading of infectious diseases'.
Tanner, Ryan, and Colleen M. Flood. Vaccine Passports Done Equitably. *JAMA Health Forum* 2, no. 4 (April 21, 2021): e210972.	Editorial	**Overview** • In this editorial the authors consider the equity risks involved with vaccine passports and discuss the ways in which policy makers can promote equity in the context of vaccination and vaccine passports. **Equity Considerations** • In general, the problem is that existing inequities threaten the future equitability of any vaccine passport scheme.

Source	Type of Source	Summary of Findings
		• There may be, however, ways to promote equity: ○ A community-led approach to promoting vaccine uptake executed by trusted community leaders, organizations, and local health care institutions could address the issue of mistrust. ○ It would also be advisable to implement systems to monitor the outcomes of vaccine passports themselves: monitoring brings accountability and transparency and provides information to guide future policy making. • Disallowing vaccine passports will not fix our inequities, and there are obvious situations in which requiring proof of vaccination is appropriate and well advised. ○ For instance, there is a clear public health interest in tightly controlling international travel during a pandemic, and many governments, airlines, and others have been motivated to implement proof of vaccination as a condition for air travel. • With respect to people who cannot be vaccinated for health reasons, there is middle ground here: it is unnecessary to completely bar unvaccinated people from activities like air travel. Vaccine passports could merely facilitate a fast lane for travel without the extra testing, quarantines, or other measures that the pandemic has made necessary in many places. • Regarding domestic use of vaccine passports: ○ In some contexts, vaccination requirements are justified from a public health perspective. For instance, requiring proof of vaccination from health care workers or from individuals applying for admission into long-term care. • If passports can encourage vaccination and speed up a return to normalcy, then groups who are at greater risk from COVID-19 will benefit as well. **Implications** • It is imperative that vaccine distribution and access be as equitable as possible, but disallowing vaccine passports will not secure vaccine equity.
Voo, Teck Chuan, Hannah Clapham, and Clarence C Tam. Ethical Implementation of Immunity Passports During the COVID-19 Pandemic. *The Journal of Infectious Diseases* 222, no. 5 (August 4, 2020): 715–18.	Journal article	**Overview** • This paper brings together key scientific uncertainties regarding the use of serological tests to assure immune status and a public health ethics perspective to inform key considerations in the ethical implementation of immunity passport policies. **Key Considerations** • Immunity passports could result in greater inequity, the stigmatization of certain sectors of society, and heightened risks and unequal treatment of individuals due to erroneous test results. • Immunity passports could, however, be used to achieve collective benefits and benefits for specific populations besides facilitating economic recovery. • **Specified Use Cases:** The authors conclude that sector-based policies that prioritize access to testing based on societal need are likely to be fairer and logistically more feasible, while minimizing stigma and reducing incentives for fraud.
Voo, Teck Chuan, Andreas A Reis, Beatriz Thomé, Calvin WL Ho, Clarence C Tam, Cassandra Kelly-Cirino, Ezekiel Emanuel, et al. Immunity Certification for COVID-19: Ethical Considerations. *Bulletin of the World Health Organization*	Journal article	**Overview** • In this article, the authors discuss key justifications and considerations for the ethical acceptability of immunity certification to exempt individuals from restrictive measures during the COVID-19 pandemic. **Ethical Considerations** • By stratifying members of society into different tiers of risk of infection and contagiousness, an immunity certification programme may result in unequal treatment of individuals that is based on ethically irrelevant considerations of ethnicity, religion, socioeconomic status or similar differential traits.

Source	Type of Source	Summary of Findings
99, no. 2 (February 1, 2021): 155–61.		• Immunity certification should not be used to dictate which individuals or groups can access an area or activity during the pandemic (or after it, if a vaccine is not available) when other measures, such as face masks, physical distancing and hand hygiene, can be implemented to reduce risks to an acceptable level. • Governments should seek to prevent immunity certification policies – public and private – from making disadvantages worse in terms of opportunities for health care, employment, housing and so forth for particular populations. **Implementation Considerations** • For an immunity certification scheme to be ethically acceptable, attention also must be given to its implementation in the following areas: ○ Test error: the degree of tolerable error must be determined. ○ Incentives and counterfeits: Test results should be securely linked to biometric identifiers or a protected digital identity to minimize fraudulent certificates. ○ Privacy and Stigma: To minimize data abuse, immunity certificates, if kept in a database, should be controlled by a trusted agency. **Implications** • As well as needing to meet robust scientific criteria, the ethical acceptability of immunity certification depends on its uses and policy objectives and the measures in place to reduce potential harms and prevent disproportionate burdens on non-certified individuals and violation of individual liberties and rights.
Waller, Jo, G James Rubin, Henry W W Potts, Abigail L Mottershaw, and Theresa M Marteau. 'Immunity Passports' for SARS-CoV-2: An Online Experimental Study of the Impact of Antibody Test Terminology on Perceived Risk and Behaviour. *BMJ Open* 10, no. 8 (August 2020): e040448.	Single study	**Overview** • The objective of this study was to assess the impact of describing an antibody-positive test result using the terms Immunity and Passport or Certificate, alone or in combination, on perceived risk of becoming infected SARS-CoV-2 and protective behaviours. **Findings** • When using the term Immunity (vs Antibody), 19.1% of participants (95% CI 16.1% to 22.5%) (vs 9.8% (95% CI 7.5% to 12.4%)) perceived no risk of catching coronavirus given an antibody-positive test result (adjusted OR (AOR): 2.91 (95% CI 1.52 to 5.55)). • Using the terms Passport or Certificate—as opposed to Test—had no significant effect (AOR: 1.24 (95% CI 0.62 to 2.48) and AOR: 0.96 (95% CI 0.47 to 1.99) respectively). • Across groups, perceiving no risk of infection was associated with an intention to wash hands less frequently (AOR: 2.32 (95% CI 1.25 to 4.28)); there was no significant association with intended avoidance of physical contact (AOR: 1.37 (95% CI 0.93 to 2.03)). **Implications** • Using the term Immunity (vs Antibody) to describe antibody tests for SARS-CoV-2 increases the proportion of people believing that an antibody-positive result means they have no risk of catching coronavirus in the future, a perception that may be associated with less frequent hand washing.
Wilf-Miron, Rachel, Vicki Myers, and Mor Saban. Incentivizing Vaccination Uptake: The 'Green Pass' Proposal in Israel. *JAMA* 325, no. 15 (April 20, 2021): 1503.	Editorial	**Overview** • This article aims to describe the possible impact of a vaccine passport on vaccine coverage by incentivizing vaccine uptake.

Source	Type of Source	Summary of Findings
		Key Considerations • The aim of Israel's Green Pass[p] is to encourage citizens, including those at lower risk of severe COVID-19 disease, to receive vaccination in a national attempt to achieve a 95% immunization rate, presumably a sufficient percentage to reach herd immunity. • Pass forgery is regarded as a criminal act punishable by fine or incarceration. • It seems that an approach of mandatory vaccination and penalties for failure to comply will be abandoned and replaced by the incentives promised by the green pass. • Issues of equity, with groups of low socioeconomic status initially demonstrating lower vaccination rates despite higher disease burden, should be addressed with outreach actions. **Estimated Impact** • In a recent survey conducted in 2021, among 503 Israelis, 21% reported not intending to be vaccinated soon. • Of these individuals (n = 106), 31% said the offer of a green pass and the associated benefits would possibly or definitely persuade them to get vaccinated, whereas 46% said that incentives would not persuade them. **Implications** • Although the proposed green pass model provides little more than freer movement, once adopted, after months of restrictions it certainly could be perceived as an incentive. • If this model is to be implemented, all barriers to vaccination must be removed for individuals who want to receive the vaccine, including obstacles related to access, logistics, and health literacy, as well as provision of reliable information to help people make an informed and free choice.
Wilson, Kumanan, and Colleen M. Flood. Implementing Digital Passports for SARS-CoV-2 Immunization in Canada. *Canadian Medical Association Journal* 193, no. 14 (April 6, 2021): E486–88.	Commentary	Overview • In this paper, the authors discuss how SARS-CoV-2 immunization passports could work, the infrastructure required to operationalize them and potential barriers and limitations to their use. Key Considerations • Public authorities and private entities may soon require people to provide proof of immunization to SARS-CoV-2 in certain contexts as an adjunct to efforts to safely re-open society. • International bodies have explored potential standards and immunization passport solutions, with an initial focus on international travel. • In Canada, provincial and territorial governments should ensure their ability to issue a cryptographically signed digital vaccination record from a government repository to operationalize immunization passports that meet national standards and are aligned with international initiatives. • If governments do not implement immunization passports, private corporations (e.g., airlines and large event venues) may develop their own requirements and systems, potentially leading to problems related to equity, privacy and coercion. • Limited access to vaccines, technology and other resources may prevent people from using immunization passports.

[p] Described in Table 3 above; see (Israel, 2021).

Source	Type of Source	Summary of Findings
Xafis, Vicki, G. Owen Schaefer, Markus K. Labude, Yujia Zhu, and Li Yan Hsu. The Perfect Moral Storm: Diverse Ethical Considerations in the COVID-19 Pandemic. *Asian Bioethics Review* 12, no. 2 (June 2020): 65–83.	Original paper	Overview • This paper aims to highlight ethical issues related to COVID-19, including exit strategies such as immunity passports and COVID-19 vaccines. Key Considerations • Public authorities and private entities may soon require people to provide proof of immunization for SARS-CoV-2 in certain contexts as an adjunct to efforts to safely re-open society. • In addition to potentially prolonging the spread of COVID-19, it may be that, in our efforts to benefit society and our economies, we create yet another type of inequity. ○ This could arise from the limited availability of tests, which disadvantaged people, who are most in need of work, may not be able to have access to serological tests, especially if they have no one to advocate for them. ○ The initial scarcity of a vaccine may also lead to inequitable distribution globally with wealthier nations benefiting before poorer nations.

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