



Public Health  
Agency of Canada

Agence de la santé  
publique du Canada

Canada

# PVC Overview

## PROOF OF VACCINE CREDENTIAL PROGRAM

Oct 2021

PROTECTING AND EMPOWERING CANADIANS  
TO IMPROVE THEIR HEALTH



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# Overview: The Canadian PVC

What people will have in hand when traveling

# A Pan-Canadian standard for PVC: The SMART Health Card

PHAC has aligned on a pan-Canadian standard **for all Canadian provinces and territories (PTs) building on SMART Health Cards specifications to create a consistent approach in Canada** and as well as for adoption among international entities

## Standard selected – SMART Health Cards

**The 2D QR code follows the SMART Health Cards framework from the Vaccine Credential Initiative (VCI):**

- Open source QR code specs widely available and recognized
- Speed of execution through libraries and other open-source accelerators – for both issuers and verifiers
- A growing list of trusted issuers on the Common Trust Network
- Portability to native mobile phone health/COVID passes

**The QR code holds all the data elements.** As such:

- Both personal and vaccination records are included
- The individual owns the digital certificate
- No call backs needed to provincial or territorial registries
- Allows for inclusion of COVID-19 test records as well, future phases

# Benefits of working towards a pan-Canadian standard - SMART



**Enduring** given that it would be a **neutral, factual document** that would never need to be revoked (and new vaccination events could be added)



**Flexible** given the ability to set different rules depending on the verifier / foreign border (rich dataset displayed vs. thumbs-up/thumbs-down); can be easily updated as vaccine science evolves



**Maximizes accessibility** via a paper or electronic format (can be printed home or in any service centre); verification process can occur offline



**Readily available & easily verifiable** by third parties



The adoption of the standard by all PTs supports **interoperability between PTs** (e.g., interprovincial travel)



Supports **domestic use cases for PTs who wish to leverage this tool**



SMART Health Card Framework is based on HL7 ® FHIR which is the **industry standard for health records**



Common-look-and-feel makes it **easier for foreign borders to recognize Canadian PVCs** issued by PTs



Detailed dataset **aligned with international travel requirements**


# PVC – Pan-Canadian Common Look and Feel


PT-issued PVCs standardize health information following the SMART specification. The following figures show the Canadian ‘look-and-feel’ PDF issued by a PT embedding a SMART Health Card QR code:

COVID-19 Proof of Vaccination / Preuve de vaccination contre la COVID-19

Issuing Province / Territory  
Province / Territoire de délivrance

Country of issuance /  
Pays d'émission


  
Yukon

  
Canada

Name / Nom : Doe, Jane Liz

Date of birth / Date de naissance : 02 JUL / JUIL 1985

SMART Health Cards QR Code / Code QR de la carte Santé SMART



Vaccinations administered / Vaccins reçus : 2

Date : 05 FEB / FÉV 2021

Product / Produit : Moderna Spikevax COVID-19

Lot : 818364

Date : 05 JAN / JAN 2021

Product / Produit : Moderna Spikevax COVID-19


Lot : Not available / Non disponible

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PVC – Canadian Look and Feel specifications


  
Yukon Territory / Territoire

For more information, visit [yukon.ca](https://yukon.ca)

Pour en savoir plus, rendez-vous au [yukon.ca](https://yukon.ca)

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PVC Format and Technical Specifications

Pan-Canadian Vaccination Credentials

v1.4.2 (October 1, 2021)



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PVC – Tech specs

# What goes in the PVC?

COVID-19 Proof of Vaccination / Preuve de vaccination contre la COVID-19

Issuing Province / Territory  
Province / Territoire de délivrance

Country of issuance /  
Pays d'émission

Yukon

Canada

1

Name / Nom : Doe, Jane Liz

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SMART Health Cards QR Code / Code QR de la carte Santé SMART

Vaccinations administered / Vaccins reçus : 2

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Date : 05 FEB / FÉV 2021

Product / Produit : Moderna Spikevax COVID-19

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3

Date : 05 JAN / JAN 2021

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FHIR Resource  
VaccinationCredentialPatient

## 1 User information

### Data Elements

Given Name(s)  
Family Name  
Birthdate

FHIR Resource  
VaccinationCredentialImmunization

## 2 First vaccine

FHIR Resource  
VaccinationCredentialImmunization

## 3 Second vaccine

### Data Elements (x2)

Security  
Vaccine Code  
Occurrence Date  
Lot Number  
Performer Name  
Vaccination Status  
Vaccine Manufacturer

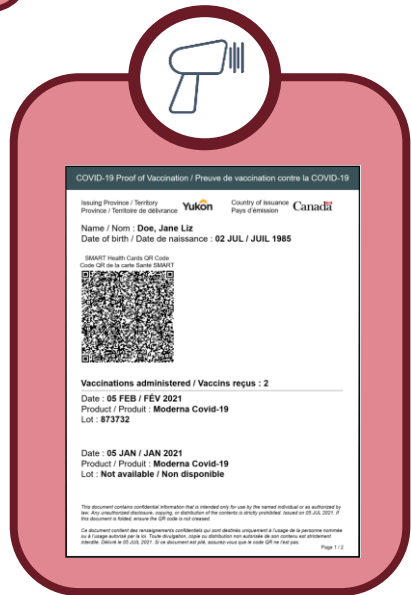
- PVCs are designed to embed vaccination events in priority. Based on the current design **more than five vaccination events** have been confirmed to fit in a single SMART Health Card QR code.
  - However, if the PT at their discretion **includes additional non-vaccination information** in the QR code, it is possible that more than one QR code may be required.
- Human readable content related to non-vaccination information e.g. tests, **can be printed on a second page (optional PT-specific page)**, if required. PTs have been instructed to ensure the QR code(s) remains fully compatible with the SMART Health Cards specifications.
- PTs have been producing PVC **samples for compliance testing** to PHAC and CBSA to ensure functionality and alignment with the specifications.

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# Reading and Verifying Vaccination QR Codes

## 1 Ingesting the PVC...



## 2 Reading the QR code

Verification is not required in order to read the data.

Reading the QR Code gives access to all of the data contained in the PVC.

Commercially available apps are available to ingest the SHC format data in a readable format.

Ingesting apps can be designed to constrain what data is displayed

## 3 Verifying the document

Verifying provides assurance that the data is provided by a trusted source and that it has not been tampered with.

PVC is digitally signed by the PT. PT public key required to complete the verification is extracted from a URL embedded within the QR code.

Trust is established via issuer whitelist of URL distributed to verifiers independently or via CommonTrust Network

GoC is providing the whitelist to all verifiers across Canada and Internationally.

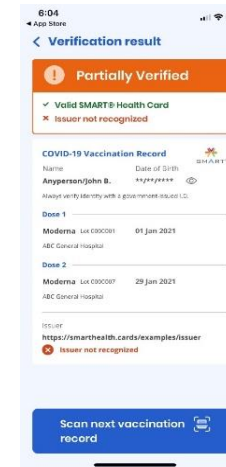


## Ingesting Apps can be developed for different use cases

Most use cases (e.g. international travel) require verification that the data contained in the document is from a trusted source and is not fraudulent.

Some use cases may require displaying the contents of the QR code along with the verification result.

**Left sample:** SMART Health Verifier app displaying QR code contents and verification result



Some use cases may only require a display of client identity data and a go/no-go signal based on verification and/or application of local business rules.

**Left sample:** Quebec's VaxiCode Verif app displaying verification and local business rules results, and client name only



PT CONDUCTING THE TEST FOR INTEROPERABILITY												
	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NL	YT	
PTS WITH WHITELISTED URL & SAMPLE PVC AVAILABLE TO BE TESTED	BC	N/A	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available
	AB	Not Yet Available	N/A	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available
	SK	No	No	N/A	Whitelisted URL Complete	TBC	Complete	No	Complete	No	Next Week	No
	MB	No	No	PVC Tested – Prod URL to be Whitelisted	N/A	TBC	Complete	No	Complete	No	Next Week	No
	ON	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	N/A	Complete	No	Complete	No	Next Week	No
	QC	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	N/A	No	Complete	No	Next Week	No
	NB	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	N/A	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available
	NS	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	Complete	No	N/A	No	Next Week	No
	PEI	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Not Yet Available	Complete	N/A	Not Yet Available	Not Yet Available
	NL	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	Complete	No	Complete	No	N/A	No
	YT	Tested/ Not in Prod	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	Complete	No	Complete	No	Next Week	N/A
	NT	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	Complete	No	Complete	No	Next Week	No
	NU	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	Complete	No	Complete	No	Next Week	No
	CAF	No	No	PVC Tested – Prod URL to be Whitelisted	Whitelisted URL Complete	TBC	URL Issue Reported (TBC)	No	Complete	No	Next Week	No

Note: NT, NU, and CAF do not have plans to test, given that they will not have a Verifier app



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# The SMART Health Card Ecosystem

# Where are SMART Health Cards used?

A growing ecosystem has developed around the SMART Health Cards standard

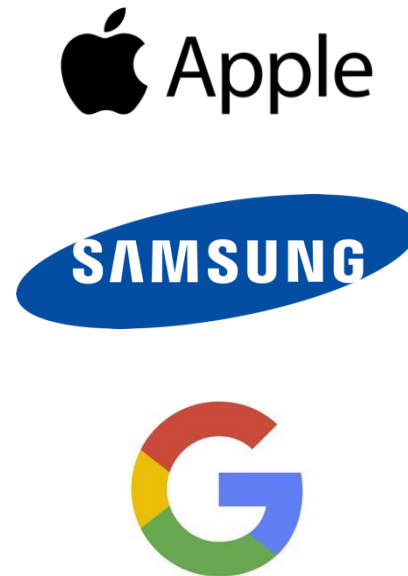
## Issuers



### US states

(California, New York, Hawai'i, Louisiana);  
Walmart; Canadian PTs (Quebec, Yukon,  
Saskatchewan) with more US States and  
Canadian provinces coming online in the next  
few months

## Holders



Apple (iOS 15), Samsung Pay  
US, Google

## Verifiers



Microsoft, CommonsPass, PathCheck,  
Airlines (JetBlue, Hawaiian Airlines,  
Swiss International Airlines, Virgin  
Atlantic, United Airlines, Lufthansa)

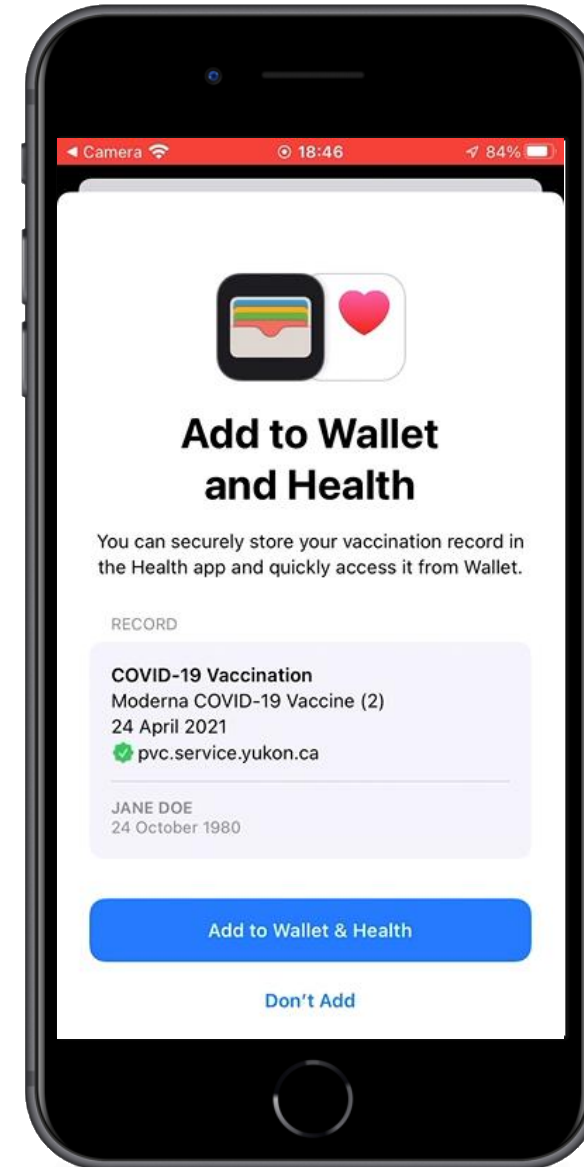
# Update on the iOS ecosystem

Apple has adopted SMART Health Cards to allow iPhone user to store their COVID-19 vaccination record in Apple Health.

## How do you share your SMART Health Card?

- Verification can be done in person by scanning the SMART Health Card in the Apple Wallet (iOS 15.1 beta)
- Verification can be done remotely using the new “verifiable health record” feature of Apple HealthKit

**Canadian PVCs are compatible with iOS 15 and can be scanned with the Camera app.**

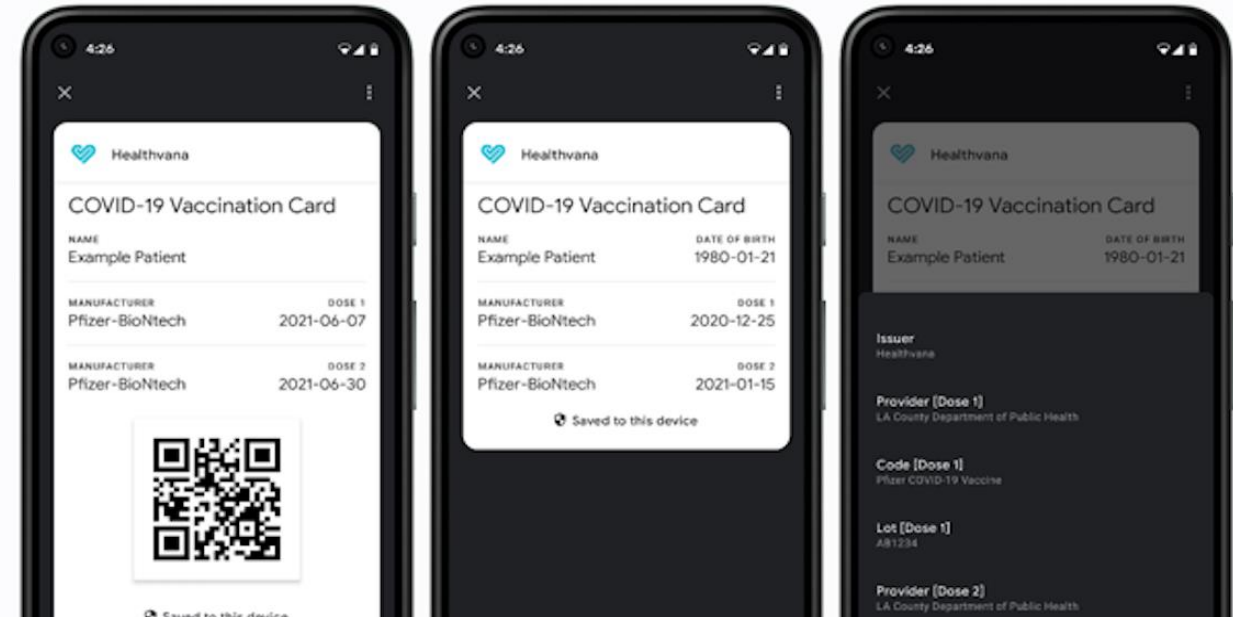


# Update on the Android ecosystem



On Android, multiple solutions have emerged to manage verifiable COVID-19 vaccination records:

- Google's Covid Cards allow the Google Pay wallet to store and display SMART Health Cards just like Apple Wallet
- Some of the US State implementations, including California are natively supporting Google Pay. Google's Covid Cards also supports a much wider variety of credentials beyond SHCs but are currently only available in US and Australia.
- The CommonHealth app available for Android can also play the same role as Apple Health to hold vaccination records

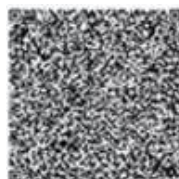
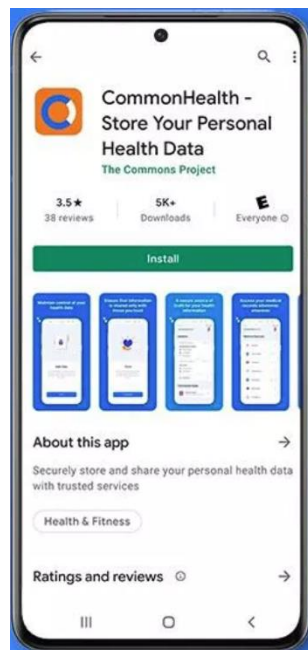


# Case study: Using SMART Health Cards on Samsung phones (US)

SAMSUNG



Samsung phone users in the US can add their proof of vaccination via the CommonHealth app to their Samsung Pay wallet.



## Step 1

Passenger installs the CommonHealth app from the Commons project and obtains a proof of vaccine certificate in the SMART Health Card (e.g. from the State of California)



## Step 2

Passenger adds health card in SMART Health Card format to Samsung Pay wallet (available in the United States only)

# Commons Project – Relevant Apps



## Commons Project Verifier App – API Now Available (next slide)

The Commons Project has developed a verifier app that validates the following:

- ✓ Whether the SMART Health Card is valid
- ✓ Whether the issuer is in The CommonTrust Network's Registry of trusted issuers
- ✓ Key information on the SMART Health Card (issuer name, vaccine type, dates of vaccine doses, and name and date of birth of vaccine recipient).

The Commons Project Verifier app **does not apply local guidelines or policies** that dictate whether a person is allowed to travel.



## Commons Project CommonPass App

The CommonPass App enables users to present proof of vaccination or negative COVID-19 tests.

CommonPass assesses whether your lab test results or vaccination record:

- ✓ Comes from a trusted source, and
- ✓ Satisfies the health screening requirements of the country or state you want to enter

If you meet the requirements of your destination, CommonPass **generates a simple “yes” or “no” certificate** that you can share without revealing any personal health information.

The app is live and in use. It is integrated with airlines for specific destinations and applies appropriate rules for travel e.g. Hawaii, Aruba and from Germany to the US on Lufthansa.



## CommonCheck – coming soon

CommonCheck functions as an embedded or standalone web service that presents a traveler with

- ✓ entry requirements
- ✓ upload health information (SHCs, EU DCCs, attestations, even CDC cards), and then
- ✓ confirms clearance to entry and the requisite information is given to destination authorities.

This is enabled through the destination website or mobile app. Rules for each destination must be provided to CommonCheck.

Three tiers of API service. 1) verifying any credentials that would be accepted by CommonCheck are valid and from a trusted issuer 2) verifying SHCs are valid and from a trusted issuer 3) verifying only that an issuer is a trusted issuer.



# API suite released

## In summary


The Commons Project has built the CommonTrust Network API Suite for organizations wishing to verify SMART Health Cards. The API components allow organizations to verify the issuer of the SMART Health Card and validate the SMART Health Card. These API components may appeal to different types of verifying organizations, depending on the level of integration and verification required.

## Possible applications for Canada

- Integrate in ArriveCAN to verify SHC from the CommonTrust Network
- Integrate in PT verifier apps to verify SHC from the entire CommonTrust Network

## More info

- Documentation for CommonTrust Network API Suite: <https://github.com/the-commons-project/commontrust-api>



### CommonTrust Network API Suite

#### Offering Deep Dive

October 5, 2021

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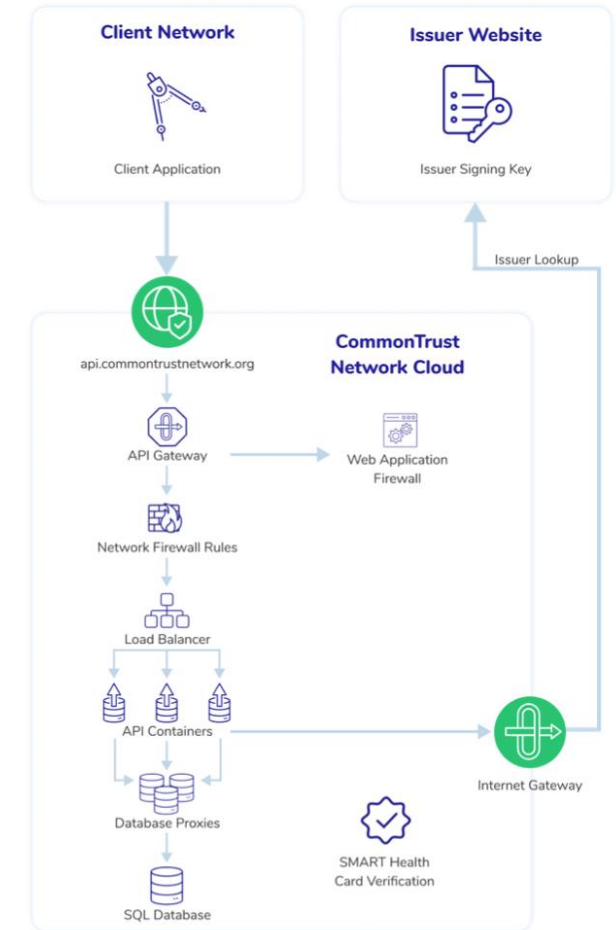
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#### Executive Summary

SMART Health Cards have rapidly emerged as the de facto standard for digital health credentials in the United States. With states, pharmacies, health systems, and insurance providers all adopting the standards, this digital, verifiable credential is now available to a significant proportion of the population of vaccinated Americans.

Given the availability of SMART Health Cards, and because they are based on an open standard and can be issued by anyone, it is important to know who issued a given SMART Health Card.

The CommonTrust Network is a registry of health data sources that includes public and private organizations committed to providing individuals with access to their health information using open, interoperable standards. Via a number of apps, services, and APIs, The Commons Project



*HL overview of the CommonTrust Network API suite (cloud hosted solution built on Amazon Web Services (AWS), across multiple zones for high availability and disaster recovery)*

## CommonTrust and VCI Directory Merging

- As verifiers are leveraged, or custom-built, referring to the trusted issuers list on the Common Trust Network or VCI directory will cover most, if not all, of the federal, provincial, territorial issuers of the pan-Canadian PVC.
  - **VCI Directory** - [vci-directory/vci-issuers.json at main · the-commons-project/vci-directory · GitHub](https://github.com/the-commons-project/vci-directory/blob/main/vci-directory/vci-issuers.json)
  - **Commons Trust Network** - <https://www.commontrustnetwork.org/verifier-list>
- We have encouraged our provinces and territories to sign up to these trusted verifier lists to enable interoperability.

# Resources and References

Being based on the SMART Health Cards standard, the proof of vaccine certificate is supported by a growing open source ecosystem with a number of resources that can be used to issue and validate SMART Health Cards. The following lists publicly available resources:

- **Landing page of the SMART Health Cards specifications:** <https://spec.smarthealth.cards/>
- **Vaccination Credential Bundle Specification:** Refer to <http://build.fhir.org/ig/dvci/vaccine-credential-ig/branches/main/StructureDefinition-vaccination-credential-bundle.html> for VCI spec when building the issuance of the vaccine certificate
- **Reference implementation:** <https://github.com/smart-on-fhir/health-cards/>
- **VCI Testing appliance:** [Verifier Portal \(smarthealth.cards\)](#)
- **SMART Health Cards validation SDK (from Microsoft):** <https://github.com/microsoft/health-cards-validation-SDK>
- **Libraries for SMART Health Cards:** <https://github.com/smart-on-fhir/health-cards/wiki/Libraries-for-SMART-Health-Cards>
- **COVID-19 CVX Vaccine Codes:** <https://www.cdc.gov/vaccines/programs/iis/COVID-19-related-codes.html>