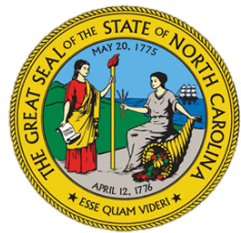# North Carolina COVID-19 Vaccine Management System (CVMS)

Automation Onboarding

Version 5

July 2021

Agenda

NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

Integration & Automation Review

Executive Summary

NCDHHS and the NC HIEA are partnering to leverage the existing infrastructure in place at your organization and the NC HealthConnex health information exchange (HIE) to submit vaccine records to the COVID-19 Vaccine Management System (CVMS).

This solution will utilize flat-file extracts of demographics and vaccine administration data to populate CVMS.

It will eliminate the need for registration of patients in CVMS and reduce the need for manual re-entry into CVMS of vaccine data entered in the pharmacy management systems (PMS).

Goals

1. Increase vaccination rate by reducing dual documentation steps
2. Improve user experience in CVMS by de-duplicating patient records using the NC HealthConnex master patient identifier (MPI)
3. Provide more timely and accurate reporting.

Steps

1. Establish secure connectivity with NC HealthConnex.
2. Create and send daily files adhering to the NC COVID Vaccine Reporting (NCVR) specification
3. Receive and remediate errors reported for rejected records

NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

Steps for Completing Integration

The following steps will be followed to create the integration between pharmacy management systems and CVMS.

Prep

- ❑ **Verify all necessary agreements are in place with NC HealthConnex**
  - NC HIEA representatives will reach out to you as needed to execute appropriate data sharing agreements. See Appendix B – Data Sharing Agreements for additional information
- ❑ **Confirm appropriate flat-file type + supplemental data feed based on federal or state allocation of vaccines**
  - State allocated vaccines must be reported using the NCVR file, while Federally allocated vaccines must be reported with CDC CVRS (preferably with supplemental HL7 VXU messages). Those using both Federal AND state vaccine inventory must report using the NCVR file.

Build

- ❑ **Develop and test internal processes for creating NCVR (or CVRS) file**
  - It is recommended that this be completed or at least in process prior to pursuing remaining steps. This ensures the integration development with NC HealthConnex can move quickly through testing and validation.
  - Please see here on the CDC website for the (Federal Only) CVRS CDC COVID-19 Vaccination Reporting Specification files & instructions.
  - Recurring meetings will provide technical support, time for Q&A, etc. These meetings should be attended by your technical point of contact.
- ❑ **Establish secure connectivity method (SFTP)**
  - A HIPAA-compliant secure connection is required to send data files into CVMS.
  - See Appendix C for more details on the supported connection types and steps for connecting.

CVMS sFTP Sign Up

Test

- ❑ **Send files for validation**
  - An initial test file containing a few days of records with PHI is requested for testing in secure pre-production environments.
  - A second file of at least 1500 records with NO PHI is requested for validation (if using NCVR file specification).
  - All files should be sent through the secure connection.
- ❑ **File validation / testing**
  - NC HealthConnex and NC DHHS will confirm all fields in the file meet specification requirements.
- ❑ **Error reporting**
  - Errors will be reported in an error file and sent via the same secure connection method (SFTP or DSM).
  - Remediation of the errors and resending of the files/new files is a requirement of the provider organization.
- ❑ **Operationalizing and automation**
  - Once the files have passed end to end testing, components in NC HealthConnex and CVMS will be promoted to production.
  - Provider organizations will need to handle ongoing issues by contacting the appropriate resources listed in Appendix F.

NCVR File Spec v7.2

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Onboarding Stages – Welcome

	1. Introductions	2. Newcomers	3. QA & UAT	4. Test to Prod Cutover	5. Production Support / Office Hours
Meeting	Automation Onboarding	CVMS Tech Calls	UAT Check-Ins	Pre-Launch and Launch Windows	Office Hours
When	Fri 2-3PM ET + Ad Hoc	Tues 1-2PM ET	Daily 2:30-3PM ET	Daily 3-4PM ET	Daily Time TBD
Who	All new entities – review recording prior to CVMS Tech Call	Prospective RPA & EHR users combined	Only those in "UAT testing" that week. Separate RPA & EHR touchpoints	Those ready for production cutover. All Hands-On Deck. Separate RPA & EHR touchpoints	Only those in production. Separate RPA & EHR touchpoints
Topics covered	Intro, Onboarding Review, Calendar of Meetings, Initial Technical Deep Dive	File Spec Review, Manual Validations	Progress on UAT, discuss known issues	Review and confirm successful production file passed E2E ingestion into CVMS	General production support
Outcomes	✓ Information Gathering	✓ Data Sharing Agreement ✓ Connectivity ✓ Manual File Validation	✓ CVRS: A few days of records, PHI file, 2 clean runs ✓ NCVR: A few days of records, PHI file, 2 clean runs ✓ NCVR: 1500 record Non-PHI file, 2 clean End to End runs	✓ Provider Prepares Locations for Production Launch\ ✓ 100 record PHI file, 1 clean BOT run ✓ Go Live	✓ Questions Answered ✓ Issues Resolved

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Providers with Federal Inventory

If you have **FEDERAL ONLY COVID** Vaccine Inventory

- CDC data clearinghouse file (CVRS) will be sufficient to provide data for federal only supplied vaccine (no state vaccine)
- Send vaccinations given in North Carolina only in the CVRS file via SFTP connection to NC HIE
- CVRS file sends to **HIE AFTER** submission to CDC & any transaction remediation needed
- CDC data sharing does not provide sufficient patient & location info for DHHS use ☹ We are asking again
- Please see **here on the CDC website** for the (Federal Only) CVRS CDC COVID-19 Vaccination Reporting Specification files & instructions.

MUST ensure State doses are reported via CVMS, and Federal Doses are only reported to Fed once (your CVRS or via CVMS)

- **If inventory is federal**, then CVRS / federal CDC file only but for vaccinations in the counties in NC only (presuming you are sending CVRS file to CDC daily). Federal inventory is NOT added to CVMS
- **If inventory is from State of NC**, then inventory is Managed in CVMS, transactions sent via NCVR file OR manual entry into CVMS
- If inventory is from **BOTH** fed & state, then State inventory on NCVR & manually enter Fed inventory into CVMS Must differentiate fed & state transactions to protect inventory in CVMS & Federal reporting

If receiving Federal inventory, State inventory will transition out. State will work with provider to ensure needed allocations are available.

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Race & Ethnicity – Critical Data Values

- **Required Goal is 99% data population of Race & Ethnicity.   No more than 1% can be "unknown".**
  - We understand fixing historical data may not be possible.
  - We don't expect you to have 99% historically, but business processes need to change NOW to achieve that Goal.
  - **To move into the CVMS Automation production solution, your Race & Ethnicity data population must be 97% or higher *AND on track toward, with a specific plan for, hitting 99%. "Unknown" must be no more than 3%, and must reach <=1%**

- **"Declined to state" will be a valid option (~3/1) but should be reserved for when patients ACTUALLY declined to state.**

- **Once in production, if a provider's Race & Ethnicity data population falls below the 99% - 97% threshold, we may need to pause automation processing and revert back to dual manual entry for that provider until the data rate recovers.**

Data File Naming Convention

NCVR File Name Differentiation – Direct

PROD (contains PROD)

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_PROD_PHI_DIRECT_VX.txt**

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_PROD_PHI_DIRECT_VX.txt_YYYY-MM-DD_HH.MM.SS.MSS_error.txt** (error file HIE sends to providers)

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_PROD_PHI_DIRECT_CORRECTIONS_VX.txt** (file providers send to HIE for transaction corrections & re-processing)

QA & UAT (removed TEST from the name)

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_NOPHI_DIRECT_VX.txt**

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_PHI_DIRECT_VX.txt** (for HIE validation in Staging)

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

CVRS File Name Differentiation – Direct

*45 field file used with federal only inventory and when you are reporting to CDC yourself

PROD **(contains PROD & CVRS)**

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_CVRS_PROD_PHI_VX.txt**

QA & UAT **(removed TEST from the name & contains CVRS)**

- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_CVRS_NOPHI_VX.txt**
- **ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_CVRS_PHI_VX.txt** **(for HIE validation in Staging)**

VXU File Name Differentiation – Direct

*Message type used by CVRS senders to share enhanced demographics

PROD **(contains PROD & VXU)**

ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_VXU_PROD_PHI_VX.txt

QA & UAT **(contains VXU)**

ORGNAMECOVID_YYYYMMDDHHMMSS_CVMS_VXU_PHI_VX.txt **(for HIE validation in Staging)**

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Onboarding Meetings: Recordings

Below are recordings of two onboarding meetings which will help you understand the objectives, process, and data used for CVMS Automation.

Please feel free to review these sessions prior to joining our Information Sharing or CVMS Tech Calls

(1) The Leveraging NC HealthConnex Tele Town Hall from Feb 24th was more participant facing

    Leveraging NC HealthConnex to Help Your Practice Fight Covid-19-20210224 1702-1
    Wednesday, February 24, 2021
     2:02 PM | (UTC-05:00) Eastern Time (US & Canada)
    Play recording (57 mins) | Recording password: (This recording does not require a password.)

(2) The CVMS Vendor Call recording from March 2nd was more of a technical deep dive for the County Health Department vendors and technical contacts.

    CVMS Vendor Call-20210302 2004-1
    Tuesday, March 2, 2021
    4:27 PM | (UTC-05:00) Eastern Time (US & Canada)
    Play recording (59 mins) | Recording password: pFXJAJh7

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Getting Started

Getting Started

Intake of new files for testing occurs weekly on a first in, first out basis.

To enroll in CVMS Automation, please reach to the connectivity team (below). We look forward to reserving your spot and receiving your files as soon as you are ready.

<u>**Next Steps**</u>

1. File Preparation
   - ❑ Review the NCVR file layout OR if Federal Inventory only, simply CVRS / CDC file
   - ❑ Join a Q&A session (schedule forthcoming)

   NOTE: NC HIEA can assist with PMS vendor coordination as needed to extract files

2. Connectivity & Data Sharing Agreement
   - ❑ Send an email to: Joe.Amaturo@sas.com and Meredith.Dennen@sas.com to begin connectivity setup, confirm data connectivity agreement status, and reserve your estimated onboarding spot

<u>**Other Info**</u>

- Data Sharing Agreement - Appendix B - Data Sharing Agreements
- Key Contacts - Appendix F for more information
- Key Notes (Links) - Appendix G for more information

NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

Appendix

Integration Requirements

In order to enable integration of vaccine data into CVMS, the following governance and technical components should be in place.

1. Retail Pharmacy CVMS Data Use Agreement

   - Appendix B for more information

2. Secure connection to NC HealthConnex via standard methods such as secure file transfer (SFTP) or direct secure messaging (DSM).

   - Appendix C for more information

3. Submission of COVID-19 vaccine data to NC HealthConnex in a flat-file adhering to the appropriate reporting specification:

   - NC allocated vaccines require the NC COVID-19 Vaccine Reporting (NCVR) file
   - Federally allocated vaccines require the CDC COVID-19 Vaccine Reporting Specification (CVRS) file

NOTE: Submission of patient demographics via HL7 standards (ADT or VXU) is requested where possible for patient matching and updates of NC HealthConnex MPI records for CVMS.

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

CVMS Data Flow Options
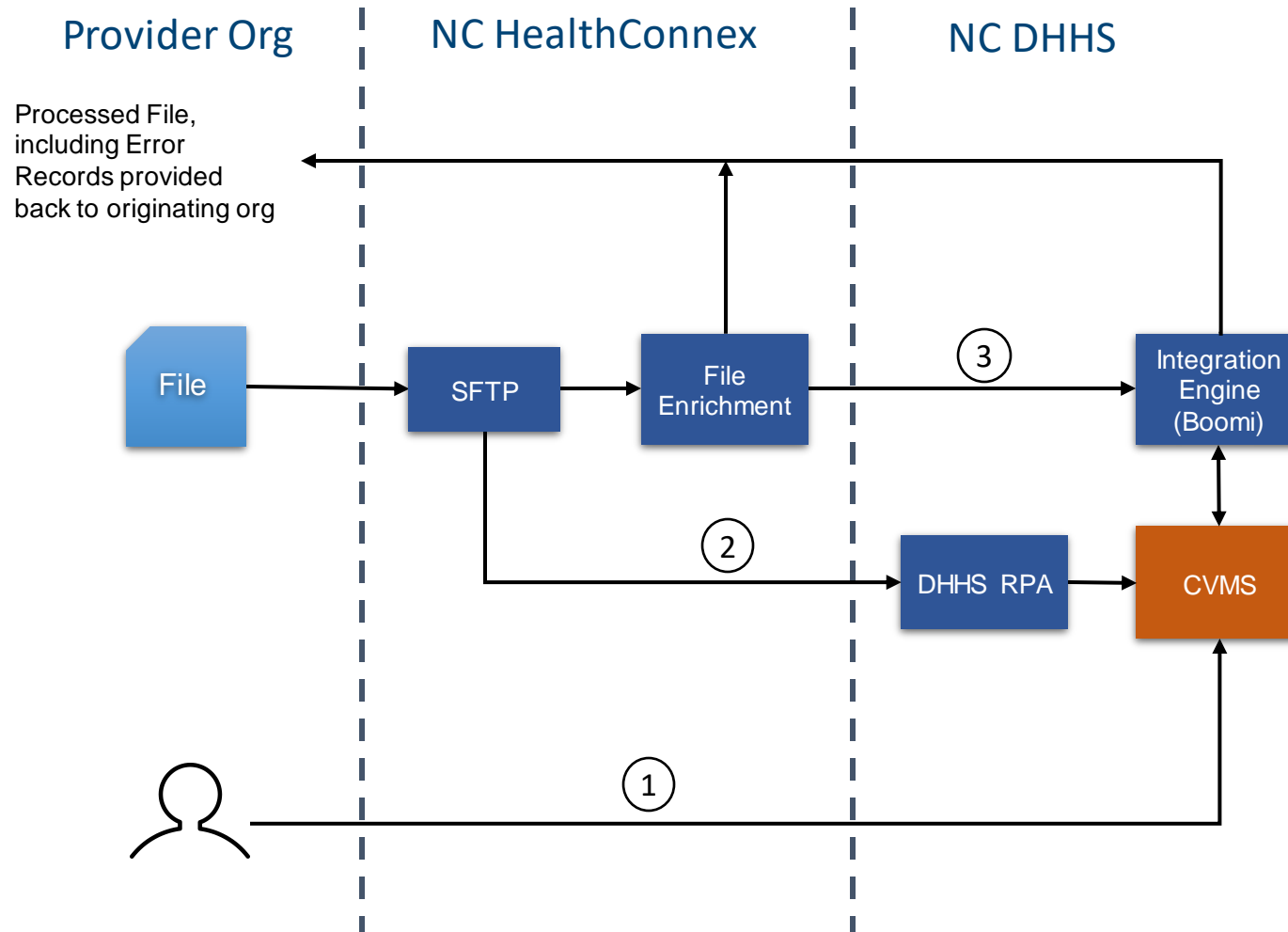
Options:

1. Manual user entry to CVMS for patient registrations and vaccine administration details.

2. Digital worker (RPA) solution for NCVR files. Will be replaced by the ETL integration process.

3. ETL integration process, which is the long-term solution for NCVR files.

Key Terms:

RPA - Robotic Process Automation or digital worker

ETL – Extract, Transform, Load process

NCVR Data File Q&A

Comments

- NDC Unit of Sale (use this below) vs Unit of Use (do NOT use this)
- Inventory will be decremented in CVMS if the below is used – else inventory will not function properly
- Some partners may use separate application outside of EHR (RX Works) for vax inventory mgmt.
- Some partners are hard coding the choice as only one type is being received by some today (02). If 03 is received, partners will need to revisit solution

Name	vm_doses_per_vial_calvax c	vm_manufacturer_calvax c	nc_ndc_product_c
Pfizer-BioNTech (195MDV) COVID-19 Vaccine	5	Pfizer-BioNTech	59267-1000-02
Pfizer-BioNTech (25MDV) COVID-19 Vaccine	5	Pfizer-BioNTech	59267-1000-03
Moderna (10MDV) COVID-19 Vaccine	10	Moderna US, Inc.	80777-0273-99

J&J NDC code

- NDC Code – will be 11 Digits 59676-0580-15
- J&J – Status should always be 'Dose One Administered' (field 33)

Questions

CVMS = need unit of sale, outer #, (02 for Pfizer)

Administration event = most likely leverages unit of use in local EHR, inner #, (01 for Pfizer)

If you are using Epic and Clarity:

- The RX_NDC table holds both the inner and outer NDC codes, so you could link to that using IMMUNE.NDC_NUM_ID and pull the corresponding outer code (RX_NDC.PRICE_FROM_OUT_NDC) instead of hard-coding it.
- It does require formatting to get it to match what's on the mapping tab of the file spec (at least for me it does).

Appendix Misc.

Error Handling POCs

Providers to Assign: Points of contact for error handling / file processing notifications, and general production coordination

- NCVR & CVRS Providers: need POC (or multiple POC) from each organization for error handling

Ticketing/support processes will be within CVMS Help Desk Portal (Service Now) and office hours support.

[CVMS Vaccine Support - As a Provider, how do I submit a question, issue or request for assistance related to CVMS? (servicenowservices.com)](servicenowservices.com)

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Appendix A – Roles

The integration of vaccine data into CVMS requires collaboration across multiple State, vendor, and provider organizations. The following table outlines the high-level roles each entity will play in the integration process.

Organization	Actors	Potential Scope
Provider Organization	Business Owner Technical Resources	Data sharing (BAA) agreements; Secure connectivity; Sending patient demographics feed; Creating EHR extract; Error handling.
NC HealthConnex	HIEA Staff SAS Technical Resources	Data sharing (BAA) agreements; Secure connectivity; Patient matching from demographics feed; Processing EHR extract; Transmitting error reports.
NC DHHS	Integration Support Team	Processing EHR extract into CVMS; reporting of errors; Solution oversight.

Appendix B – Data Sharing Agreements

For NC HealthConnex to receive protected health information (PHI) for vaccine administration purposes, there must be a business associate agreement (BAA) between the Participant organization and NC HealthConnex.

For Participants that are currently on a full participation agreement, the BAA is already included. No further action is required for data sharing.

For Participants on a submission-only participation agreement, the NC HIEA has developed an amendment process to allow submission of data for patients beyond the data required by law.

For Pharmacy entities, the Retail Pharmacy CVMS DUA has been established for sharing COVID vaccine data with the HIE.

NOTE: More information about the NC HealthConnex connection process, including data sharing contractual requirements, can be found on the NC HIEA website's how to connect page. Additional questions may be directed to hiea@nc.gov.

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Appendix C – Connectivity Information

NC HealthConnex offers several secure HIPAA-compliant methods for transmitting data between the HIE and Participant EHR systems.

CVMS sFTP Sign Up
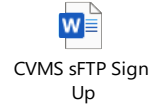
Secure File Transfer Protocol (SFTP)

- NC HealthConnex hosts an SFTP server which can be utilized for the exchange of files and error reports
- Access to this server requires allow-listing of IP addresses and ports to ensure security of the connection.
- SAS resources will provide forms to be filled out by the Participant with the necessary information for configuration of the SFTP.

Direct Secure Messaging (DSM)

- NC HealthConnex has a DSM mailbox that can be used to exchange the files and error reports.
- Usage of this method requires coordination with SAS technical resources to ensure the files received into this mailbox can be automatically processed.

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Appendix D – Patient Demographic Feed

NC HealthConnex accepts clinical and demographic data according to the HL7 standards.

The demographic data is used for master patient identity (MPI) - creating new patient records in the exchange and updating existing records with new demographic details.

The MPI is applied to records in the NCVR file for use in deduplication in CVMS.

- HL7 v2 ADT
- HL7 v2 VXU
- HL7 v3 PIX
- CDA documents or related structures like CCDs

Note: While not required for the initial vaccine ingestion, the demographics feed will ensure ongoing updates to patient demographics are received and utilized to keep CVMS patient matching up to date.

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES

Appendix E – Data Files Required

- Removed

Appendix F – Key Contacts

Have Questions?

- **Data File Layout**

  - Email To: Elise.Lang@ey.com; Umair.Naeem@ey.com; s.shrestha@accenture.com

- **Connectivity & File Transport**

  - Email To: Meredith.Dennen@sas.com; Aman.Arora@SAS.com; Jessica.Drammeh@sas.com; Eric.Myers@sas.com; Paul.Riker@sas.com

- **General DHHS RPA BOT Questions**

  - Email To: aaron.rakes@ey.com; samuel.stonehouse-ACN@dhhs.nc.gov

- **Your production data in CVMS**

  - CVMS Vaccine Support - As a Provider, how do I submit a question, issue or request for assistance related to CVMS? (servicenowservices.com)
  - CVMS Help Desk Portal Home Page

NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

Appendix G – Key Notes

- **RPA Definition**

  - Robotic process automation (or RPA) is a form of business process automation technology based on metaphorical software robots (bots) or on artificial intelligence (AI)/digital workers.

- **CVMS Links**

  Main Site **NC DPH, WCH: Immunization: Providers**
  - Online FAQs
  - Key Documents
  - Onboarding Materials
  - Training Documentation
  - Mock file for NCVR

NC DEPARTMENT OF
HEALTH AND
HUMAN SERVICES