## Catalog of Electronic Technologies Used for Data Collection at Vaccination Clinics

A Helpful Guide for Health Departments, Employee Health Clinics, and Others Who Are Implementing Vaccination Clinics



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## **TABLE OF CONTENTS**

#### INTRODUCTION

Background	3
Methods	3
Results	4
Limitations	4
Instructions on How to Use the Catalog	4
GLOSSARY	6
TECHNOLOGY TYPES	
Barcode Scanners	
Honeywell 4600G	7-8
CASE STUDY: Honeywell 4600G Mass Vacation Modules	9-10
Gillette, WY Barcode Scanner with Mass Vaccination Module	9-10
Washington State: Barcode Scanner with Mass Vaccination Module	9-10
Motorola DS4208	11-12
Digital Pen	
Capturx	14-15
Magnetic Card Swipers	
IDWedge	17-18
MagTek Mini Swipe Card Reader	19-20
Mobile Technology	
Handheld Automated Notification for Drugs and Immunizations (HANDI)	22-23
On-line Registration Technology	
9HealthFair	25-26
AppointmentPlus	27-28
Dispense Assist	29-30
Public Health Event Web Registration (PHEWR)	31-32
RightMed	33-34
Scanning Technology	
Datacap	36-37
GoScan	38-39
Teleform	40-41
Web-based Technology	
Countermeasure and Response Administration (CRA)	43-44
New York Clinical Data Management Systems (CDMS)	45-46

#### Background

During an influenza pandemic or other vaccine-preventable disease outbreak, it will be essential to vaccinate many people as quickly as possible. Tracking vaccination status will be particularly important in order for public health officials to manage the pandemic or outbreak effectively. This ability to track is especially important if there are multiple vaccine products, a need for multiple vaccine doses with adjuvant in each dose, and/or a need to match vaccine and adjuvant type between doses. Vaccination administration information (i.e., patient and vaccine information) would need to be collected quickly, recorded into an electronic system, and reported to the jurisdiction's Immunization Information System (IIS).

For many health departments, data collection during mass vaccination clinics is often done manually, which can be time-consuming and labor intensive. In addition, transferring clinic data to the IIS manually allows for susceptibility to data entry errors and delayed entry. Simplifying the process of information entry into systems such as an electronic health record (EHR) system or IIS is an important part of preparing for the next pandemic. Health departments use a variety of methods and technologies to collect patient and vaccine information during routine vaccination clinics and during mass vaccination clinics and/or points of dispensing (PODs) conducted during influenza pandemics and other public health emergencies. Prior to this project, a comprehensive catalog describing these technologies did not exist.

#### **Methods**

The Immunization Services Division (ISD) in the National Center for Immunization and Respiratory Diseases (NCRID) at the U.S. Centers for Disease Control and Prevention (CDC) contracted with ORAU to identify different methods used for collecting patient and vaccine information during mass vaccination clinics and develop a catalog of the existing technologies. As a first step, ORAU conducted an environmental scan, which included literature and internet searches, as well as key informant interviews. The scan identified different types of technologies used to collect patient and/or vaccine information during mass vaccination clinics and helped inform future project information collection activities (e.g., survey development, identification of technology evaluative criteria). Next, CDC collaborated with the National Association of County and City Health Officials (NACCHO), the Association of Immunization Managers (AIM) and ORAU to conduct a survey to identify electronic technologies used to collect patient and/or vaccine information during vaccination clinics. Lastly, follow-up interviews were conducted with survey participants to elicit detailed information to complete the technology catalog (e.g., technical requirements, costs, training). In addition, time motion analyses were conducted with five different technologies.

#### Results

There were seven different technology types identified through the project: barcode scanners, digital pens, magnetic card swipers, mobile, scanning, and web-based technology. A total of 16 technologies were identified and are displayed in the following pages.

#### Limitations

Although an extensive search was conducted using the methods outlined above, the list of technologies is unlikely to include every electronic technology available to collect patient and/or vaccine information during vaccination clinics. The information listed about the organizations that have used or are currently using these technologies are based on organizations that provided information and approval to be listed in the catalog.

#### Instructions on How to Use the Catalog

This catalog is intended to assist health departments and others interested in improving the efficiency of their vaccination clinics. This catalog is laid out by technology type with a brief description, summary of features and capabilities, and type of data collected by each technology. The reported data collected by the technology is based on how it was used by the organization that provided the information. Data elements for the data each technology collected are based off of CDC's NCIRD and American Immunization Registry Association's IIS recommended core data elements. Technology requirements such as software, hardware, and internet connection are listed when applicable. The training and technical support elements are based on if they were offered by manufacturer. The catalog also provides information on whether or not the technology imports data electronically to a database such as IIS, EMR, etc. The information in this catalog is not intended to endorse any specific product or brand, but rather to provide information on the types of technologies available. Products are listed in alphabetical order by technology type.



### Introduction

### Glossary

#### Glossary

This section defines terminology for how they are used for the purpose of this catalog.

*Barcode Technology* - a barcode scanner that reads digits, characters, or images that are in 1 dimensional (1D) or 2 dimensional (2D) patterns.

*Electronic Medical Records (EMR)* - digital version of traditional paper-based medical records for an individual.

*Immunization Information System (IIS)* - confidential, population-based, computerized databases that record all immunization doses administered by participating providers to persons residing within a given geopolitical area.

*Magnetic Card Swipers* - a device that reads the information encoded in magnetic stripes located on the back of credit cards, IDs, etc.

*Mass Vaccination Module* - a module within an Immunization Information System that is used for data collection only for mass vaccination and not for everyday vaccination information.

*Mobile Technology* - a portable device that can store data and applications, scan barcodes, capture photos, and can be used to transmit information using wifi.

*Online registration* - an online based software that utilizes a web browser and allows for patient registration and/or medical screening and information to be collected.

*Patient information* - was defined to include (but not limited to) demographic information (e.g., name, date of birth, race/ethnicity, gender, and contact information), medical history, and health insurance information.

*Scanning Technology* - software where paper forms are scanned and data are transmitted electronically to populate electronic databases.

*Vaccine information* - was defined to include (but not limited to) date of vaccination, lot number, vaccine expiration date, type of vaccine, and vaccinator name

*Vaccine Information Statement (VIS)* - is a documents, produced by CDC that informs vaccine recipients about the benefits and risks of the vaccine they are receiving.

*Web-based technology*- a software application that allows for storing, managing, and tracking of information. The software can also be used to capture patient and vaccine information during vaccination clinics.





## **Barcode Scanners**



#### Honeywell 4600G

The Honeywell 4600G is a barcode scanner that can help speed up the process for entering data during vaccination clinics. Patient demographics can be scanned from linear and 2D barcodes on driver's licenses or state identification cards and vaccination information can be captured from vaccine vials or generated barcodes. Currently, the barcode scanners can only scan driver's licenses from Wyoming and some neighboring states (i.e., South Dakota, Montana). Scanning function does not require internet connection and scanners connect to the computer via USB ports. The Honeywell 4600G is currently being used by Washington State's Department of Health and Campbell County, Wyoming local health department. Data is populated directly into Washington's IIS (WAIIS) and Wyoming's IIS (WyIR) real time during vaccination clinics. Data that populates into the IIS is not encrypted.

### **Technology Details**

Manufacture	er Honeywell
Model	4600
Website	www.honeywellaidc.com/CatalogDocu- ments/4600G_DS_RevH_0110_EN.pdf

#### **Technical requirements**

platform		Ν
internet conne	ction required	N
software		compact disc to sync barcode to IIS
Manufacturer tra	aining	N
user manual ava	ailable	Y

#### Type of Information Collected<sup>+</sup>



## **Barcode Scanners**

Technical support online www.hor	Y eywellaidc.com
Cost per device	\$200-\$450
mports data electronically to databas	ie Y
database type	IIS
Barcode type	
linear	Y
2D	Y
Barcode scanner power source	
corded	Y

	Y
ate	Y
è	Y
	Y

)	Vaccine manufacturer (MVX code)	Y
	Vaccine provider	Y
	Vaccine type (CVX code)	Y



#### Mass Vaccination Modules

Mass vaccination modules are additional components of some Immunization Information Systems that is used for data collection only for mass vaccination and not for everyday vaccination information. Mass vaccination modules may have more extensive capabilities than reported in this catalog but for our purposes we only focused on patient and vaccine information data collection during vaccination clinics. Currently, Washington State Department of Health and Campbell County, Wyoming local health department are using their mass vaccination modules during mass vaccination clinics along with barcode scanners (Honeywell 4600G) to scan patient demographic information from drivers licenses and vaccine information from vaccine vials and/or generated barcodes.

#### Campbell County, Wyoming: Barcode Scanner with Mass Vaccination Module

The mass vaccination module is used for seasonal influenza vaccinations when knowing patients' vaccination history is not necessary. The mass vaccination module has the capability to allow users to pre-load vaccine lot numbers prior to clinic and click the appropriate lot number during data collection instead of typing the information when using standard IIS mode. This saves time because the lot numbers are pre-populated and faster to collect data during the clinic because the vaccinator can enter in patient information without opening the entire patient record.

Vaccination default settings (e.g., vaccinators, lot numbers, manufacturers, clinic dates) can be manually entered prior to clinic to help save time by allowing vaccinators to use drop-down menus of pre-populated information at the time of vaccination and helps patients move through the vaccination process quickly.

When the barcode scanner is used, patient's demographic information from driver's licenses is populated directly into the IIS mass vaccination module (those without driver's licenses are manually entered). The use of barcode scanners reduces data entry of patient demographics and data entry errors. All information is completed real time during the vaccination clinic. Currently, the barcode scanners can scan Wyoming driver's licenses and some neighboring states, including South Dakota and Montana.

During patient registration, the IIS is capable of forecasting needs for future doses (such as pneumococcal, HPV, and pandemic influenza vaccine) and can be provided if they are being offered during the mass vaccination clinic. This capability can help reduce missed vaccination opportunities.

The mass vaccination module contains a "waiting room" feature which allows you to pre-enter a list of patients waiting to be vaccinated. This feature could be used to create a list of patients who have appointments for vaccines prior to the start of a mass vaccination clinic. Staff can select patients from the waiting room list and complete vaccination information. The feature can also be used to hold patients in que if the patient requires multiple vaccines and are given at different stations at the clinic.

Washington State: Barcode Scanner with Mass Vaccination Module Vaccination default settings (e.g., vaccinators, lot numbers, manufacturers, clinic dates) can be manually entered prior to clinic to help save time by allowing vaccinators to use drop-down menus of pre-populated information at the time of vaccination and helps patients move through the vaccination process quickly. A barcode scan sheets containing vaccination information and barcodes for vaccinators can be created in the mass vaccination module to use during the mass vaccination clinic.

When the barcode scanner is used, patient's demographic information from driver's licenses are populated directly into the IIS mass vaccination module. The barcode scanner is also used to scan barcode sheets created for vaccination information and vaccinators.

The mass vaccination module contains a "waiting room" feature which allows you to pre-enter a list of patients waiting to be vaccinated. This feature could be used to create a list of patients who have appointments for vaccines prior to the start of a mass vaccination clinic. Staff can select patients from the waiting room list and complete vaccination information. The feature can also be used to hold patients in que if the patient requires multiple vaccines and are given at different stations at the clinic. Washington State developed just-in-time training videos on the use of mass vaccination modules http://jitt-wa.stchome.com.

### Mass Vaccination Modules



#### Motorola DS4208

Motorola DS4208 is a barcode scanner that can help speed up the process for entering data during vaccination clinics. Patient demographics can be captured from driver's licenses and vaccination information can be captured from vaccination vials or created barcodes. The device has the ability to scan linear and 2D barcodes on paper, mobile devices, and computer screens. Scanning function does not require internet connection and scanners connect via USB ports. Data on this barcode scanner was provided by Wisconsin's immunization program from a pilot project with eight sites. Data that populates into the IIS is not encrypted.

### **Technology Details**

Manufacturer	Motorola
Model	DS4208
Website	www.atgsupportcentral.motorolaso- lutions.com/content/emb/docs/manu- als/13923205a.pdf

#### **Technical requirements**

platform	Ν
internet connection required	N
software	Ν
Manufacturer training	Ν
user manual available	Y

#### Type of Information Collected<sup>+</sup>

	Address	Y		Vaccine dose volu
ç	Birth date	Y	õ	Vaccine expiration
	First name	Y	N	Vaccine injection s
N	Last name	Y	SINE	Vaccine lot numbe
	Middle name	Y	ACC -	Vaccine manufactu
ť	Sex	Y	2	Vaccine provider

phone	800.653.5350
ost per device	\$150-\$200
ports data electronically to databa	ase Y
database type	IIS
arcode type	
linear	Y
2D	Y
arcode scanner power source	
cordless	Y

ime and unit	Y
n date	Y
site	Y
er	Y
urer (MVX code)	Y

Vaccine route of administration Vaccine type (CVX code)





# **Digital Pen**



#### Capturx

Capturx is a battery operated computing device that converts handwritten information on paper to electronic data that can be modified and formatted. The digital pen is used like an ordinary pen. Internet connection is not required; data are stored on password protected digital pen and uploaded to database once placed on docking station. Capturx has the ability for data to be uploaded to a secure SharePoint site via wifi.

Capturx is an add-in that is capable with Microsoft Office (e.g., Excel) and allows for customization of forms to capture desired fields for patient and/or vaccine information. It allows for coding of fields for type of information to collect (e.g., numbers, text). Forms are printed on ordinary paper with a special watermark that enables them to be used with digital pen. Capturx automatically uploads the data and inserts into the correct formatted cells and allows for information to be verified. Capturx has the capability to view a digital text or the original handwritten version of the form once it has been uploaded.

This technology allows for the user to obtain a paper and electronic form of the information collected. Capturx reduces data entry and allows immediate access to data after it is collected. In addition, Capturx also offers a summary table view which aggregates all entries on each form for analysis as well as a link to the original form to simplify searching of forms. Currently, Capturx is being used by New Hampshire Division of Public Health for field surveys, not for data collection of vaccination information.

#### Type of Information Collected<sup>+</sup>

	Address	Insurance status
Q	Assigning Authority ID***	Last Name
N	Birth date	Middle name
NT	Ethnicity	Mother's first name
TIE	First name	Mother's last name
Д	ID Type*	Mother's maiden name

#### **Technology Details**

Manufacturer	Adapx
Technology name	Capturx
Website	www.adapx.com

#### **Technical requirements**

platform	Microsoft Excel
internet connection required	Y
hardware	Ν
software	Y

	Contraindication(s)/precaution(s)	Vaccir
Q	Contraindication(s) precaution(s)	 Vaccir
N	observation date(s)	Vaccir
INE	Date of history of vaccine preventable disease	 Vaccir
CC CC	Exemption(s)/parent refusal(s) of vaccine	 Vaccir
7	Vaccination date	 Vaccir
_	Vaccine dose number	 Vaccir
	Vaccine dose volume and unit	 VIS da
	Vaccine expiration date	 VIS ty

## **Digital Pen**

Other information**
Patient multiple birth indicator
Phone Number
Race
Relationship to Patient
Sex

Manufacturer train	ing	Y
online	www.adapx.com/suppor	t/tutorials
Technical support		Y
online	www.adapx.com/suppo	rt/contact
Cost per device		
unit		\$300
additonal softwar	e	\$3,000
Imports data elect	ronically to database	Y
database type	other	r electronic database
ction site		
lumber		

ne provider

ne reaction(s)

ne route of administration

ne type (CVX code)

ate given to patient

pe & publication date

Software can be customized to include desired patient and vaccine information.

15





# **Magnetic Card Swipers**



#### IDWedge

IDWedge swipes driver's licenses or state identification cards to collect patient identification information and prefills into a customized Microsoft Access database real time; vaccination information (e.g., lot number, vaccination date) is manually entered for each patient during the time of vaccination. Prior to the clinic, a simple user defined formula is generated to specify the field order (first, last, etc.) and the keystrokes (tab, arrow up, enter) which are sent to a database. Internet connection is not required and the device is connected via USB ports. IDWedge can be used to fill any form on a computer that accepts keyboard input but data is not encrypted. IDWedge makes data collection faster and accurate and reduces data entry for patient information. Currently, Philadelphia Department of Health is using IDWedge.

### **Technology Details**

Manufactu	ırer	TokenWorks
Technolog	y name	IDWedge
Website	www.tokenworks.c	:om/products/idwedge

#### **Technical requirements**

platform	Ν
internet connection required	Ν
software	compact disc

#### Type of Information Collected<sup>+</sup>



Vaccine information is not captured using device, information is manually entered at the time of vaccination.

VACCINE INFO

## **Magnetic Card Swipers**

echnical support	Y
online	support@tokenworks.com
phone	800.574.5034
Cost per device	\$700
mports data electronica	any to database Y



#### MagTek Mini Swipe Card Reader

The mini swipe card reader assists with registering patients during vaccination clinics by swiping patients' driver's license or state identification card to collect demographic information. The information from the driver's license prepopulates into EMR using software that allows the user to code and specify how the fields populate into the da-tabase. Data that populates into the EMR is not encrypted. Internet connection is not required to use the device but necessary if the electronic database the information is importing into requires an internet connection. The mini swipe card reader connects via USB port and allows for bi-directional swiping of IDs. Magtek is currently being used by Erie County Health Department in Pennsylvania.

### **Technology Details**

Manufacturer	MagTek
Technology na	ame Mini reader
Website	www.magtek.com/V2/products/ secure-card-reader-authenticators/ magnesafe-mini.asg

#### **Technical requirements**

platform	Ν
internet connection required	Ν
software	Y

#### Type of Information Collected<sup>+</sup>



Vaccine information is not captured using device, information is manually entered at the time of vaccination.

VACCINE INFO

## Magnetic Card Swipers

Y
support@magtek.com
888.624.8350
\$85
latabase Y
EMR



# **Mobile Technology**

### **Mobile Technology**

Handheld Automated Notification for Drugs and Immunizations (HANDI)

Handheld Automated Notification for Drugs and Immunizations HANDI is a paperless mobile device that supports efficient public health immunization and prophylaxis activities through rapid collection and transfer of standardized data. The mobile application software (MI Clinic) automates patient processing and data collection for health campaigns and reduces manual data entry. HANDI can operate in several network environments: 1) a disconnected environment (no wireless internet connection) where data are collected

on the device and uploaded once internet connection is established, 2) HANDI designated network where wifi hotspots can be used to connect a laptop with HANDI server and device and information is pushed from device to server, 3) existing network where devices are connected to existing server and information is transferred. The data are transferred in real-time when the device is connected to the internet.

HANDI has a server for defining campaigns and collecting data captured by the mobile devices. Campaigns are created on the server to define patient demographic fields (e.g., name, birth date, sex) to capture vaccine information (e.g., vaccinator, lot number, manufacturer) that will pre-populate in application on device. Fields can be created to capture insurance information (drop down menu of insurance types) and patient specific policy numbers and be manually entered during clinic.

HANDI utilizes barcode/magnetic stripe scanning technology through a "sled" accessory. If a sled is not available, newer versions of IPod touch and iPhones can capture IDs and prepopulate desired fields via the camera on the device. Also, images of insurance cards and electronic signatures can be captured. The data are stored in encrypted format on the device to ensure patient privacy and HIPAA compliance and then securely transferred to the server database (real-time with wireless internet connection).

HANDI is designed for a three-station workflow (patient registration, medical screening, and vaccination) where the device is used at each station. When workflow is separated, a mobile printer is used to print a patient-specific barcoded label and patient takes that to the next stations to be scanned. In addition, HANDI was the only technology assessed that had the capability to provide patients with a printed proof of vaccination at the end of the clinic. The server bundles the data from each station and the complete patient record is transferred to a designated database. The workflow could be conducted by a person on one device.



HANDI has the ability to securely transfer data to repositories (e.g., immunization registries) using HL7 standards. Also, rapid electronic data storage allows for real-time reporting and data analysis (e.g., number of people served, demographic characteristics, risk factors and geo-locatable information). HANDI is currently being used by Denver Public Health.

#### **Technology Details**

Manufacturer	
software	Countermind, LLC
iPod touch, iPho	ne Apple
sled	Honeywell/Infinite Peripherals
mobile printer	Zebra
Technology name	HANDI (Handheld Automated Notification for Drugs and Immunizations)
Vebsite	www.countermind.com
	www.denverhealth.org/for-profes- sionals/clinical-specialties/pub- lic-health/public-health-informat- ics-and-technology/handi
lechnical requirer	nents
platform	iOS
internet connect	ion required N

Ν
HANDIMI clinic

#### Type of Information Collected<sup>+</sup>



## **Mobile Technology**

onsite	available
phone	available
chnical support	Y
online	www.countermind.com
phone	720.708.4400
ost per device	
IPod touch,IPad, IPhon	e <b>\$200-\$500</b>
Captuvo sled	\$600
mobile printer	\$330-\$1000
other costs may be	e subject to maintenance fee if nosted on Countermind server.
ports data electronica	ally to database Y
database type	other electronic database, IIS

	Y	Vaccine manufacturer (MVX code)	Y
	Ŷ	Vaccine provider	Y
e and unit	Y	Vaccine route of administration	Y
	Ŷ	Vaccine type (CVX code)	Y
	Y		





Larimer County PHEWR - Public Health Event Web Registration	on
Annual and a spatial s	Alexady Registered? If the set of the instance was alexade of the instance o
	-

HOUSEHILD REPORTATION Contact Reformation (NO MARK REOVIDED)	Contact
Tedca Information Tedca FEROY	Promise information as completely as you
	Patentine required fields
	fee
	Las .
	Address
	A39100
	a
	ter" Walnut (8)
	10°
	Press
	Protifiane Last Rame
Longer Longer	

## **Online Registration Technology**



#### 9HealthFair

9HealthFair is a non-profit health fair program where organizations can coordinate their vaccination events. It allows for people to register online and print off a ticket to bring to the clinic. If additional health screenings are offered (e.g., hemoglobin A1C), 9HealthFair has a secure website where people can review their results. 9HealthFair is currently being used by a local health department in Colorado.

### **Technology Details**

Manufacturer	N/A
Technology name	9Health Fair
Website	N/A

#### **Technical requirements**

platform	web browser
internet connection required	Y
hardware	N

#### Type of Information Collected<sup>+</sup>



on paper form during clinic.

VACCINE INFO

## **Online Registration Technology**

echnical support	Y
phone	800.332.3078
ost per device	
unit	N/A
nports data electronically to dat	abase N

Vaccine information not captured using software, information recorded manually



#### AppointmentPlus

AppointmentPlus is an online scheduling software that allows for patient pre-registration, scheduling vaccination appointments online, inventory management, vaccination appointment reminders and staff scheduling. It saves patients and clinic staff time and assists with managing clinic resources. Patients are able to go online and schedule their appointment, complete patient demographic and medical screening questions, and print out to bring to clinic.

AppointmentPlus users can view the number of people registered prior to the vaccination clinic and appointment times can be changed real-time. During the clinic, AppointmentPlus software helps with clinic flow by eliminating the time-consuming tasks of completing paperwork onsite. Appointment Plus is cloud-based and housed on a secure server with a backup system. Users pay a monthly fee to use the software located on AppointmentPlus server. The software also allows for reports to be generated and exported to Microsoft Excel or HTML. Data from clinic is manually entered into IIS. Currently, a local health department in New Jersey uses AppointmentPlus.

### **Technology Details**

Manufacturer	StormSource
Technology name	Appointment Plus
Website	www.appointment-plus.com
Technical requirements	
platform	web browser

platform	web browser
internet connection required	Y
Manufacturer training	Y
onsite	available

#### Type of Information Collected<sup>+</sup>



VACCINE INFO

## **Online Registration Technology**

phone	800.988.0061
Cost per device	
unit	\$49-\$99/month
other costs informat	required monthly fee to house ion on Appointment Plus server
Imports data electro	nically to database N

Vaccine information not captured using software, information is captured manually on paper form during clinic.

<page-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header>

#### **Dispense Assist**

Dispense Assist allows for online patient registration and medical screening using a web browser. Dispense Assist is user-friendly for patients completing form online, person creating the form, and clinical staff. The software reduces data entry and speeds up vaccination because patients have the option to register offsite. The software creates a quick response (QR) code on vouchers that the patient can print and bring to the clinic. If patients do not have Internet access or printer capabilities, stations are available at clinic to allow for onsite registration. In addition to streamlining the vaccination process, Dispense Assist also determines what medication a person is eligible to receive based on the answers to the medical screening questions. Dispense Assists allows for information to be filled out for multiple family members.

Scanning of the QR codes does not have to be done in real-time at the clinic. There is the option to record vaccination information on the form and scan into the database later. Dispense Assist can be downloaded on a computer and be used without internet connection. DA is also available as a mobile application where barcodes can be scanned directly from the mobile device. In addition, DA has the capability to be translated to Spanish through a link provided on the website.

There is no registration required to use the software and it is free. It is non-proprietary because it does not store any information on the website. Also, an Excel datasheet is provided for data from the clinic to be collected. The datasheet can be manipulated and imported into EMRs. Dispense Assist was created by Johnson County, Kansas and is currently being used by multiple health departments and hospitals in multiple states.

#### **Technology Details**

Manufacturer	Johnson County Health Department, KS
Technology name	Dispense Assist
Website	www.dispenseassist.net
Technical requirements	
platform	web browser
internet connection require	ed Y
software	Microsoft Excel

Manufacturer training Y online www.dispenseassist. net/Training.html

#### Type of Information Collected<sup>+</sup>



## **Online Registration Technology**

online	dispenseassist@jocogov.org
phone	913.477.8343
Cost per device	
unit	free
additonal hardwa	are
barc	ode scanner that reads QR codes
mports data elect	ronically to database N
database type	other electronic database

	Y
date	Y
te	Y
-	Y
rer (MVX code)	Ŷ
	Y

Vaccine route of administration	Y
Vaccine type (CVX code)	Y
VIS date given to patient	Y



#### Public Health Event Web Registration (PHEWR)

Public Health Event Web Registration is a free software application that collects patient demographic information and medical screening questions prior to vaccination clinics. The software allows appointment times to be created and the patient can select the desired time and date. This helps manage clinic flow and staff resources. Vaccination appointment times can be adjusted in real time. Tickets are printed with registration, screening information, and time/date chosen. Public Health Event Web Registration data is stored on a secure server, from which users can create reports using reporting tools with support SQL database standards (e.g., Microsoft Server Reporting Services). Public Health Event Web Registration has the capability to download data from clinic into an EMR; data for IIS is manually entered. Public Health Event Web Registration was developed by Larimer County, Colorado and used by multiple health departments in Colorado.

#### **Technology Details**

Manufacturer	Larimer County Department of Health and Environment		
Technology name	Public Health Event Web Registration (PHEWR)		
Website www.phethos.or	rg/phewr-development.html		
Technical requirements			
internet connection req	uired Y		
hardware	SQL Server 2005		
Manufacturer training	Y		
onsite	available		

#### Type of Information Collected<sup>+</sup>

	Address	Y	Mother's first name
0	Assigning Authority ID***	Y	Mother's last name
N I	Birth date	Ŷ	Mother's maiden nan
NT	Email address	Y	Other information*
VTIE	Ethnicity	Ŷ	Phone Number
4	First name	Ŷ	Race
	Insurance status	Ŷ	Relationship to Patier
	Last Name	Y	Sex
	Middle name	Y	

## **Online Registration Technology**

chincal support	Ŷ
online	jschreurs@larimer.org
ost per device	
unit	free
other costs	
onsite training av	ailable for additional cost
ports data electronic	ally to database Y
database type	IIS

e	Ŷ	
e	Ŷ	о Ч
name	Ŷ	N
*	Ŷ	INE
	Y	
	Ŷ	2
tient	Ŷ	

Vaccine information not captured using software, information recorded manually on paper form during clinic or directly into EMR.

## **Online Registration Technology**

Contact Information (NO NAME PROVIDED)	Contact	
Medical Information Medical History	Provide information as completely as you	
	can.	
	First	
	Name:*	
	Name:*	
	1:*	
	Address 2.	
	City.*	
	State:* Wisconsin	
	Zip.*	
	Primary	
	First Name Last Name	

#### RightMed

RightMed is a free software that utilizes a web browser and allows for patient information to be collected, medical screening question to be answered, and drug interactions identified. Since screening and drug interactions are identified online, it allows for patients to skip registration/medical screening during the clinic and go directly to dispensing. Although the software is set up for countermeasure dispensing for Anthrax, it can be customized to be influenza specific. In addition, RightMed allows for customization of logo, unique URL, and name of organization using the software. RightMed has the capability to be coded for different languages (e.g., Spanish). Also, the software is non-proprietary because it does not store any information on the website. RightMed was developed by Wisconsin Department of Health and University of Wisconsin.

Wisconsin Department of Health and University of Wisconsir
ne RightMed
www.rightmed.org

platform	web browser
internet connection required	Y
hardware	compact disc with soft- ware on it to download

#### Type of Information Collected<sup>+</sup>

	Address	Y	Race
0	Birth date	Y	Relationship to Patient
NF	Email address	Y	Sex
NT	First name	Y	
TIE	Last Name	Ŷ	
A	Phone Number	Y	

## **Online Registration Technology**

Manufacturer training	Y	
user manual	available	
Technical support	Y	
online	available	
Cost per device		
unit	free	
Imports data electronically to database	N	



VACCINE INFO

Vaccine information not captured using software, information is captured manually on paper form during clinic.



Screening Form Clear bilamation
Clear Phase pro DRAFT Period Tech Jakan Exy r NO to each question below by marking o targe ad enterior from boll more at here a carpose are to intere user to sense at egr Ruis Apr Bander (Ban Cas Inditiv) Of propriate box. → 1vts wo → 1vts wo → 1vts wo VES. Datio Balance and processes in an available and processes in a second processes in a second processes in a second processes and proceses and p

 
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## **Scanning Technology**

Inf	luenza Vaccination Screening Form	THE PARTY OF	Clinic Code
Ple	ase print clearly in blue or black ink, using CAPITAL	Client Information	AL
LE	ITERS only, within the spaces provided.		For clinical staff use only.
Firs	l Name		
			1 1 1 1
Last	Name D		
	).K		
Stre	et Address (or Post Office Box)		
			1.1.2.1.3.3
City		State	Zip Code
Tele	phone Number Date of Birth	Ag	e Ger
(	) –		(fill-in C bubble)
	Month Day	Year	
An	swer YES or NO to each question below by markin	ig with an X in	n appropriate box
You	r answers below will help us determine if you should receive an influenza	a vaccine today.	
1	Do you live with or provide care for infants under 6 months of age? -		YES
2	Are you health care or emergency medical services personnel? -		YES
3	If female, are you pregnant or might be pregnant?		YES
4	Do you have a long-term health problem such as heart or lung disease airways, kidney disease, metabolic disease (e.g., diabetes), blood dise long term aspirin-therapy?	e, asthma, reactive eases or are you o	$n \longrightarrow \square$ YES $\square$
5	Do you have an illness such as HIV/AIDS, lupus or cancer, or do you ta medication that might lower your body's resistance to infection?	ke any	
6	Do you have a severe allergy to eggs, gelatin or other components of f	lu vaccine? ——	YES
7	Are you feeling ill today or do you have a fever?		
8	Were you ever diagnosed with Guillain-Barre Syndrome (GBS)?		
9	Have you ever had a bad reaction to a flu vaccination in the past?		
10	Do you have close contact with immunosuppressed persons who requi environment?	ire a protected	→ YES
11	Have you received another vaccination in the past four weeks?		
12	Have you ever fainted after an injection in the past?		
that (e.g. med	e received, read and had my questions answered about the Vaccine Information the dose(s) be given to me or the person named above, for whom 1 am responsite Meanenths. I have received this clinics HIPAA Notice of Privacy Practices info Cregon Public Health may follow-up with persons neceiving HINI vaccine;	n Statement(s) for th ble. My relationship poess insurance clair mation sheet, chec please check if you o	e doses to be given. I requ to the patient is ms and request payment of k here do not wish to be contacted
	X	Da	ite Signed:
Sic	nature: A		

#### Datacap

Datacap has the ability to create and customize forms in Microsoft Word to capture desired patient demographic information and vaccine information. The software is user-friendly for patients who are filling out the forms and the person creating the form.

The software allows for double-sided forms to be scanned and for scanned information to be reviewed and verified before accepting into database. When verifying, the software highlights required fields in yellow and fields with errors in red for easy review. Data is transmitted into a database which can aggregate data and be exported in various formats (e.g., Microsoft Excel). The data is converted using HL7 guidelines and imported into the IIS. Datacap was used by Oregon's immunization program during the 2009 H1N1 influenza season.

Technology Details	
Manufacturer	IBM
Technology name	Datacap
Website www-01.ibm.com/soft	ware/info/datacap
Technical requirements	
platform	Microsoft Office
internet connection required	Y
hardware	scanner
software	Y
Manufacturer training	Y
Type of Information Collected <sup>+</sup>	



	www.coliber.com
oniine	wwwUI.IDm.com
phone	877.426.3774
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unit	\$5,000
additional software	Y
other costs licensing, training, and scanners	are additional costs
nports data electronically to d	atabase Y
database type	IS, other electronic database

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Alled dia dia dia dia dia dia dia dia dia di	s the erglet beter beter e pa pleta e pa patie nor, nt/Si -H1I / H1N / H1N /	e patie s to e s, can patie week tient ed In nam nam ggnat ggnat ggnat C V1 VI / / Patie nate se to t Va	ient eiggs of oper, inn eiges of oper, inn eiges of oper, inn eiges of the operation of the	have have ready ver h ter r long- nza A close ved t f pare s P O O	and our second s	NOV	MI O Date	ispiritions?	iflu va sune s drom ? n-cor its less e las STO o ninis	tan 6 tan 6 tan 6 tan 6 Pri P-D 0.25 r tered	monti monti ays: onse nt/Si 0.2	igna mL O 0 0	y and/ y and/ o Sk ca ca ca ca ca ca ca ca ca ca ca ca ca	TE BI NII Inf Accine Inic I D Publ	), lung le or n ere n rrenti prote luenza ation Site Intran RD ( LD ( Prov	(asthm reve dis nuscle nuscle nosupp to vacier to vacier to vacier to vacier to vacier to vacier to vacier to vacier to vacier to vacier to vacier va	a), and order weak cently resservironm e O Mer In bis info ensur	I kidnet (cereb I perse ent (fo Seaso lormatic e a cu	ay disarral pararal parara par	ho al mple	e hos; , bone D Othe e Guar sharecurat	pitalizi mar ar Liv n Im bet te im <b>mber</b>	O ceed a trow to the Van muni	YES YES ind/or ransp cccine zation lization lization liste 6278	C recee plant) s C n Reg th pro- n reco	NO     NO     NO     NO     NO     NO     NO     Stry.     Srd.     By:     Formet

#### GoScan

GoScan allows for customization of forms and captures desired patient and vaccine information during vaccination clinics. The scanned information is transferred into a database and those data are converted to flat file and sent to IIS. The software works with any scanner or copier. GoScan is user-friendly and reduces data entry errors and increases productivity. GoScan provides both secure and encrypted transfer of information to the central server to ensure compliance with HIPPA privacy policies. GoScan was used by North Dakota's and Guam's immunization programs during 2009 H1N1 influenza pandemic.

Technology Details	
Manufacturer	Formtran, Inc.
Technology name	GoScan
Website	www.goscan.com
Technical requirements	
platform	web broswer
internet connection required	Y
hardware	scanner
software	Microsoft.NET, GoScan,Golmage
Manufacturer training	Y

#### Type of Information Collected<sup>+</sup>

PATIENT INFO

Address Y		Mother's maiden name
Birth date		Other information**
Birth state/country		Phone Number
Ethnicity Y		Race
First name		Sex
ID Type*	LFO	Contraindication(s)/pre
Insurance status 🛛 👔	EN	Date of exemption/pai
Last Name 🛛 💙	N.	refusal of vaccine
Middle name 🛛 💙	ACC	Vaccination date
Mother's first name 🕜	>	Vaccine dose volume
Mother's last name 🕜	_	Vaccine injection site

online	support@goscan.com
phone	858.240.2186
ost per device	
unit	varies
other costs	
\$45,000 price from (GOIMAGE, GOSCAN, an online training; and 1 ye Subject to tra	m 1 organization included software nd FORMTRAN) licenses, services/ ear support software maintenance. ining and annual maintenance fee.
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e	Y
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	Y
ecaution(s)	Y
irent	Y
	Y
and unit	Y
	Y

Vaccine lot number	<b>Y</b>
Vaccine manufacturer (MVX code)	Y
Vaccine provider	Y
Vaccine route of administration	Y
Vaccine type (CVX code)	Y
VIS date given to patient	Y

CT DPH Public Provider H1N1 Vaccine Administration Record Please print in capital letters as shown in the example: E X A M P L E 1 2 3 Please shade circle tion as completely as you can. All information will be kept confidential. st Name (2) Last Name (3) MI ) Street Number (5) Street Name (6) Apt. Number CT (8) Other specify (10) Phone (where we can reach you) (11) Date of Birth (12) Age (yr (12) Age (ye (14) Gender O M F (15) Race White Black or African American Asian American Indian/Alaskan Native 17) Do you have health insurance? Native Hawaiin/Pacific Islander Other (16) Hispanio/Latino? Yes No OY ON (18) Insurance Company: (19) ID No.: (if no, go to question 20) (20) Name of Policy Holder: (21) Do you live in a household with a child less than 6 months old? Heart Disease Lung Disease Asthma 22) Do you have any of the following medical conditions (select all that apply)? ○ Kidney Disease ○ Liver Disease ○ Neurological Disease ○ Cancer ○ Diabetes ○ Blood disorder ○ Immune Disorder (23) Are you pregnant or do you think that you might be pregnant? (24)Are you allergic to eggs or to the preservative thimerosal? OYON 
 (25) Have you ever had a reaction to any vaccine?
 O Y O N

 (26) Have you ever been diagnosed with Guillain-Barre Syndrome within 8 weeks of a previous influenza vaccination?
 O Y O N
 (27)Are you sick with a fever today?
 CY ON
 (27)Are you sick with a fever today?
 V ON
 (27)Are you sick with a fever today?
 (27)Are you sick with a fever today?
 (27)Are you sick with a fever today?
 (28) If minor, name of parent or legal uardian
 (29) Signature of responsible party 
 STOP - DO NOT WRITE BELOW THIS LINE (vaccine administrator completes this section)

 (30) MDA #
 (31) PIN
 (32) Screener initials:
 (33) Vaccine H1N1
 WS pac.
 (34) Clinic name and address: (35) Manufacturer (39) Lot Number (38) Site SP GSK Nov MI CSL (36) Dose # (37) Dosage 

#### Teleform

Teleform allows for customization of forms to capture desired patient and vaccine information during vaccination clinics. Teleform allows for forms to be created in both English and Spanish. Teleform automatically reads hand writing from the form, creates an image of the form, as well as the electronic populated form, and allows for data verification. When verifying, the software highlights fields with errors and allows for data to be corrected. The software assists with reducing manual entry. Teleform has the capability to securely export data in various file formats (e.g., Excel) allow for upload into other electronic repositories (e.g., IIS, EMRs). During the 2009 H1N1 influenza pandemic, New York City Department of Health and Mental Hygiene, as well as Michigan's and Connecticut's immunization programs used Teleform.

Tachnology Dataila	
rechnology Details	
Manufacturer	HP
Technology name	Teleform
Website	www.hpteleform.com
Technical requirements	
internet connection required	Y Y
hardware	scanner, server to store data
Manufacturer training	Y
onsite	available
online	available

#### Type of Information Collected<sup>+</sup>

PATIENT INFO

Address		Mother's maiden name
Assigning Authority ID	Y	Other information
Birth date	Y	Phone Number
Ethnicity	Ŷ	Race
First name	Ŷ	Relationship to Patient
ID Type*		Sex
Insurance status	PEO	Contraindication(s)/pre
Last Name		Contraindication(s) precauti
Middle name	CIN	observation date(s)
Mother's first name	AC	Date of history of vaccine pre
Mother's last name		Vaccination date

online	info@hpteleform.com
phone	949.829.5822
ost per device	
unit	N/A
other costs	
outsource	ed scanning and verifying: \$1/form
for verifying;	maintenance.enterprise platform:
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	Y
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tion(s)	Ŷ
eventable disease	Y

Vaccine dose number	Y
Vaccine dose volume and unit	Y
Vaccine expiration date	Y
Vaccine injection site	Y
Vaccine lot number	Y
Vaccine manufacturer (MVX code)	Y
Vaccine provider	Y
Vaccine route of administration	Y
Vaccine type (CVX code)	Y
VIS date given to patient	Y



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# Web-based Technology

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#### Countermeasure and Response Administration (CRA)

Countermeasure and Response Administration (CRA) is a free web-based application deployed centrally at CDC that uses CDC's secure data access method. CRA gives public health officials key information about the availability and dispensing of pharmaceutical and medical equipment. CRA can be customized to adapt fields for countermeasures administered and dispensed. CRA can be used to generate barcode labels for vaccine information (e.g., lot number, manufacturer) to be scanned during vaccination clinics or 2D barcodes directly from vaccine vials; currently patient demographic information is manually entered.

CRA can manage multiple public health events and countermeasures, reducing the need to develop a new tracking application for every new emergency. CRA has the ability to track vaccine administration and countermeasure dispensing at both the individual and aggregated levels. In addition, CRA makes it easy to report data to CDC and CRA can accept data from the state's IIS.

CRA has the capability to be downloaded on a computer to operate without internet connection. CRA allows for reporting of aggregated and patient-level information. Through analysis of CRA data, officials can gain insight into the scope and demographics of the populations served. CRA is only available to Public Health Emergency Preparedness (PHEP) grantees.

#### **Technology Details**

Manufacturer	Centers for Disease Control and Prevention (CDC)
Technology name	Countermeasure response administration system (CRA)
Website	www.cdc.gov/cts/cra/ documents/cra-fact-sheet.pdf

#### Technical requirements

internet connection required	N
Manufacturer training	Y
online	available

#### Type of Information Collected<sup>+</sup>





## Web-based Technology



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on date	Ŷ

## Web-based Technology

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12/12/2015 09:00 AM - 09:30 AM Please fill out the following information procession and the following information and the foll	
Please fill out the following information	
DIOCESS.	nation for the person who will be receiving the countermeasure at this Event. Fields labeled "Required" need to be entered before continuing the registrat
- Recipient Information-	
First Name (required)	MI Last Name (required)
Country (required) Address (require	red) Apt# Phone# (999-999-9999) (required)
USA 🗸	
City (required)	State (required) Zip (required)
E-Mail Address (recommended)	
Gender	
OMale OFemale OOther	
Date of Birth (MM/DD/YYYY) (require	red)
For persons less than 19 years	rs of age
Mothers First Name Mo	Rothers Maiden (Last) Name
-Emergency Contact Inf	formation
First Name	MI Last Name

#### Clinical Data Management Systems (CDMS)

Clinical Data Management Systems (CDMS) is a customized secure web-based application that allows patients to register online, choose clinic location and complete medical screening questions. A campaign can be created to pre-populate clinic and target population (e.g., high risk, employees) information, desired patient fields and vaccination information. CDMS also allows for administration to set up intervals for vaccine appointments which allows for management of resources for a clinic based on the number of people registered. Patients print a form which has a barcode on it to take to clinic. During the clinic the workflow is separated and barcodes are used to retrieve/recall information at each station. If the e-mail address field is created, people can receive notification and reminders of their appointment. Primary care provider information can be entered by patient and data will be sent to notify provider of vaccination. CDMS has the capability to transfer vaccination information to immunization registry if people consent to information being reported. CDMS was created by information technology person at New York's State Department of Health and used throughout the state of New York by local health departments.

Technology Details	
Manufacturer	New York State
[	Department of Health
Technology name N Managen	ew York Clinical Data nent Systems (CDMS)
Website	N/A
Technical requirements	
internet connection required	Y k
Manufacturer training	Y
online	New York State
	Health Department

#### Type of Information Collected<sup>+</sup>

	Address	Y	Mother's first name		Vaccination dates	Y
0	Birth date	Y	Mother's maiden name	<b>()</b>	Vaccine expiration date	Y
NF	Email	Ŷ	Phone Number	$\mathbf{v}$	Vaccine injection site	Ŷ
NT	First name	Ŷ	Relationship to patient		Vaccine lot number	Ŷ
TIE	Last Name	Ŷ	Sex		Vaccine manufacturer (MVX code)	Ŷ
PA	Middle name	Ŷ			Vaccine provider	Y
				_	Vaccine type (CVX code)	Ŷ
					VIS date given to patient	Y

## Web-based Technology

when a New Yerly Chate Lie alth Da	
phone New York State Health De	partmen
cost per device	
unit	N/A
nports data electronically to database	Y
database type	IIS