



Adopting 2D Barcodes

Information for Health Information System Vendors

Adopt 2D Barcode Functionality

In recent years, measures have been introduced to ensure a continued focus on data quality and patient safety for vaccine administration. There is an increased dependence on electronic systems as a mechanism to capture and interpret key data elements while also providing additional information to aid in decision making during the patient visit. Integration of two-dimensional (2D) barcode functionality by Health Information System Vendors, particularly electronic medical record (EMR) and immunization information system (IIS) vendors, is the key to collecting more accurate data elements, improving workflow, and improving patient safety and health outcomes.

The data elements of interest on the vials and syringes are the product identifier (ID), such as the National Drug Code (NDC), lot number, and expiration date; in most instances today, these data elements are manually typed or selected from a preset list of data populated from inventory. Manual entry is a common cause of missing or incorrect data within EMRs and IIS. One advantage of the adoption of 2D barcodes is that they contain more data elements and occupy less space than linear barcodes, and when scanned, can improve data accuracy and completeness.

Industry Investment in 2D Barcoding

For the last several years, the Food and Drug Administration (FDA), the American Academy of Pediatrics (AAP), and the Centers for Disease Control and Prevention (CDC) have worked together to promote the use of 2D barcodes on vaccines. The market shift toward 2D began in 2011, when the FDA issued guidance which opened the door for placing alternative symbology on vaccine products in lieu of linear barcodes and allowed manufacturers to use 2D barcodes containing not only the product identifier, but also lot number and expiration date. This has had a significant impact on the adoption of 2D barcode scanning, and demonstrates the collaborative efforts of key industry players.

There is demonstrated evidence that patient record and state registry data quality improves when healthcare providers scan 2D barcodes (<http://www.cdc.gov/vaccines/programs/iis/2d-vaccine-barcodes/downloads/pilot-summary.pdf>). US vaccine manufacturers have introduced 2D barcodes on the majority of the products that are currently shipping and providers who scan 2D barcodes have also acknowledged the potential for time savings as a result of scanning. This is a clear indication that 2D barcodes are becoming a practical reality, and will become an accepted mechanism by which providers enter vaccine data into electronic systems.

Benefits for Health Information System Vendors

The increased number of 2D barcoded vaccines in the supply chain has prompted greater interest in health information systems that are capable of integrating with barcode scanners to accurately capture data elements contained in the 2D barcode, automatically populating those elements in the correct fields in the patient record and inventory system, and providing patient safety alerts and vaccination recommendations. Because of these features, providers are increasingly seeking this functionality.

EMRs and IIS are essential to realize the full benefits of 2D barcodes for vaccine inventory and administration data. An investment by Health Information System Vendors in developing and maintaining functionality to integrate with scanning devices will enable the capture of vaccine data at both inventory and patient administration. Once the data are identified and read correctly, they can be auto-populated into required data fields within the system as well as derive additional information based on the product ID that is of interest to the users, such as manufacturer and product name. With confidence in the quality of the data recorded, additional features can be built in to help providers improve their vaccination process.



Improve Data Quality and Provide Continued Public Health Support

Vendors can join other stakeholders in efforts to improve data quality and patient safety by implementing 2D barcode functionality to increase ease of use and facilitate the integration of 2D scanning into providers' workflows. The following steps will support the continued adoption of 2D barcode scanning amongst health information systems vendors.

- ✓ Fully integrate 2D barcode scanning capabilities to expand information populated and benefits to providers
 - Enable population of lot number, expiration date, and product identifier for all 2D barcode scans
 - Expand algorithms and look-up tables behind the scenes to enable conversion of the product identifier (e.g. NDC) and to derive additional information
 - Add functionality or new fields to allow practitioners to capture information on funding source (e.g. Vaccines for Children). Currently, many providers add this information by editing the lot number field, which can introduce errors, reduce data quality, and hamper recall efforts
 - Consider decision support functionality to alert providers of patient safety concerns at time of administration
 - Improve scanner compatibility with standalone scanners or scanning functions contained within mobile devices
- ✓ Provide support to practitioners to identify and address compatibility issues between health information systems, 2D barcodes, and 2D barcode scanners
 - A [Functional Capabilities Report](#) is available on the CDC website to assist with these types of issues.

As the number of 2D barcoded vaccines in the market continues to increase, the demand in the market for 2D barcode functionality is expected to increase. Vendors who enable their systems to be 2D barcode-compatible will continue to support and enhance public health activities while proactively responding to their clients' expectations.

Vaccination record accuracy and completeness are better when 2D barcodes are scanned than when information is entered manually. Thus, 2D barcode-enabled EMR and IIS systems can improve public health and patient safety by increasing data quality. Analysis of these data can be used to conduct surveillance and other activities, or identify patients who may be affected by a product recall. Implementing 2D barcode capability in these systems allows providers to scan vaccine administration data directly into the patient record and provide high quality data to the IIS. 2D barcode-enabled systems will ultimately improve customer expectations and facilitate the continued adoption of 2D barcoding, which will in turn improve data quality and advance patient safety. A Summary Report is available for reference and provides further detail on potential improvements in data quality.



Interested in learning more?

To find out more about how adopting 2D barcode functionality can benefit your organization, please scan the barcode above or visit the CDC's Two-Dimensional Vaccine Barcoding website at:
<http://www.cdc.gov/vaccines/programs/iis/2d-vaccine-barcodes/>