Two-Dimensional (2D) Vaccine Barcode Pilot: Lessons Learned

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Session Objectives

- Provide an overview and status of the 2D Vaccine Barcode Pilot project

- Share 2D Vaccine Barcode Pilot's preliminary results

- Discuss next steps

Pilot Overview

Pilot Objectives

1. Assess the effect of 2D barcodes on vaccine data

2. Evaluate the use of 2D barcodes

3. Implement 2D barcodes on Vaccine Information Statements (VIS)

4. Evaluate how 2D barcode application on vaccine secondary packaging will impact the vaccine supply chain

5. Compile - EMR & IIS 2D barcode scanning functionality

Pilot Information

History

- Oct 2010 - Preceding Study –Feasibility Study impact of a transition to 2D barcodes Findings: http://www.cdc.gov/vaccines/programs/iis/activities/downloads/2d-barcode-trkg-rpt.pdf

- Sept 2011 - 2D Barcode Pilot Initiated

- Aug 2012 – Apr 2013 – Implementation period

Participants

- 2 Vaccine Manufacturers

- 217 Immunizers

- 10 Immunization Information Systems

Vaccination Records Assessed – Implementation Period

|	EMR	IIS
Total	916,000	1.1M
2D Barcoded	53,000	46,000

Pilot Participation

10 Immunization Awardees

— Alaska

— Florida

— Iowa

— Michigan

— New Jersey

— New York State

— New York City

— Oregon

— Washington

— Wyoming

2D Barcoded Vaccines

- Havrix Adult
- Pediatric DT
- Adacel
- Fluzone
- Menactra
- Daptacel
- Tenivac
- IPOL
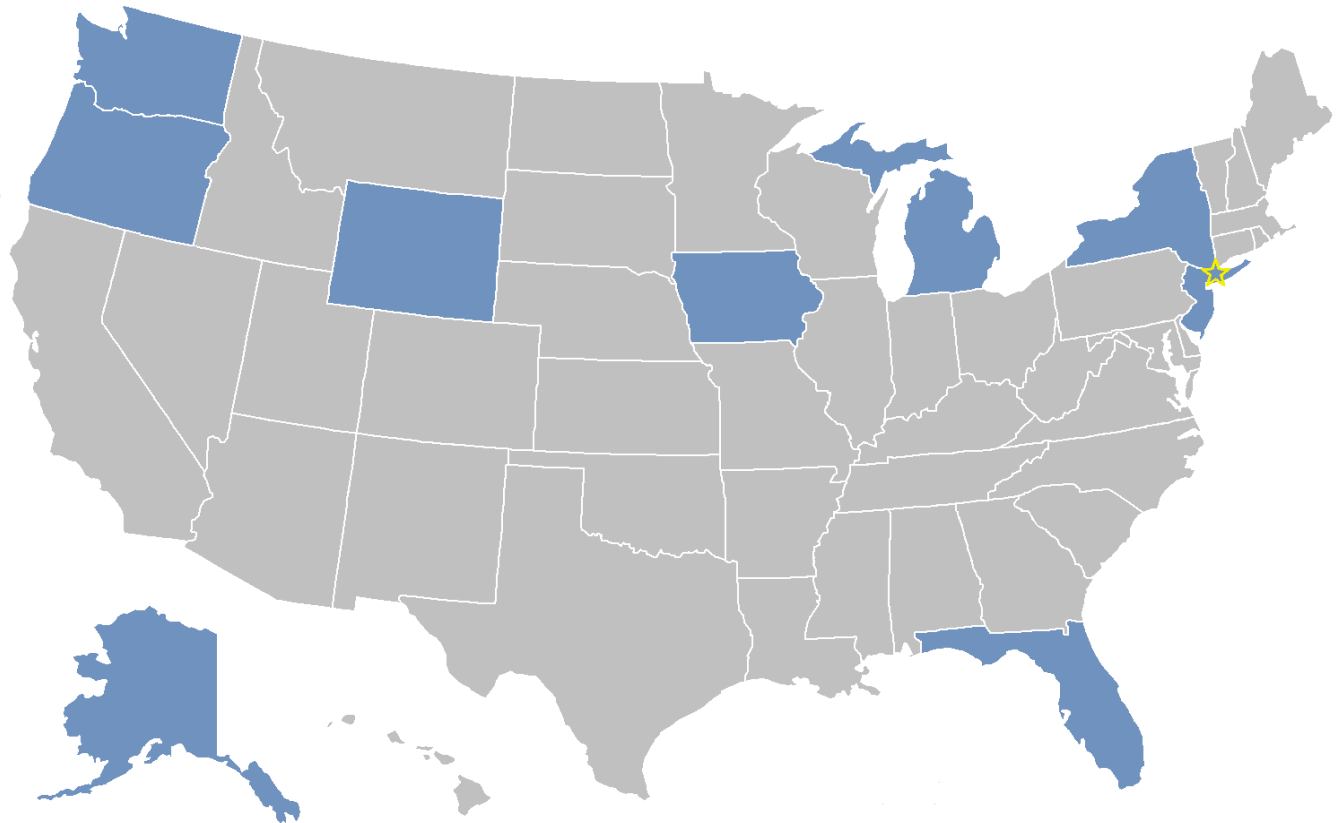
Pilot Vaccine and Information Workflow

Manufacturer	Immunizer	Record System	IIS

Add 2D barcode to primary packaging :
- Data Matrix barcode containing
  - GTIN
  - Expiration date
  - Lot number
- Distribution to pilot participants via existing vaccine supply chain.

Scan vaccine data:
- Entering vaccine into inventory
- Administering vaccine
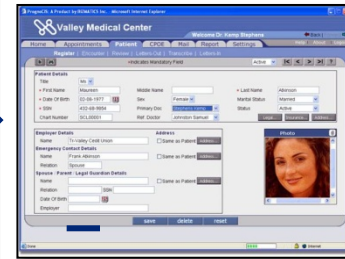
Record system types:
- Electronic medical records (EMR)
- Immunization Information Systems (IIS)
- Track GTIN, expiration date, and lot number

Receive data from the immunizers' record system:
- Acts as a source of evaluation for data accuracy and completeness

Preliminary Results

Key Findings

1. Preliminary results confirm a positive effect on vaccine data accuracy and completeness

2. Vaccine manufacturers have demonstrated a commitment to the application of 2D barcodes on the unit-of-use

3. Most EMR and IIS systems require modification to process 2D barcodes

4. Providers are willing to adopt practices to incorporate 2D barcode vaccine use but not until the majority of vaccines are 2D barcoded

5. Pharmaceutical supply chain stakeholders have indicated 2D will be the data carrier of choice

Preliminary results

Key Findings

Average EMR/EHR Pre- and Post-Implementation Data Quality

■ Pre-Implementation
■ Post-Implementation
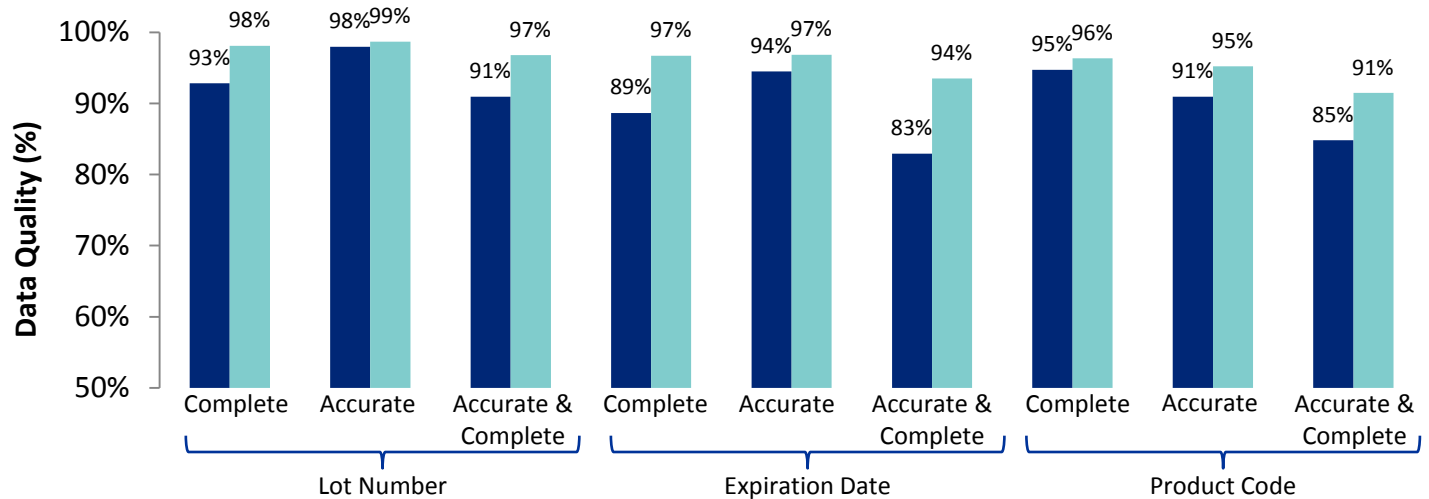
Average IIS Pre- and Post-Implementation Data Quality

Preliminary results
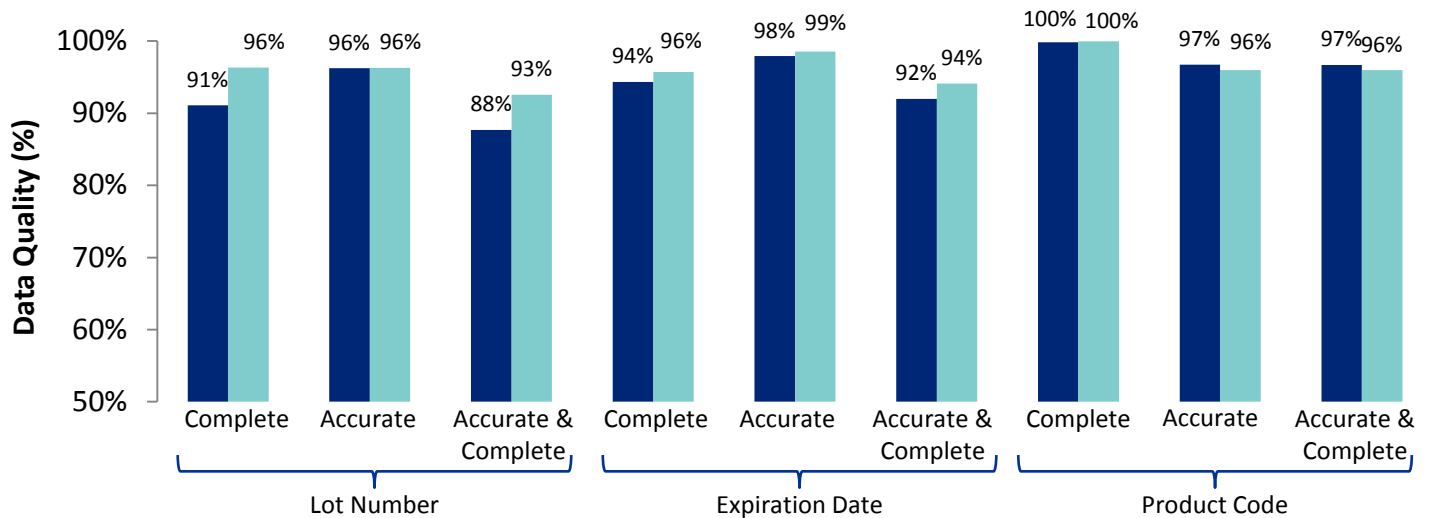
Early Pilot Findings: Pilot Supply Chain

Preliminary results
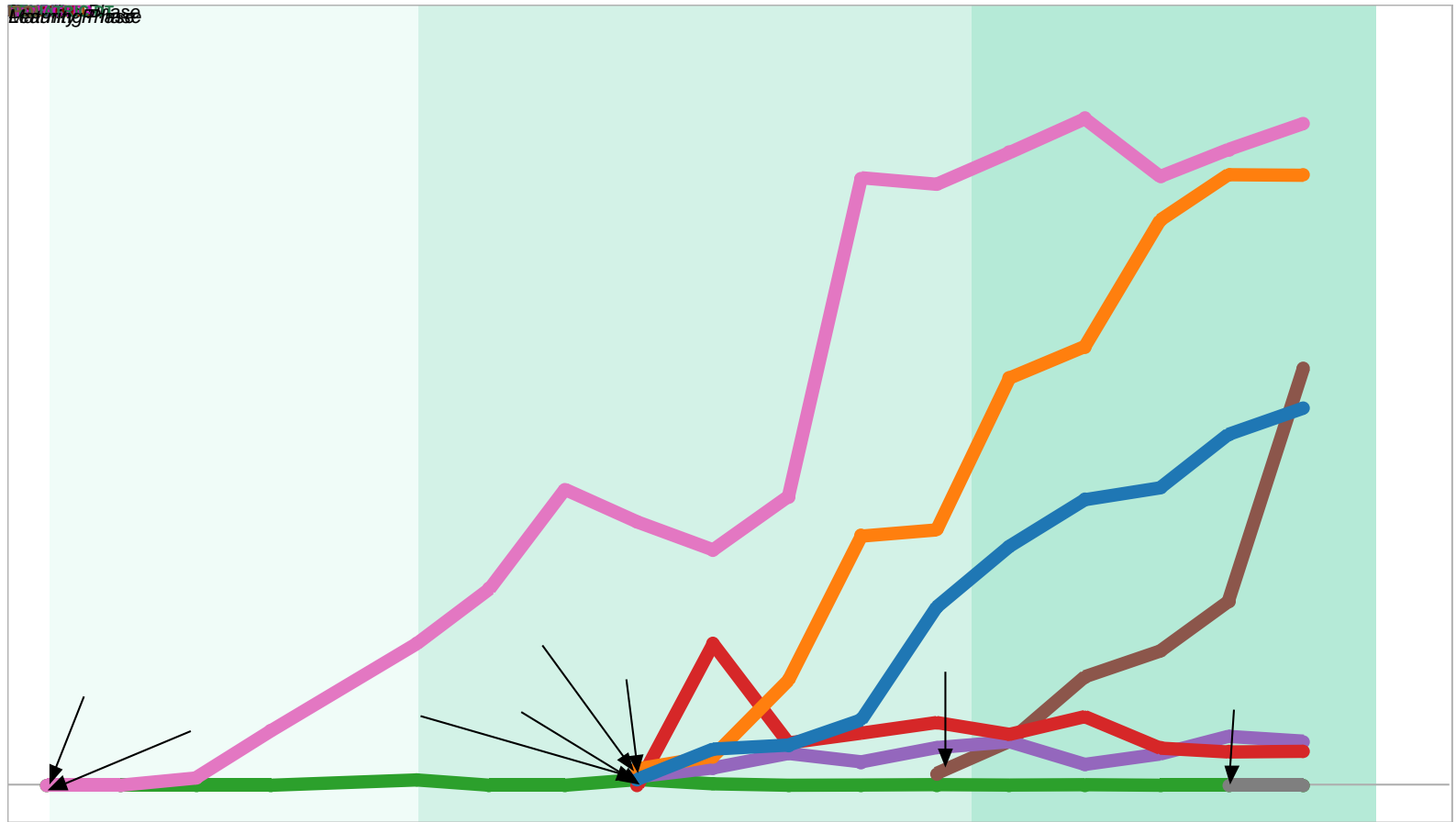
Workflow Analysis: Summary Efficiency Findings

Inventory Management

Avg. Time to Complete (sec)*

- Pre-Pilot / Baseline: 36.0
- 2D Barcode: 25.4

Vaccine Administration

Avg. Time to Complete (sec)*

- Pre-Pilot / Baseline: 18.9
- 2D Barcode: 20.2
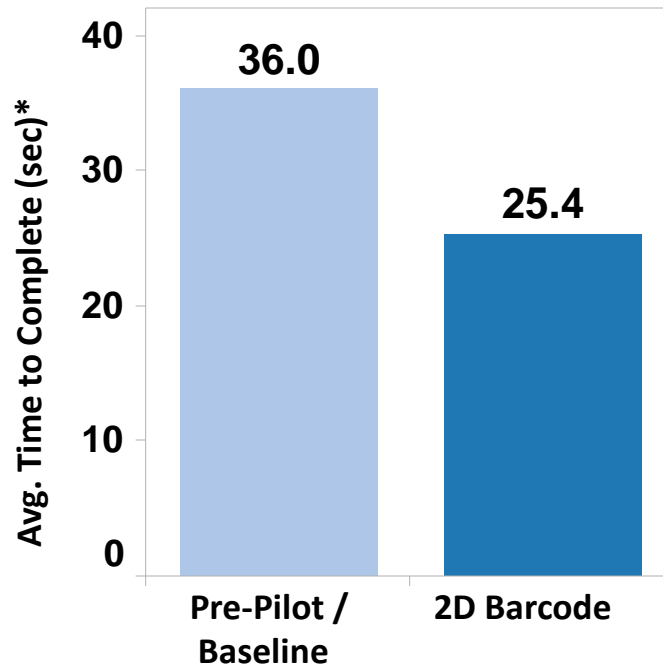
- Inventory is initial point of vaccine data entry
- Lot number and expiration date manual transcription eliminated
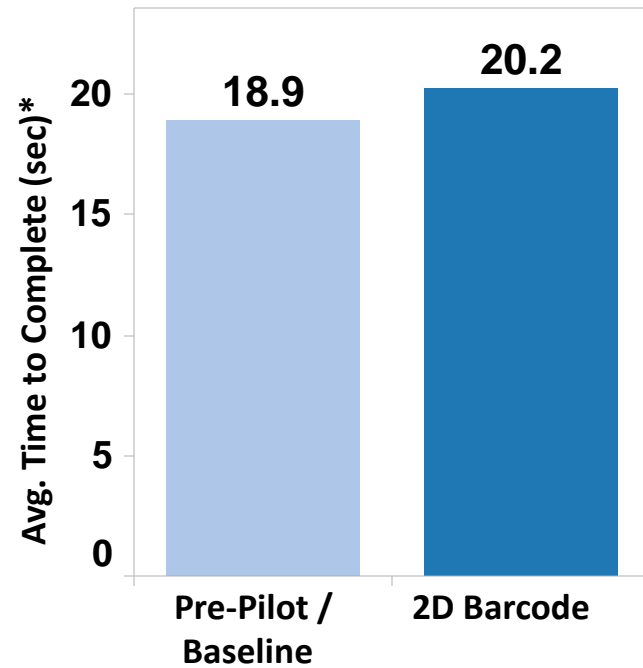
- Experienced users maximized process efficiencies
- Scanning efficiency will improve as the number of vaccines scanned per patient increases

Preliminary results

User Experience Survey: Sustainability
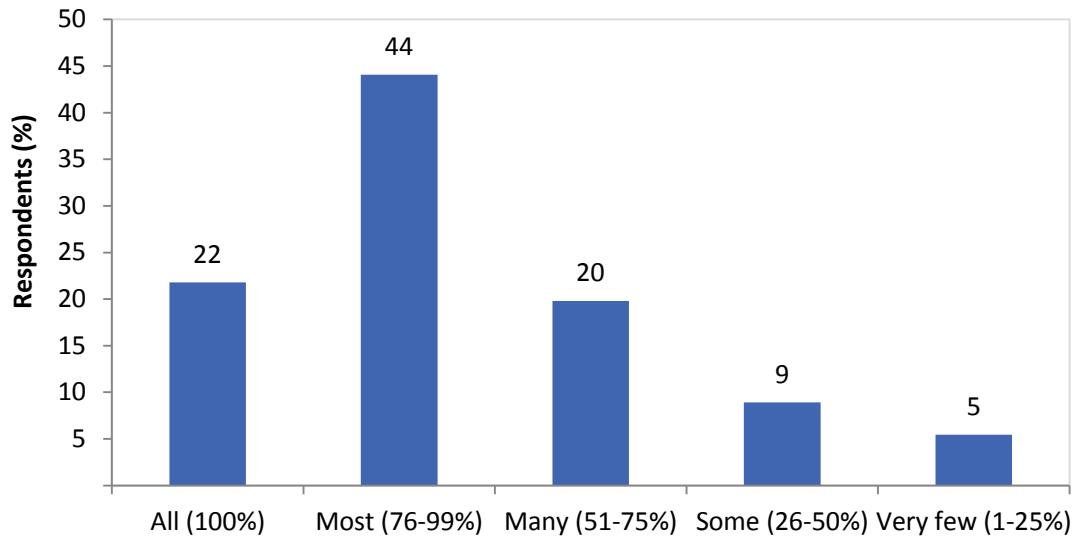
Percentage of vaccines that would need to have 2D barcodes on them to sustain the use of 2D barcode scanning in the respondent's practice
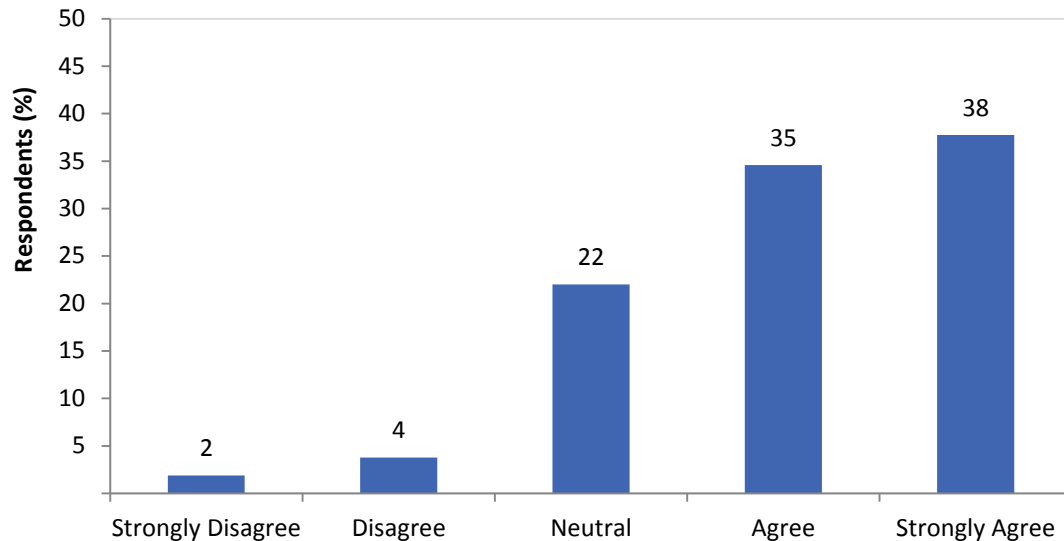
Level of agreement/disagreement with the statement "When available on most vaccines, 2D barcode scanning should be used consistently to record vaccines administered in my clinic"

Preliminary results

# User Experience Survey: Pilot Participant Efficiency Perceptions

Administration

Inventory

Legend:
- Very Negative Impact
- Somewhat Negative Impact
- No Impact
- Somewhat Positive Impact
- Very Positive

Administration chart values:
- UE1 Lot Number: 11%, 20%, 34%, 34%
- UE1 Expiration Date: 10%, 25%, 30%, 35%
- UE1 Product ID: 10%, 16%, 39%, 34%
- UE2 Combined: 18%, 14%, 43%, 23%

Inventory chart values:
- UE1 Lot Number: 13%, 18%, 36%, 33%
- UE1 Expiration Date: 12%, 20%, 36%, 32%
- UE1 Product ID: 6%, 13%, 48%, 32%
- UE2 Combined: 18%, 17%, 42%, 24%

Preliminary results
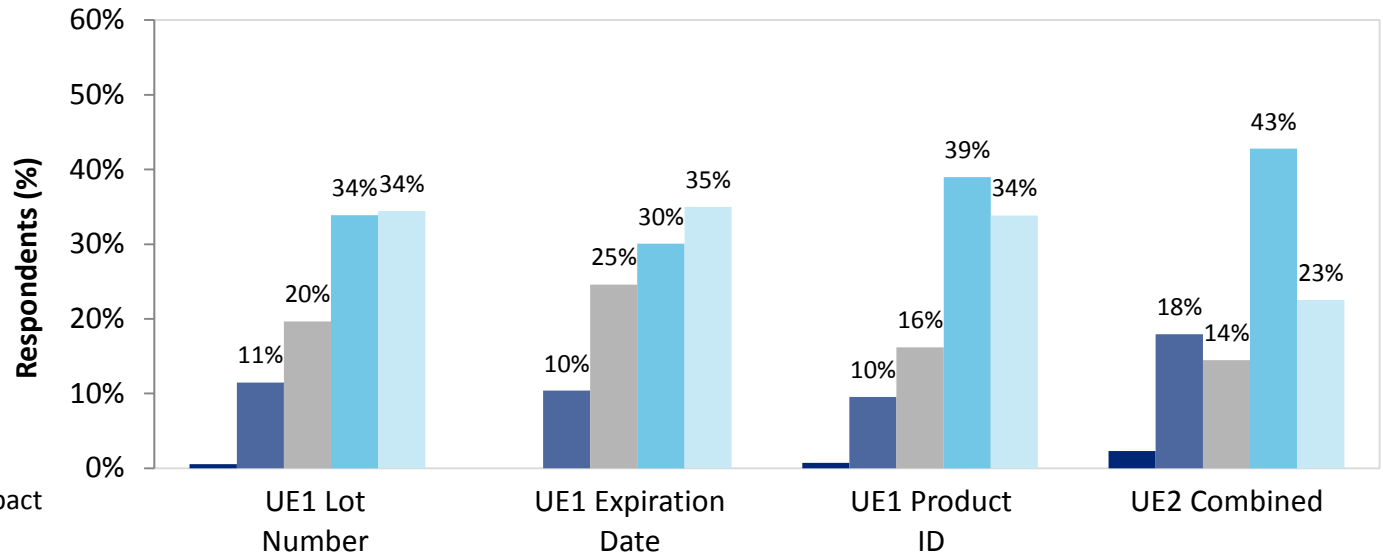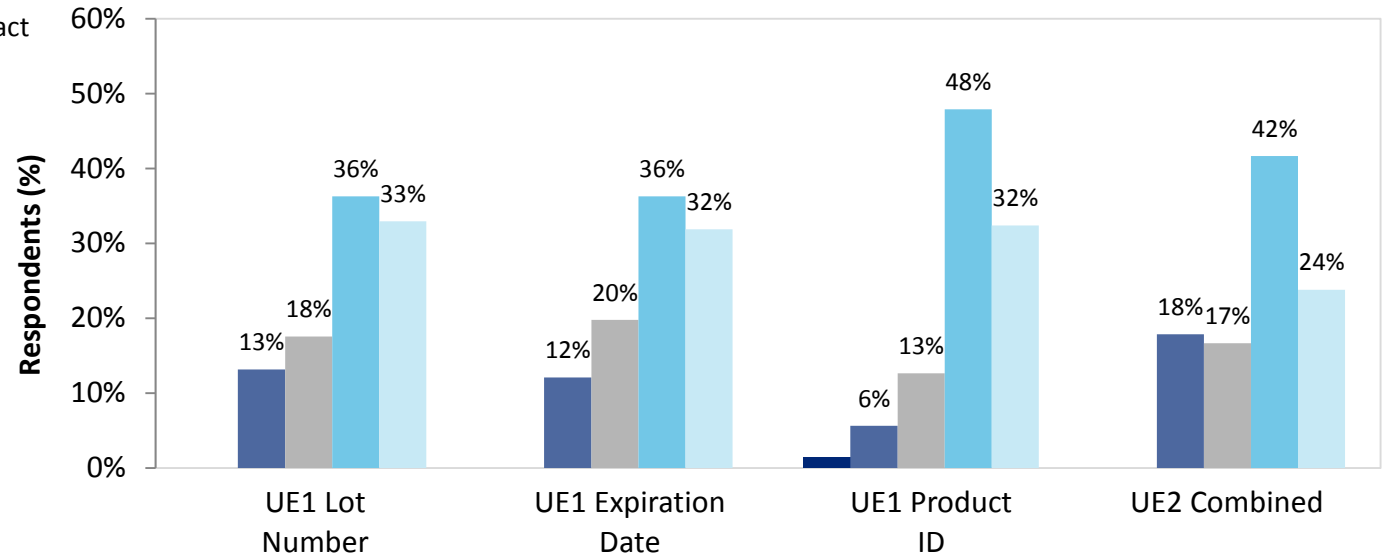
User Experience Survey: Pilot Participant Accuracy Perceptions

Administration

Inventory

Legend:
- Very Negative Impact
- Somewhat Negative Impact
- No Impact
- Somewhat Positive Impact
- Very Positive

Y-axis (both charts): Respondents (%)

Categories: UE1 Lot Number, UE1 Expiration Date, UE1 Product ID, UE2 Combined

Administration chart values:
- UE1 Lot Number: 1%, 4%, 20%, 28%, 48%
- UE1 Expiration Date: 1%, 4%, 20%, 28%, 48%
- UE1 Product ID: 1%, 4%, 17%, 39%, 38%
- UE2 Combined: 0%, 5%, 10%, 38%, 47%

Inventory chart values:
- UE1 Lot Number: 2%, 21%, 27%, 49%
- UE1 Expiration Date: 2%, 20%, 27%, 51%
- UE1 Product ID: 4%, 14%, 38%, 42%
- UE2 Combined: 4%, 12%, 36%, 49%

Preliminary results

Workflow Analysis: Clinician Feedback

"The lot number and expiration date are hard to read on some of the vaccines we get. When those vaccines get barcodes we can scan, it will be a huge help."
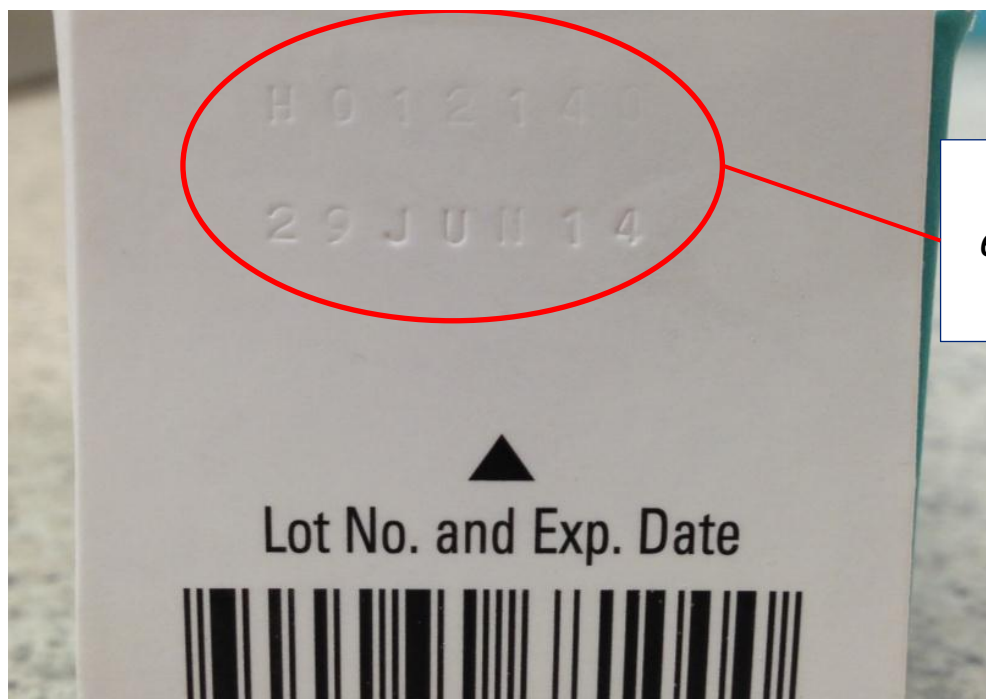
Lot number and expiration date stamped on M-M-R package

"I often see transcription errors where eight (8) and "B" or zero (0) and "O" have been mixed up. Scanning will fix these issues and reduce the number of times I can't find the lot I'm looking for in our inventory."

Pilot Investigation Reports

Impact of 2D Barcodes on Vaccine Secondary Packaging
- Evaluates how the introduction of 2D barcodes onto unit of sale (package) will impact participants in the vaccine supply chain

EHR-IIS 2D Barcode Functional Capabilities Report
- Provides a best practices approach of 2D scanning functionality based on EMR-IIS interviews

Next Steps

Next Steps

- Finalize 2D Barcode Pilot Report

- Continue work with Prevention and Public Health Fund (PPHF) Awardees to implement 2D barcode vaccine scanning in immunization registries

- Monitor 2D Barcoded Vaccines – in the supply chain

- Adoption Strategies for 2D Barcodes – Pilot
  - 2014 – 2015 flu season
  - Pharmacies, community vaccinators, public, and private immunizers
  - Work flow analysis

CDC 2D Barcode Website

Questions

Thank You
&
A Special Thanks to the Pilot Participants!
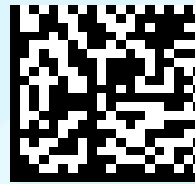
For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov   Web: www.cdc.gov

National Center for Immunization and Respiratory Diseases
Immunization Services Division