Life Behind the Doors of Public Health: Technology

Alberta Health and Wellness
Overview

1. Alberta Bar Coding Pilot Project

2. Current Alberta Immunization Registries

3. Future Alberta Immunization Registries
   – Communicable Disease and Outbreak Management Information System
1. Alberta Bar Coding Pilot Project
Background

• The National Advisory Committee on Immunization (NACI) passed a resolution in 1999, recommending that bar codes be placed on all vaccine products to improve record keeping and the safe use of vaccines

• In response to the NACI recommendations, the Public Health Agency of Canada (PHAC) initiated the Automated Identification of Vaccine Products (AIVP) project
Bar Coding in Alberta

• In 2010, Alberta Health and Wellness Completed a Feasibility Study to Evaluate the Use of Bar Codes at the Provincial Vaccine Depot

• The Potential for Measurable Benefit was Identified and a Bar Coding Pilot Project was Initiated

• The Scope is Limited to Publicly Funded and Administered Vaccines
Key Benefits of Bar Coding in Alberta

• Time Savings
• Improved Accuracy
• Better Supply Chain Management
  – Reduced Waste
  – Reduced Inventory Holding Costs
  – Improved Forecasting
• Help to Reduce Supply Shortages
• Contribute to a Complete and Accurate Electronic Health Care Record
Vaccine Management and Distribution

The Alberta Provincial Vaccine Depot (PVD)

- Procures, Manages and Distributes Over 41 Different Biologics
- Distributed Over One Million Doses in the 2010/2011 Fiscal Year
- Supplied Vaccines to 16 Public Health Vaccine Depots throughout Alberta
Vaccine Management and Distribution

The Alberta Provincial Vaccine Depot (PVD)

• Located in a Secure Facility with:
  – Several Loading Docks
  – Two large Walk-in Coolers
  – Packing Areas
  – Office Space

• Lots of Parking for Refrigerator Trucks to Load and Unload

• Ability to Expand Storage Capacity if Required
Alberta Bar Coding Pilot Project Purpose

• To Evaluate and Demonstrate the Ease of Integration and the Benefits of Automated Technology in Vaccine Supply Chain Management

• To Test the Readability of Bar Codes on Secondary Packages (e.g. GTIN)
Pilot Project Focus Areas

• Stock Counts
• Purchase Order Creation
• Receiving Product
• Picking, Packing and Shipping Stock
• Reconciliation of Product Return
Pilot Project Costs

• Business Process Analysis (Current and Future States)
• Hardware Analysis and Procurement
• Software Development and Vaccine Inventory Management Database (VIDS) Integration
• Redesign of Business Procedures
• Staff Training
• Data Collection and Maintenance
Hardware

• Bar Code Readers Can Communicate with the Inventory Application:
  – Over Wi-Fi (Wireless)
  – Through a USB Connection (Wired)

• Due to the Physical Location of the PVD, Wi-Fi is Not an Option
  – A Signal Cannot be Maintained between Rooms in the Building
Software

• In Early 2011, the PVD Implemented the PeopleSoft Inventory Module
  – PeopleSoft Replaced Spreadsheets

• This Application is Extensible to Support Bar Coding
Evaluation Research Objectives

• Objective #1: Data Exchange
  – Test the Load of Information from the Vaccine Inventory Database System (VIDS) to the PeopleSoft Inventory Module

• Objective #2: Data Entry
  – Test the Completeness and Accuracy of the Data Elements (e.g. Lot Numbers, Expiry Date, Date of Receipt/Ship, Product Name, etc.)
Evaluation Research Objectives

• Objective #3: Time Trials
  – Pre and Post Bar Coding

• Objective #4: User Acceptance
  – What was the Staff Level of Satisfaction with the Bar Coding Process?
Next Steps

• Phase 1 - Underway
  – Bar Coding Pilot at the Provincial Vaccine Depot

• Phase 2
  – Bar Coding at One Rural and One Urban Public Health Vaccine Depots

• Phase 3
  – Bar Coding at all Sixteen Public Health Vaccine Depots

• Phase 4
  – Feasibility Analysis and Implementation Planning for Bar Coding on Primary Packaging
Immunization Registries
Overview

Alberta is Actively Investing in:

• Immunization Registries
  – End-user Applications
  – Data Repositories (Databases)

• Electronic Immunization Data
  – Immunization Events
  – Adverse Events Following Immunization (AEFI)
Key Benefits of Immunization Registries

• Improve Health Outcomes

• Inform and Monitor Policies And Programs

• Forecast Inventory Requirements

• Strengthen Surveillance and Assessment
2. Current Immunization Registries
IMM/ARI

• Stores Immunization and AEFI Information from ALL Public Health Zones in the Province

• Provides:
  – Data Submission Guidelines
  – Comprehensive Business and Data Rules

• Contains Data from 2002 for Rural Zones and 2006 for All Zones

• Has Been Used as a Starting Point for Custom Applications (First Nations)
Source Systems

- Capital (Edmonton)
- Calgary
- Rural

IMM/ARI
Key Data Elements

• Immunization Events
  – Demographics
  – Vaccine (Including Lot #)
  – Vaccine Administration Information

• AEFI Data Elements
  – Demographics
  – Immunization (Including Lot #)
  – Adverse Event Details

AEFI Records are Not Currently Linked to Immunization Records
Data Submission Frequency

• Zones Electronically Submit Immunization Data Weekly
  – One Zone Submits Quarterly
Data Submission Challenges

• Source Unable to Submit
  – Immunizations Administered by or AEFI\'s Reported to:
    • Non-Public Health Workers
    • Physicians
    • Pharmacies
    • Private Companies

• Data Quality
Data is Key

- 2010/2011 Blue Cross Influenza Data
  - 40,000 Records
- Historical Data from Rural Communities
  - 21M Records
- 2010/2011 Influenza Data
  - 525,000 Records
- Historical Data from Calgary
  - 1.6M Records
On-going and Future Projects

• Real Time AEFI Monitoring
  – Link Immunizations with AEFI Data
  – Monitor at the Lot Level

• Analysis of Immunization Rates
  – Framework and Methodology to Monitor Program Effectiveness and Herd Immunity

• Enhanced Data Quality Assurance and Control
Future Alberta Immunization Registries

Communicable Disease and Outbreak Management Information System
Alberta’s Public Health Information System Solution (CDOM)

• Alberta Considers Itself to be Part of the Pan-Canadian Public Health Information System Solution

• Alberta is Committed to the Growth and Expansion of the Canadian Electronic Health Record

• Driven by findings in the Naylor Report (2003)

• Same Goals / Different Roads
Alberta’s Public Health Information System Solution (CDOM)

- Alberta-specific Solution
  - Aligned with Canadian Standards

- Bottom-up Solution Designed to Support Alberta Health Practices

- Developed in Consultation with Alberta Public Health Professionals

- Interoperability and Data Portability are Key Focus Areas
Alberta’s Public Health Information System Solution (CDOM)

- Close to Real-time Surveillance Data and Reporting Mechanisms
- Comprehensive Case Management Tools and Workflows
- Is a Configured Commercial Off-the-shelf Solution (COTS)
- Is HL7 Enabled to Allow for Communications with Application in Other Jurisdictions
Alberta’s Public Health Information System Solution (CDOM)

• Focused on Alberta-based Outcomes and Success Criterion

• Implementation of CDOM will Occur in Parallel with Organizational and Business Process Change
  – Alberta Health and Wellness
  – Alberta Health Services (Central)
  – Alberta Health Services (5-Zones)
  – Provincial Laboratories
Alberta’s Public Health Information System Solution (CDOM)

- Developed Using a Phased Approach

- Full Implementation at the End of Each Phase

- Designed to be:
  - Time Neutral
  - Easy-to-use
  - Easy-to-deploy
Alberta’s Public Health Information System Solution (CDOM)

- Will Leverage COTS and GOTS Solutions that are Already in Production

- Data will be Integrated with Alberta’s Business Intelligence Environment (BIE) that:
  - Houses Data from 1919 to the Present
  - Offers Numerous Operational Reports
  - Provides the Tools for Ad-hoc Data Mining and Reporting
CDOM Scope

CDOM will Include Data and Surveillance Information at a Client-focused Level for:

– Communicable/Notifiable Diseases
– Outbreak Management
– Sexually Transmitted Infections
– Tuberculosis
– Immunization
– Adverse Events Following Immunization
CDOM Approach

CDOM will be Built by AHS in Three Phases over a Five-year Period

- Phase One: Communicable Diseases and Outbreak Management
- Phase Two: Sexually Transmitted Infections and Tuberculosis
- Phase Three: Immunization and Adverse Events Following Immunization
CDOM Approach

Phase 1: Implement 2011

Phase 2: Implement 2012

Phase 3: Implement 2014
CDOM Project Status

• Proof-of-concept Phase Complete

• Functional Design and Product Configuration for the CD/Outbreak Management Module (Phase 1) is Underway
  – Delivered Concurrently Using an Agile Approach

• Reports and Data Extract Design is Underway
  – Key Component of Surveillance and Assessment
CDOM Project Status

• Phase One will be Implemented (Pilot) in Fall 2011

• Detailed Requirements for the STI/TB and Immunization Modules (Phases 2&3) will Begin in Early 2012
CDOM Related Projects

The Following Activities are Underway to Prepare for the Implementation of CDOM

– Lab Interfaces
– Business Process Analysis
– Definition of Roles and Responsibilities
– Retire Legacy Applications
– Legacy Data Plan
Provincial Immunization Repository

• Alberta Health and Wellness and Alberta Health Services are in Joint Discussions about the Feasibility of a Shared Provincial Immunization Repository

• All Related Systems Could be a Consumer and Contributor of Immunization and Related Data
  – This Would Include CDOM
Thank You