Digital Transformation and Readiness for GS1 Standards

A Conversation with Mackenzie Health Canada

Mackenzie Health

Presentation by:

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An Introduction to Mackenzie Health (MH)

Mackenzie Health

CORTELLUCCI VAUGHAN HOSPITAL

SPECIALIZED SERVICES:

- Inpatient Integrated Stroke Care
- Inpatient Mental Health Care
- Obstetrics
- Pediatrics

CORE SERVICES:

- Critical Care
- Emergency Care
- Medicine
- Surgery

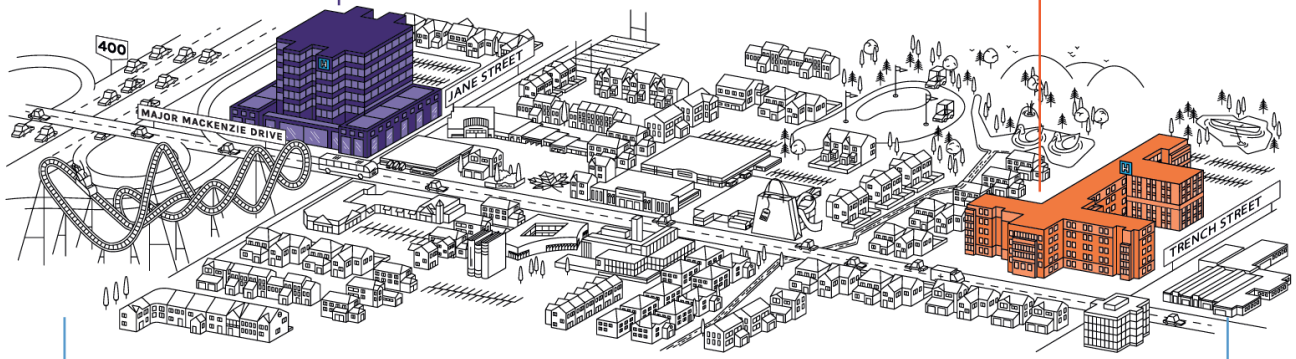
MACKENZIE RICHMOND HILL HOSPITAL

SPECIALIZED SERVICES:

- Chronic Kidney Disease Program
- Complex Continuing Care
- Outpatient Clinics
- Rehabilitation

CORE SERVICES:

- Critical Care
- Emergency Care
- Medicine
- Surgery



COMMUNITY-BASED SERVICES:

Autism, Behaviour Management, Brain Injury, Cardiovascular Rehabilitation, Complex Continuing Care, Diabetes Education, Dialysis, Domestic Abuse and Sexual Assault

Mackenzie Health's journey from one to two hospitals

2011

MRHH

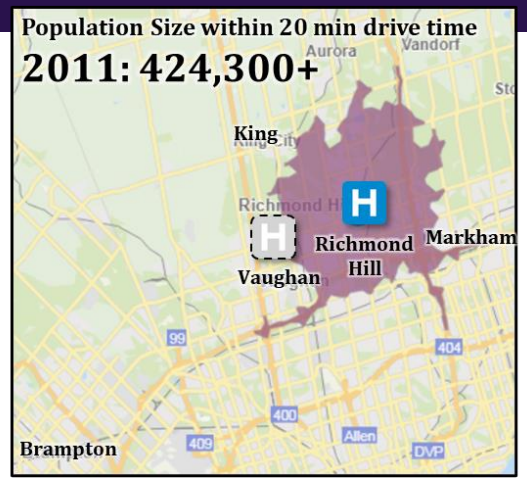
One hospital

85,853 Emergency Visits

500 Physicians

2,000 Staff

500 Volunteers

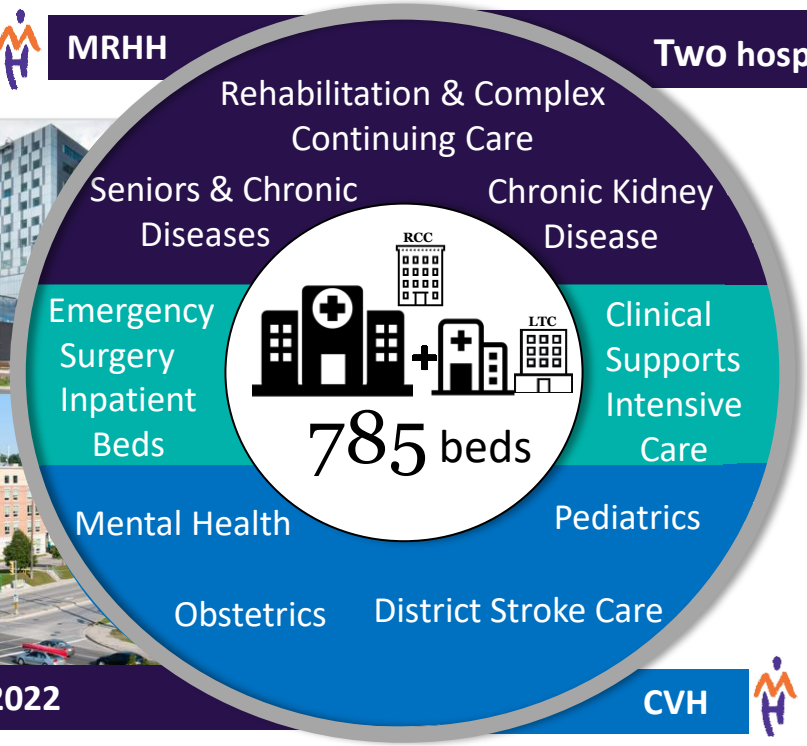


2022

MRHH

Two hospitals, including new Vaughan hospital

207K Emergency Visits for 2022

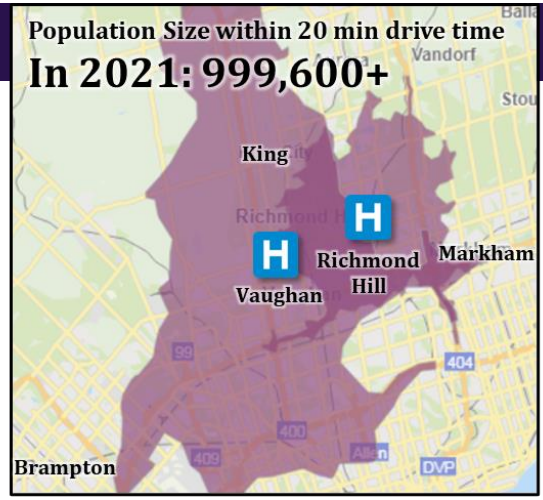


CVH

650+ Physicians

4,700+ Staff

700 Volunteers



We more than doubled population served based on drive time.

ENABLING EXCELLENT QUALITY CARE EVERY PATIENT, EVERY TIME

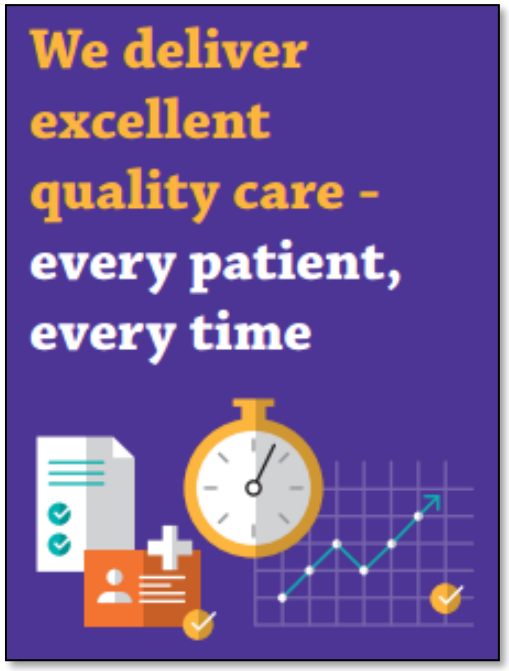
Think Big
Be Bold

Our future is Epic

HOW WE'LL SUCCEED

- Use effective & efficient processes
- Increase best practices across the hospital
- Make information easy and accessible for all care providers
- Relentlessly improve & consistently learn from every situation
- Foster a just & non-blaming environment

ENABLING



Epic implementation enabled every strategic driver of quality & patient safety

Throughout our EMR journey, we have been adding functionalities to better serve our patients

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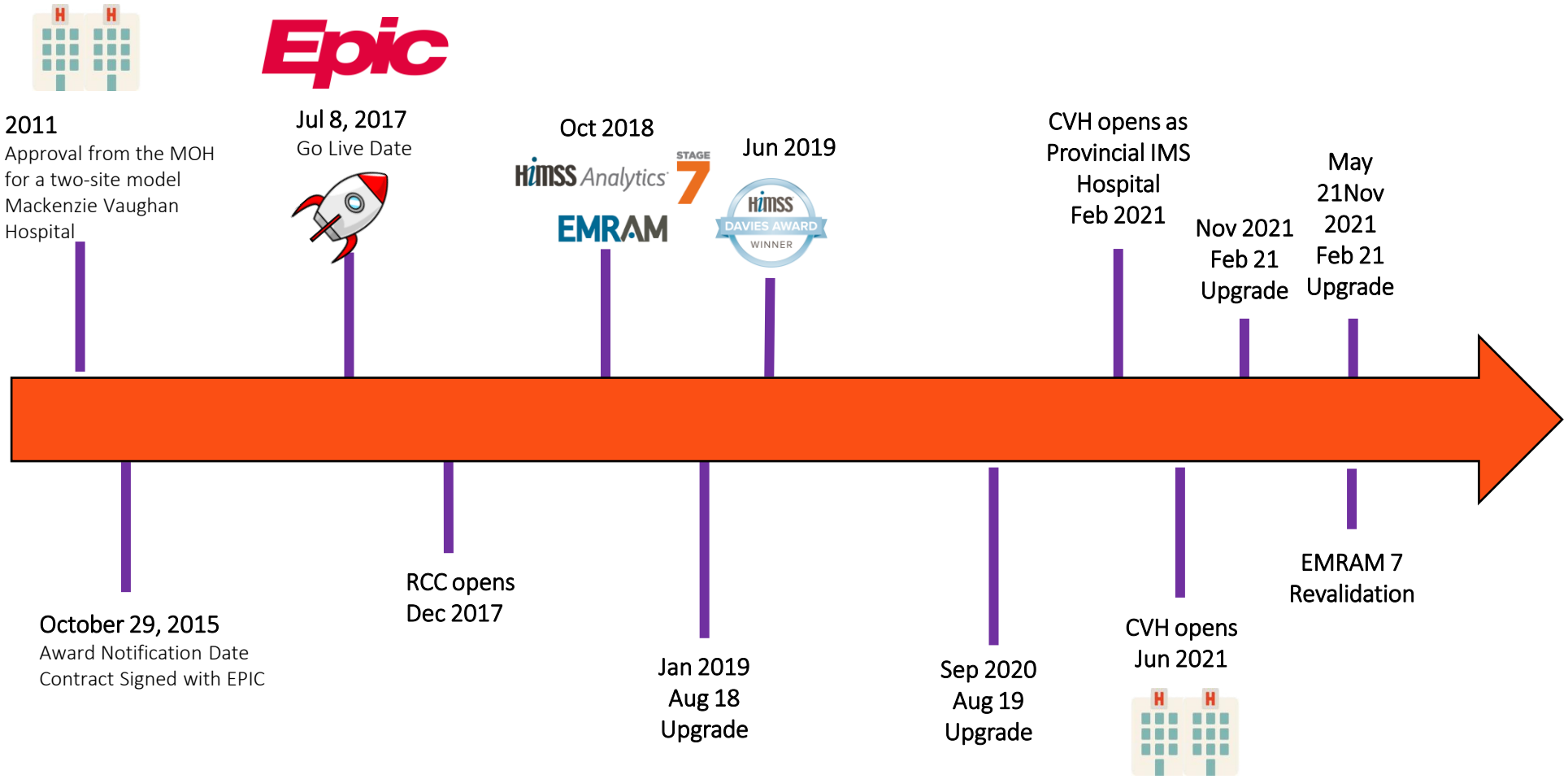


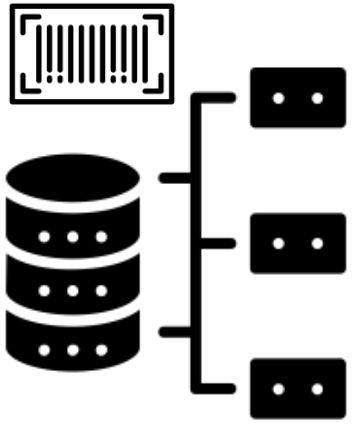
Preparation
2011 – 2015

Stabilization
Aug 2017 – Jul 2018

Optimization
Aug 2019 – Jun 2020

COVID Modifications
Mar 2020 – Jun 2021

Healthcare industry needs universal barcode infrastructure



- Healthcare industry is behind on universal barcoding system
- Infrastructure needs to be in place to ensure universal barcoding to support patient care

HIMSS Analytics STAGE 7

EMRAM

- Requires organization to grow data content, build infrastructure, data governance and analytical competency
- Most Canadian hospitals are at a Stage 4 which focuses on documentation and CPOE

Mackenzie Health is leveraging the Healthcare Deployment Roadmap

Global Standards

- ✓ Statement of Direction Approved
- ✓ Gap Analysis
- ✓ GS1 Digital Readiness Scorecard

National Product and Location Registries

- ✓ Pilot Stage Statement of Direction for National Healthcare Product Registry Approved
- ❑ Early Adopter Pilot
- ❑ Requirements of a healthcare product registry including a medical device category

Common Platform to Communicate Recall & Withdrawal Notifications

- ❑ Discussions on the advancement of a common platform
- ❑ Continue work commenced by GS1 Canada Product Recall for Medical Device Working Group (2018)

Barcodes promote product identification, traceability and visibility

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Product identification

Inventory control and traceability

Product visibility across the product cycle

Barcoding in Pharmacy

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Our Pharmacy's Pathway to Barcoding Success

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Foundational elements

Constructing the source of truth

Implementation

Monitoring impact and uptake

We had to build the infrastructure to support our vision

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Epic

Omnicell

CODONICS
PATIENT SAFETY

We built workarounds to accommodate for lack of barcoding infrastructure

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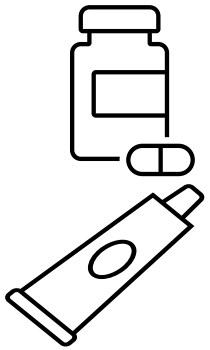
Made in House Medications Will Always Require Barcoding



Repackaged Products – unit dose oral solids, unit dose oral liquids

Compounded Products – sterile and non-sterile compounds

Lack of Universal Barcoding means we have to do more

No GS1 compliant barcode on product

Limited lot number and expiry detail

Automation to generate barcodes is preferred

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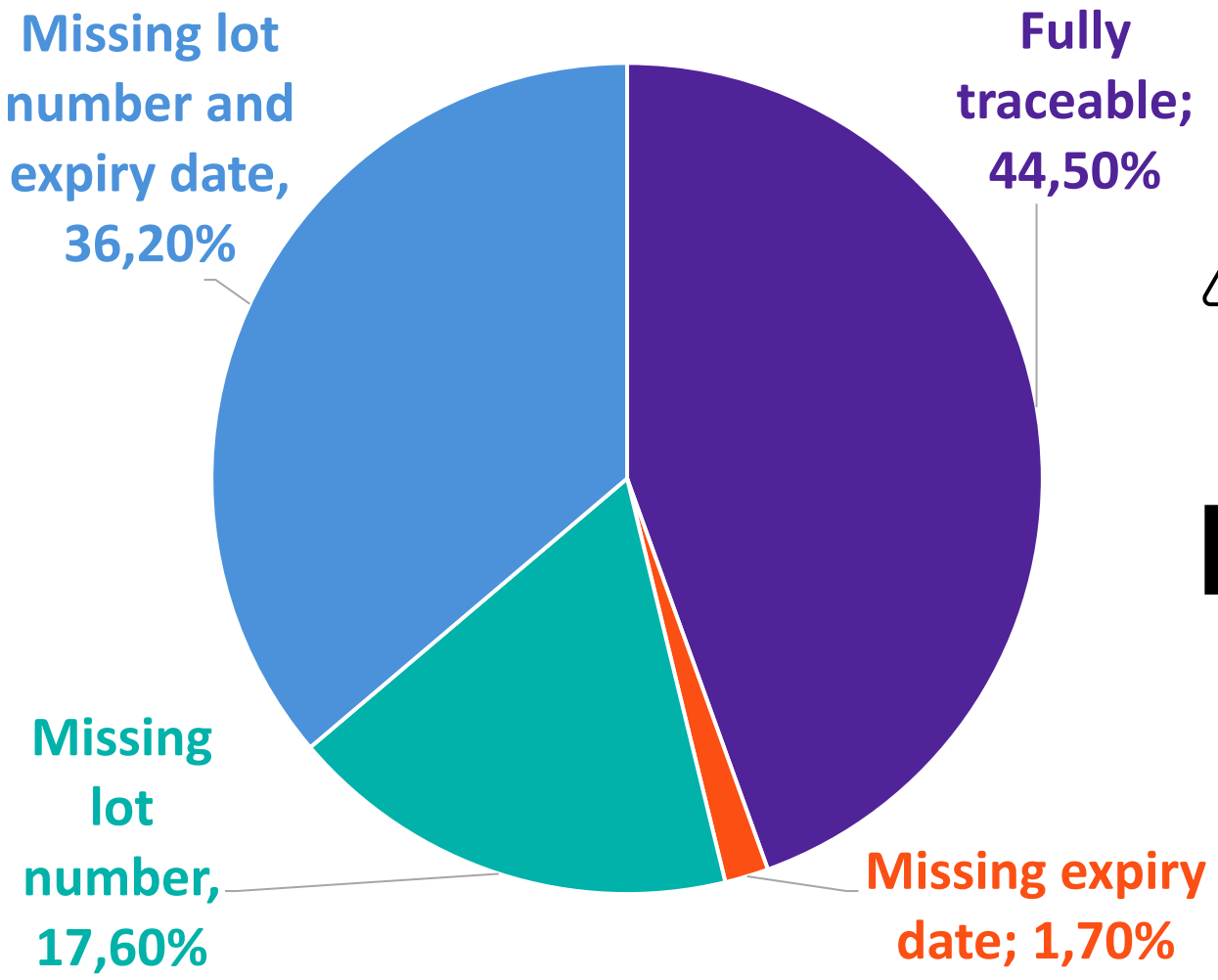
ARXIUM
Innovative Pharmacy Solutions

swisslog

HEALTHMARK

Due to lack of legislation, there is still a long way to go to support full traceability

Medication Administration Traceability



Nearly **40%** of products do not have a barcode with lot and expiry

Embedded within the 44.5% of products that are fully traceable are products with **no valid GTIN**

We use many systems to optimize processes

Pharmacy Product Flow

swisslog Epic Omnicell HEALTHMARK ARxIUM Innovative Pharmacy Solutions

At receiving, identify if product has a 14 digit GTIN barcode at unit of use (UOU)

If no usable GTIN, follow MH generated barcode workflow to label UOU

Restock into pharmacy automation using barcode scanning process

Barcode scan on removal from pharmacy automation to restock ADUs and Anesthesia Carts

Barcode scan to restock into correct pocket of ADU and Anesthesia Cart

Administer to patient using barcode scanning in Epic

Epic

Removal from patient care unit and pharmacy automation updates inventory tracking in Epic for full visibility

**Note: GS1 compliant barcodes include the GTIN, expiry date and lot number*

Anesthesia Removal at CVH

CODONICS PATIENT SAFETY

At removal from Anesthesia Cart, scan medication barcode using Codonics Printer

Codonics will verbalize the name and strength of the scanned medication as a second check

Codonics printer generates medication label with a barcode

Label is applied to prepared medication to scan at administration

MD scans barcode on Codonics label to document administration in Epic

Epic

Administration in Epic generates traceability of product to the patient level (including lot and expiry if that info is included in the GS1 compliant barcode

We built workarounds to accommodate for poor system infrastructure

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Resources, processes, and workflows are needed in order to compensate for the deficiencies in the existing barcode standards and legislation.

- Maintain formularies
- Verify barcodes
- Create and verify standardized barcodes
- Troubleshoot when barcodes are not working

The process for technicians to apply a barcode on a single product is very complicated and high-risk

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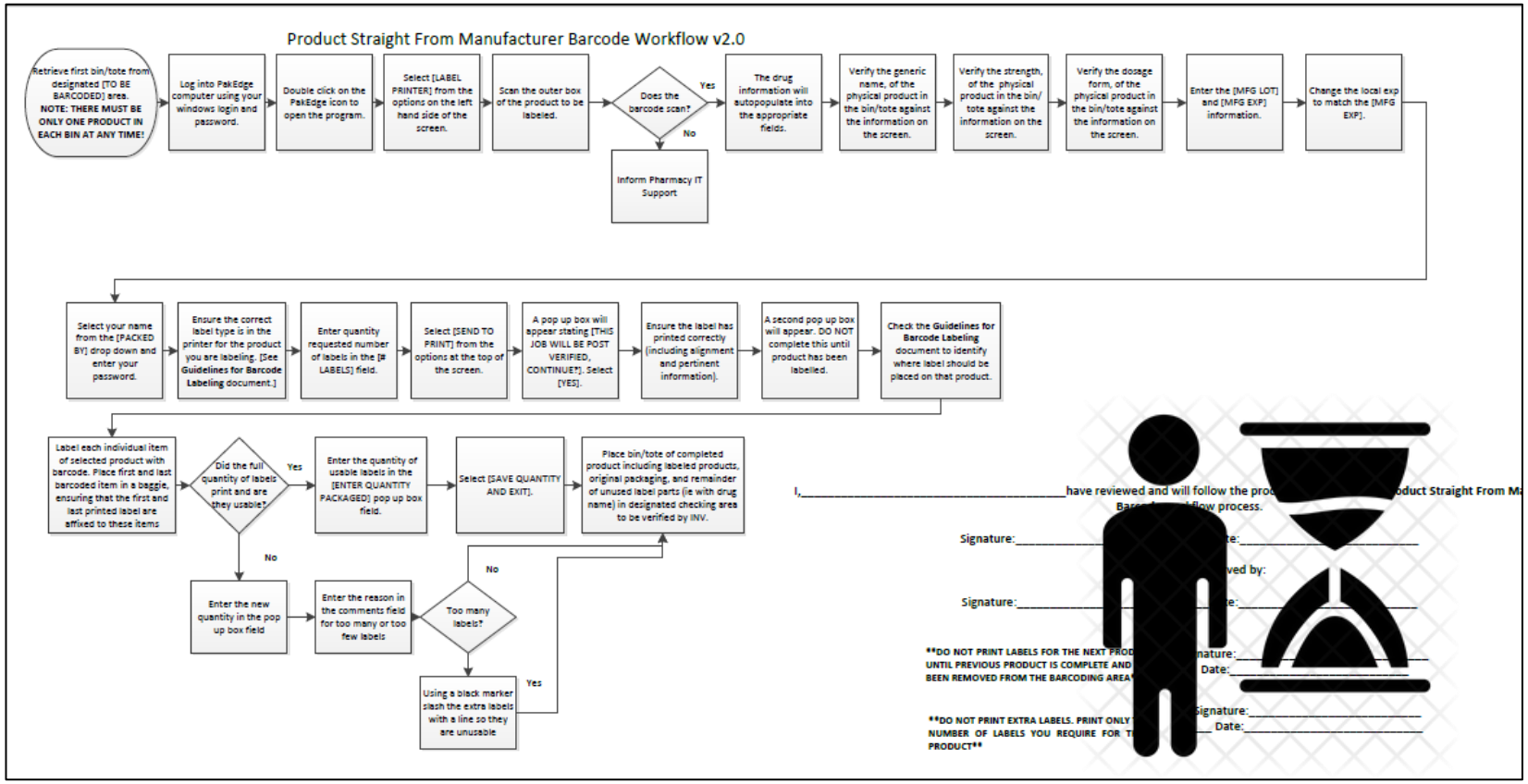

Manual, time consuming, costly and complicated

Since implementation, we have had high adherence to the barcoding process

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	Jul	Aug	Sep	Oct	Nov	Dec (MTD)
Patients attempted to scan at the bedside (≥95%)	98.2	98.2	97.7	97.7	97.6	97.8
Medications attempted to scan at the bedside (≥95%)	96.8	96.8	96.8	96.4	96.4	96.4
Blood Products attempted to scan at the bedside (≥95%)	98.9	97.5	99.3	99.4	99.8	99.6
Human Milk attempted to scan at the bedside (≥95%)	99	99.7	99.6	99.5	98.4	100
Bedside Specimen/Sample Collection (≥95%)	98.6	98.5	98.5	98.4	98.5	98.5
Computer Provider Order Entry (≥90%)	97.4	97.3	97.1	97.2	97.2	97.2

Pharmacy's Challenges and Ideal State

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Benefits Observed

- Improved provider experience by automating workflows
- Decrease patient safety events by utilizing barcode scanning at different stages
- Quality assurance
- Line of sight to inventory
- Drug recall management
- Scan compliance

Challenges Faced

- Maintaining several databases
- Manual checks
- Investing in resources to re-barcode vendor GTINs
- Barcodes generated by Pharmacy have the potential to create a downstream error

Lessons Learned

- Build the GTIN as the identifier of choice
- Invest in an EMR that has capability to read and store lot and expiry from the barcode
- Invest in automation at the medication management level
- Ensure all systems use the same barcode

Next Steps

- Need advocacy for legislation
- Need single global registry

Barcoding in Operating Room

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Our Operating Room Pathway to Barcoding Success

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Foundational elements

Constructing the source of truth

Implementation

Monitoring impact and uptake

Before barcoding we relied on manual data entry

Key patient information was formerly tracked through the **"Implant Book"**

Included:

- Patient stickers
- Implant stickers
- Surgery information

Perioperative scanning requires partnerships to manage, maintain and capture barcodes accurately & effectively

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Plexxus

Epic

- People
- Processes
- Infrastructure
- Database
- Tracking
- Automation

Most of MH's implant vendors have worked to meet a barcode standard that can be accessible to scanning into an EMR

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Plexxus

ConMed

Medtronic

Zimmer Biomet
Moving You Forward.

stryker

Johnson & Johnson

Epic

We have achieved success in scanning the orthopaedic implanted devices

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Implant Scanning: Barcodes are available directly from manufacturer to scan

Many key items are not scanned into the patient's chart

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No barcode scanning for the following

- Instruments
- Supplies procured in bulk
- Equipment

We are diligent in scanning into the patient's chart where it is possible

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Implant Barcode Scanning

The supply database within Epic is updated with information on supplies and implants from Plexxus

For implants, Plexxus sends a GTIN which is a generic barcode unique to that implant

In the operating room, the nurse uses a handheld barcode scanner and scans the implant barcode on the product

Because the barcode on the implant matches the GTIN in the Epic supply database, the implant is automatically documented in the patient's chart

Barcodes improve safety, efficiency, patient outcomes, and staff satisfaction

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Clinical and Supply Chain Benefits

Provider scans supplies

Optional for the vendor to send GTIN to the procurement partner so supplies do not scan

Items not scanned are assumed to exist on a pick ticket and already recorded in the chart or manually recorded in the chart

Case Costing

- barcode scanning captures cost of care
- individual patient as well as individual surgeon costs can be tracked in detail
- Benchmarking with our provincial peers
- Provides real time data to address areas of concern

Supply Chain Replenishment

- Multiple supply replenishment processes exist with or without the availability of barcoding
- JIT combines manual processes with scanning
- Direct orders also vary in applicability supplies
- **Plexxus** supports the procurement of both direct orders and Just in time supplies

Data Capture in the Patient's Chart

- Easy process to scan data into the patient chart including lot and expiry when included in the barcode
- Easy retrieval process through report writing from within EPIC

Product Recalls

- Reports available to search EMR for recalled product
- Data then readily available to inform patient, vendor or other registries as necessary

The healthcare system has a long way to go to catch up to retail and improve our systems for patients

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Supply Chain Clinical Use

Clinician scans supplies

Optional for the vendor to send GTIN to the procurement partner so supplies do not scan

Items not scanned are assumed to exist on a pick ticket and already recorded in the chart or manually recorded in the chart

Impact on Implementation

- Vendor submission of GTIN is not mandatory making it impossible to scan into the EMR
- Some vendors use an alternate identifiers to the GTIN standards making it difficult to convert to a GTIN
- Not all items are in the database for scanning even if a GTIN does exist

We have achieved success in the face of challenges, but more could be accomplished with effective collaboration of state, industry and healthcare

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Benefits Observed

- accurate implant data in the EPIC chart
- Decreased documentation errors related to supplies
- Patient focus during care
- Easier inventory replenishment
- Retrievable information on all scanned implants
- High staff compliance with scanning process

Challenges Faced

- Not all supplies scannable
- Risk of Inaccurate documentation when entered manually
- Supplies traced via scanning in EPIC chart, still requires manual entry into the procurement system
- Maintenance of current system/processes requires 3 FTE to support

Lessons Learned

- Scanning ensures timely and accurate documentation
- Removes assumptions from the process; this consistency creates reliability in the data
- Scanning increased provider time at the patient level
- Facilitates access to information
- Enables evaluation of patient outcomes as associated with the products used

Next Steps

- Creation of partnership agreements between GS1, Industry Suppliers, EMR vendors, Healthcare provider organizations and Health Canada
- Regulating and monitoring compliance to Healthcare GTIN data definitions
- Single national data registry for medical supplies

Opportunities:
Healthcare Excellence Through Application of GS1 Barcodes

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Patient Care Excellence

- Correct medication administration
- Accurate implant device information in the EMR
- Simple recall notification process

Inventory, Procurement and Recall Processes

- Integrated inventory and procurement systems
- Recall notification at vendor, hospital, provider and patient levels

Quality Assurance and Quality Improvement

- Pristine National Registry
- Easy access to vendor quality issues and improvement initiatives
- Regular industry compliance evaluation with scorecard release

Industry Quality Standards

- GTIN Compliance with GS1 standards
- Barcode Compliance at the unit of use level

Future Opportunities: Inputs For Ideal State

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Monitoring and follow up

Commitment to put patients first in the initiative

Partnerships to implement GS1 standards compliance and implementation within each partner's sector

Engagement of surgical supplies vendors, health care providers, GS1 to create the knowledge base, urgency for action and evidence of success

Regulatory oversight

Understanding of the implications to patient care

Universal Standards and Registry

Thank you


Main Entrance
Cortellucci Vaughan Hospital
← Main Entrance
↑ Learning Centre Drop-off