Emerging Healthcare Leaders Webinar:


November 17, 2021

Zaryab Ahmed, BSc, MBA
Abhinav Bhatnagar, BMSc, MBA
Tyler Boulanger, BSc, MBiotech, MBA

McMaster University

DISCLAIMER: The views and opinions expressed in this presentation are solely those of the author/presenter and do not necessarily represent any policy or position of HIMSS.
Upcoming Events

Next EHL Webinar
December 15, 2021 | 11:00pm CT/12:00pm ET
The Benefits of Networking and Volunteering

www.himss.org/events

Healthcare IT Foundations Course

• Self-paced online course in collaboration with Carnegie Mellon University
• Aligned with the CAHIMS™ exam outline
• Receive a certificate and CE hours

Search Results for “Healthcare IT Foundations” – OLI (cmu.edu)

HIMSS JobMine

• Job postings
• Upload your resume
• Resume review and coaching available

https://jobmine.himss.org/
Welcome

Zaryab Ahmed
MBA Candidate
DeGroote School of Business

Abhinav Bhatnagar
MBA Candidate
DeGroote School of Business

Tyler Boulanger
MBA Candidate
DeGroote School of Business
Agenda

• Canada’s PPE Supply Chain
• Recommended Technology Solutions
• Implementation Plan
• Tracking Project Success
• Cost Analysis
Learning Objectives

• Recognize the pitfalls of Canada’s PPE supply chain from the outset of the COVID-19 pandemic

• Identify applicable technological solutions that could potentially overcome these issues in the future

• Recommend an action plan to implement these technologies in the Canadian healthcare system

• Estimate potential costs to be incurred through this recommendation
Introduction

1. Improving capacity to meet unexpected surges in demand

2. Increasing digital infrastructure and data enablement

3. Balancing regional and national priorities

GDP

11.5%
Recommendation
Criteria
Current System Integration

Technology

Data Enablement

Federal Government

MEDCHAIN

Provincial Government

Canada Health Infoway

HIMSS
Enhancing Procurement Processes

- PIPA compliant cloud-platform
- Data enablement to enhance local procurement practices
- Upstream data Sharing to provincial and federal levels
Enabling GS1 Barcode System

GTIN Global Trade Item Number and Extended Data
Enabling GS1 From Manufacturer to Patient

1. **Local Analysts**: monitor inventory, supply usage, predicted demand, storage capacity, and vendor performance

2. **Suppliers**: supply availability, proximity to healthcare organizations, expiry dates, real-time product location

3. **Provincial and Federal Analysts**: current state supply needs and promoting knowledge translation

**Deloitte**

**GS1**

**HIMSS**
On previous slides and then slides afterwards it looks like italics are applied to the font style, so I have modified this slide to be similar.

Daiker, Mara, 7/12/2021
MedChain Platform

Integrated Supply Chain KPIs

Centralized sharing of organizational, regional, and national data
Implementation Plan

**Pre-Phase 1**
- Hire development team
- Begin MVP development

**Phase 1**
- Agile software development
- Establish compliant data host

**Phase 2**
- Pilot side integration
- Analyze results and implement feedback

**Phase 3**
- Nationwide integration
- Infrastructure upgrade

**Phase 4**
- Long-term software evaluation
- Continuous feature updates

**Development & Technology Implementation**
- Federal engagement
- Consult with Deloitte

**Communication Plan**
- Provincial & regional engagement
- Engage & train pilot test sites

**Governance & Monitoring**
- Initial KPI testing
- Patient & user feedback surveys
- Implement KPIs & scorecards
- Quarterly KPI reviews with MedChain & health networks
Communication Plan

Federal Government

Provincial & Regional Health Authorities

Internal MedChain Team
Federal Engagement & Alignment

Federal Current State Analysis

Consulting Engagement

National Vaccine Management IT Platform
Phase 1: Technology Development

- Hiring & Development
- Agile Testing
- Compliance
Phase 1: Provincial Engagement

Phase 1
Cost: $470M (CAD)
Duration: 12 months
Phase 1 ROI: 0%
Phase 2: Pilot

- **Cost:** $14.01M (CAD)
- **Duration:** 6 months
- **ROI:** 1.48%
Phase 3: National Expansion

1. Comprehensive training program
2. Clear process expectations
3. Support for analysts and users

Phase 3 Cost: $182.2M (CAD)
Duration: 24 months
Phase 3 ROI: 15.13%
Adjusted font style and size to compliment slide 11.
Daiker, Mara, 7/12/2021
The MedChain Network
Phase 4: Long-term Sustainability & Evaluation

- MedChain Key Performance Indicators
- Quarterly Scorecards
- Goal Setting & Progress Measurement

- Finances
- Patient & Workplace Safety
- Inventory Management
- Procurement & Contracting

Phase 4:
- Cost: $164.2M (CAD)
- ROI: 35.26%
- Duration: Indefinite
Cost and ROI

Pilot

Phase Two Cost: $14,061,900
Phase Two ROI: 1.48%

National Expansion (Annual)

Phase Four Cost: $164,160,00
Phase Four ROI: 35.26%
Questions

We’re happy to answer any questions you have about our presentation!
Thank You!

Zaryab Ahmed
Ahmedz19@mcmaster.ca

Abhinav Bhatnagar
Bhatnaga@mcmaster.ca

Tyler Boulanger
Boulangt@mcmaster.ca
# Appendix 1

## MedChain Cost Calculations

<table>
<thead>
<tr>
<th>Cost (Cad $)</th>
<th>Assumption</th>
<th>Phase 1: Development</th>
<th>Phase 2: Pilot (91 Hospitals)</th>
<th>Phase 3: Expansion (1200 Hospitals)</th>
<th>Phase 4 (Long Term Evaluation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Development</td>
<td>Development &amp; maintenance</td>
<td>$350,000</td>
<td>$50,000</td>
<td>$50,000</td>
<td>$50,000</td>
</tr>
<tr>
<td>Hosting Platform and PIPA Compliance</td>
<td>Recurring annual costs</td>
<td>$20,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>Legal</td>
<td>One time implementation costs</td>
<td>$100,000</td>
<td>$250,000</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Implementation IT Support</td>
<td>IT Requirements/ Hospital</td>
<td>$0</td>
<td>$455,000</td>
<td>$6,000,000</td>
<td>$6,000,000</td>
</tr>
<tr>
<td>Technology: PC and Tablets</td>
<td>$10,000/Hospital</td>
<td>$0</td>
<td>$910,000</td>
<td>$12,000,000</td>
<td>$0</td>
</tr>
<tr>
<td>Technology: Barcode Scanners</td>
<td>$5,000/Hospital</td>
<td>$0</td>
<td>$455,000</td>
<td>$6,000,000</td>
<td>$0</td>
</tr>
<tr>
<td>Marketing and Program Development</td>
<td>$500/Hospital</td>
<td>$0</td>
<td>$45,500</td>
<td>$600,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>Personnel training and Onboarding</td>
<td>$30,000/ Hospital</td>
<td>$0</td>
<td>$2,730,000</td>
<td>$36,000,000</td>
<td>$36,000,000</td>
</tr>
<tr>
<td>MedChain Analyst Costs</td>
<td>$100,000/Hospital</td>
<td>$0</td>
<td>$9,100,000</td>
<td>$120,000,000</td>
<td>$120,000,000</td>
</tr>
<tr>
<td>Other stakeholder engagement</td>
<td>$400/Hospital</td>
<td>$0</td>
<td>$36,400</td>
<td>$480,000</td>
<td>$480,000</td>
</tr>
<tr>
<td><strong>Total Cost (CAD)</strong></td>
<td></td>
<td>$470,000</td>
<td>$14,061,900</td>
<td>$182,160,000</td>
<td>$164,160,000</td>
</tr>
</tbody>
</table>

**Cost Benefit Calculations (Cad $)**

Supply chain expenditure is estimated to be 19% of total healthcare expenditure ($20.8 Billion for Pilot Hospitals and $265 Billion Nationally). Assuming 5% year over year growth.

<table>
<thead>
<tr>
<th>Cost Benefit Calculations (Cad $)</th>
<th>$3,954,151,655</th>
<th>$4,151,859,238</th>
<th>$55,125,000,000</th>
<th>$57,081,250,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Cost Benefit (CAD)</td>
<td>$0</td>
<td>$267,593</td>
<td>$27,562,500</td>
<td>$57,081,250</td>
</tr>
<tr>
<td>ROI – Cost Benefit / Total Cost</td>
<td>0%</td>
<td>1.48%</td>
<td>15.13%</td>
<td>35.26%</td>
</tr>
</tbody>
</table>

### Summary

<table>
<thead>
<tr>
<th></th>
<th>Pilot (Annually)</th>
<th>National Expansion (Annually)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost (CAD)</td>
<td>$14,531,900</td>
<td>$346,320,000</td>
</tr>
<tr>
<td>Expected Cost Benefit (CAD)</td>
<td>$267,593</td>
<td>$85,443,750</td>
</tr>
<tr>
<td>ROI = Cost Benefit / Total Cost</td>
<td>1.48%</td>
<td>35.26%</td>
</tr>
</tbody>
</table>

Note: Only hospitals were included for costs because they make up a majority of network demands, long term care homes and other providers will be included in more detailed calculations.
Appendix 2

MedChain Key Performance Indicators

Patient Safety and Workplace Standards
- Patient surveys
- Employee satisfaction surveys
- Investment in skills and development
- Voluntary turnover in supply chain roles
- Proportion of individuals qualified to agreed role standards

Finances
- Inventory turnover
- Hard and soft savings
- Cost avoidance
- Value of unused inventory
- Value of expired inventory
- Cost to issue a purchase order

Inventory Management
- Inventory Held
- Expired items still in stock as percentage of stock on hand
- Purchased inventory versus consumed inventory
- Unused inventory as a percentage of on-hand inventory

Procurement and Contracting
- Scheduled vs. completed unit deliveries
- Percent of orders delivered on time
- Time between a requisition to the purchase order dispatch
- Contracts taking over 90 days to process
- Number of expired contracts