Best Achievement in Technology Enabled Process Automation – UHN Learner Registration Program

1.0 SYNOPOSIS

1.1 Background

University Health Network (UHN) is an international source for research, patient care and education and consists of four hospitals, five research institutes, and a post-secondary institution. UHN welcomes over 5500 clinical learners each year. These learners are expected to provide patient care the first day they arrive at UHN.

1.2 Challenge

Figure 1: July Learner Onboarding

Learners should have access to our Electronic Patient Record (EPR) the first day they arrive in order to provide clinical care, as they need access to read patient health history and order medications and tests. The current delay in accessing clinical systems for learners has an impact on **patient safety** and workflow efficiencies. Every July, we have approximately 1300 learners arriving at UHN within a 2-week period (see Figure 1 July Learner Onboarding). To onboard thousands of learners in a short time period creates tension to our system. We hear of learners waiting **3** to **5 days without access** to **electronic patient information.** Through survey feedback, only **40%** of learners are getting access to EPR by the first day they arrive.

1.3 Outcome

The main driver for this program is **safety**. Learners need prompt access to electronic patient information. As part of streamlining the onboarding process, we automated many antiquated processes, which resulted in saving approximately *7560 working hours* annually. We **decreased** the actual **work effort by 97%, 75%, and 88%** in creating an AD, Pyxis, and EPR accounts respectively. Please see Figure 2 Key Efficiency and Cost Savings.

Functionality	1.0 On-line Registration	2.0 Active Directory (AD) Auto-Creation	3.0 Pyxis Auto-Creation	4.0 EPR Test Integration, Account Auto-Creation, and Password Retrieval
Efficiency (work effort)	**76%** decrease in time	**97%** decrease time	**75%** decrease time	**88%** decrease time
Cost Savings (Annually)		**$100,000**	**$36,000**	**$165,000**
Elapsed Time Savings Per Learner		1 day -> 1 minute	3 days -> 5 minutes	4 days -> 7 minutes

Figure 2: Key Efficiency and Cost Savings

2.0 STRATEGIC OBJECTIVES AND SCOPE

2.1 UHN Organizational Strategy

In order to meet the emerging health demands and respond to dramatic changes to our environment, UHN is transforming our organization to be a **Learning Health Organization**; an organization that focuses on continuous learning to improve our efficiency and effectiveness on our patient care delivery. In a learning organization, we are all teaching and learning. Our clinical learners, which includes residents, fellows, medical students, nursing, and health professional (HP) learners, are valuable assets to our organization. They come with innovative ideas and the latest theories and practices. Our program has taken an innovative approach and used **process automation** in driving efforts to improve the onboarding process for our learners to ensure they have **access to critical functions** that allow them to provide **safe** and **quality patient care**. Our UHN Learner Registration program is strategically aligned with UHN's principles of continuous learning and supporting our learners.

2.2 Program Vision and Project Objectives

Our **3-year program vision** is to achieve at least **90%** of **clinical learners** getting access to key clinical information systems that allow them to *provide safe and quality patient care* the first day they start work at UHN.

The main driver for this program is **safety** – for learner, patients, and staff. Before the UHN Learner Registration Program, it would take weeks to compile over 5500 learners' contact information, as they are not part of our organization's email or human resource system. Their information was stored in various formats including paper and excel documents. If there were a public health emergency (e.g. Ebola outbreak), we are unable to quickly and efficiently communicate to all learners without a centralized system. Furthermore, learners are expected to provide patient care the first day they arrive at UHN. Delayed access to clinical systems has an impact on patient safety. As part of this program, we developed a learner registration database called UMLearns. We are leveraging this platform to automate some manual onboarding processes to get access to critical clinical applications.

Key Objectives	
Learner and Patient Safety	1. To achieve at least 90% of clinical learners getting access to EPR by the *first day* they start at UHN 2. To reduce the number of days EPR access is delayed 3. To improve the turnaround time in getting a Pyxis account for nursing learners 4. To capture at least 85% of learners in a centralized learner database (e.g. notification of public health outbreaks / emergencies)
Learner Satisfaction & Efficiency	5. To reduce the time from requesting an EPR account to getting an EPR password, from 4 days to 4 hours 6. To improving the efficiency in creating Active Directory accounts
Cost Savings	7. To reduce the costs involved in paying our third party provider to create system accounts
Staff Satisfaction	8. To improve staff's satisfaction on currently onboarding process for learners

2.3 Scope

The scope of this project includes only clinical learners, which includes medical learners (residents, fellows, and medical students) and health professional learners (e.g. nursing, occupational therapists, and pharmacy learners). Staff, volunteers, and observers are out of scope. For this project, we are leveraging process automation to create learner access for the following critical functions:

- **Electronic Patient Record (EPR)**: UHN's hospital information system where patient health information is stored. The scope includes integrating the EPR training test results, which are stored in a separate EPR training database
- **Pyxis:** UHN's medication dispensing system
- **Active Directory Accounts:** computer network accounts

3.0 IMPLEMENTATION PROCESS AND TIMELINE

3.1 Implementation Approach

The initial phase of this project started with developing a registration system in order to address the immediate need for a central learner repository to address any potential public health emergency concerns.

Some key guiding principles to our approach include the following:

- **Start Small and Prove Success:** We were originally given only a small budget to build a learner registration system. We were able to build the first phase successfully under budget. With the project savings, we decided to use it to automate the manual onboarding processes. As we continue to demonstrate success on each phase, we were able to obtain additional funds to continue with multiple phases. Please see Figure 3: High-Level Implementation Timeline.
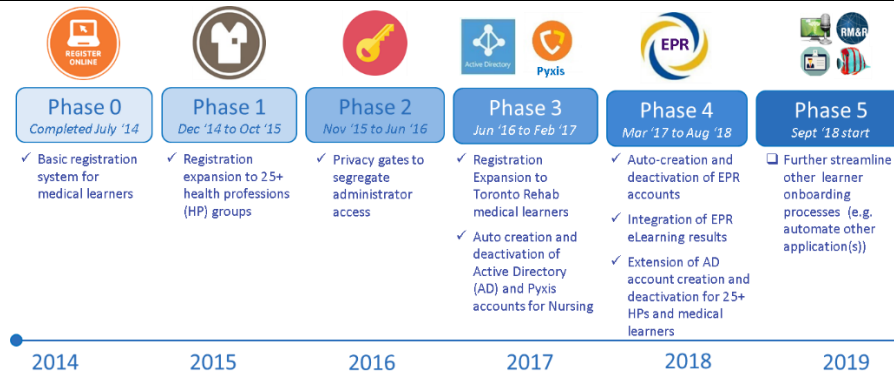
Figure 3: High Level Implementation Timeline

- **Lean and Process Improvement Tools:** Given the recurrent lengthy delays of clinical information access for our learners, our project team leveraged Lean and process improvement tools to analyze the current learner registration and onboarding processes to identify the root cause of the delay for key clinical applications' access and identify opportunities to remove the wastes in the cumbersome manual processes.

3.2 Leadership Engagement

Our executive sponsor is our **Executive Vice President (EVP), Education and Chief Medical Officer, Brian Hodges.** He was actively engaged and attended our monthly Executive Team meetings and provided his guidance and direction.   Our project sponsor, Director of Medical Education, Dr. Jackie James, also attended all the Lean Kaizen workshops.

Figure 4: Team Photo

Partnership / Collaboration Model: This project was the first formal collaboration between the Digital and Education teams. We collectively brainstormed innovative ideas. After our initial year of working together, we were working so efficiently that we were able to deliver our project under budget and able to develop additional functionality for the business. Given the successful demonstration of a collaboration model, our team was asked to present our project successes during a UHN's Senior Management Team (SMT) meeting (see Figure 4: Team Photo).

4.0 SIZE OF PROJECT CHALLENGE

4.1 Size of Project

The size of our challenge include the following:

- **5500 clinical learners annually** across **6 hospital sites**
- Went from > **25 different registration processes** to **1 registration process**
- Challenging and **automating existing processes** that have been in place **for decades**

4.2 Tools / Approach

For this initiative, we leveraged many Lean tools including Going to Gemba, Kaizen, Value Stream Mapping, 5 Whys, Cause and Effect Diagram, and Voice of Customer tool. We leveraged the feedback and ideas from everyone involved in this process including our learners, education coordinators, system account administrators, system owners, education leaders, and digital leaders. In addition to leveraging Lean tools, we worked collaboratively with our application owners and system developers and leveraged existing software in our organization to automate antiquated processes that have existed in our organizations for decades.   Please see Figure 5: Example of Tools Used including Lean and High Level Architectural Diagram.

Figure 5: Example Tools Used including Lean and High Level Architecture Diagram
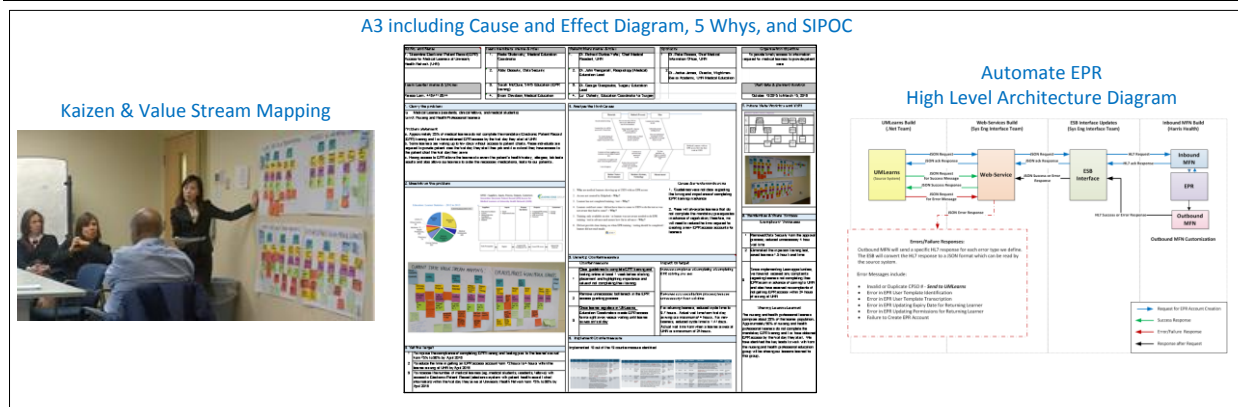
5.0 ORGANIZATIONAL IMPACT OF PROJECT

5.1 Organizational Learnings and Value

- **Importance of Going to Gemba:** When we first met with the leadership team regarding this problem, some members felt that they knew what the issue was and actually presented us with a recommendation. We strongly recommended the importance of engaging key people involved in this process to understand the root cause and getting their involvement in coming up with the recommendations. Leveraging the Lean methodology helped prevent people from jumping to the solution without truly understanding the real issue. The working team was engaged and actively participated in designing the future state
- **Importance of Leveraging Data:** As mentioned above, many of our projects start with anecdotal evidence. Given the breadth of potential opportunities, our team leveraged data to help define the problem and to assist with decision-making and setting priorities. We used data to challenge and validate our assumptions. We are continuing to leverage data insights to help us evaluate and monitor progress to ensure we continue to meet our intended objectives and continue to deliver value to the business
- **Continuous Improvement:** Through this project, we have instilled the importance and value of continuous improvement. This project is never complete. There will always be opportunities to improve. We need to find opportunities, act upon them and continue the momentum

6.0 Business Results

6.1 Business Results

- **Decrease 97%, 75%, and 88%** of the actual **work effort** in creating an **AD, Pyxis, and EPR account** respectively
- **Increase 99% in speed from requesting to getting an EPR account** – prior to automation, creating an EPR account took an average of 4 days from request to getting an EPR password; it now takes less than 7 minutes
- **96%** of learners are captured in UMLearns; **70%** of medical learners are getting EPR access by first day
- **Save 7560 working hours** (~3.9 FTEs) of **work effort** through automation

6.2 Customer Benefits

The main drivers for this project are safety, learner and staff satisfaction and improving efficiency. Some additional benefits include the cost savings that we are able to achieve through automation. We use a third party provider to conduct our account creations; by automating many of these processes, we are able to save at least **$300,000** annually. Automating EPR alone, the savings in 1 year surpasses the cost of designing and implementing the EPR automation. The Education department actually reached out to our team to highlight additional benefits that they have seen. With the consolidation of learner contact information, our customer was able to reach a business goal of theirs, which is to increase the participation of a Learner Engagement Survey. With the implementation of UMLearns and better accuracy of learner contact information, they have seen the survey response increase from **30% to 50%**. Furthermore, with better tracking of learners and their mandatory training, their HP learners were able to reach **98% compliance** in Privacy training – the highest group in our organization.