Streamlining Emergency Care Processes at Northeastern's UHCS: A Lean Implementation Strategy

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IE 5617 Graduate Project

Lean approach

Problem Statement:
Northeastern University's UHCS faces issues with long wait times and inefficient urgent care prioritization. This project will introduce visual management tools to streamline patient flow, reduce waits, and improve service quality, enhancing both patient satisfaction and healthcare delivery efficiency.

1. Value Stream Mapping (VSM):

We will use **VSM** for identifying inefficiencies and enhancing treatment flow through elimination of redundancies.

2. Standard Work:

We've established **standardized protocols** to ensure consistent, efficient patient assessment and care.

3. Kanban Systems:

We will apply **Kanban** for visual patient flow management, prioritizing urgent care and optimizing resource allocation to reduce wait times.

4. Continuous Improvement (Kaizen):

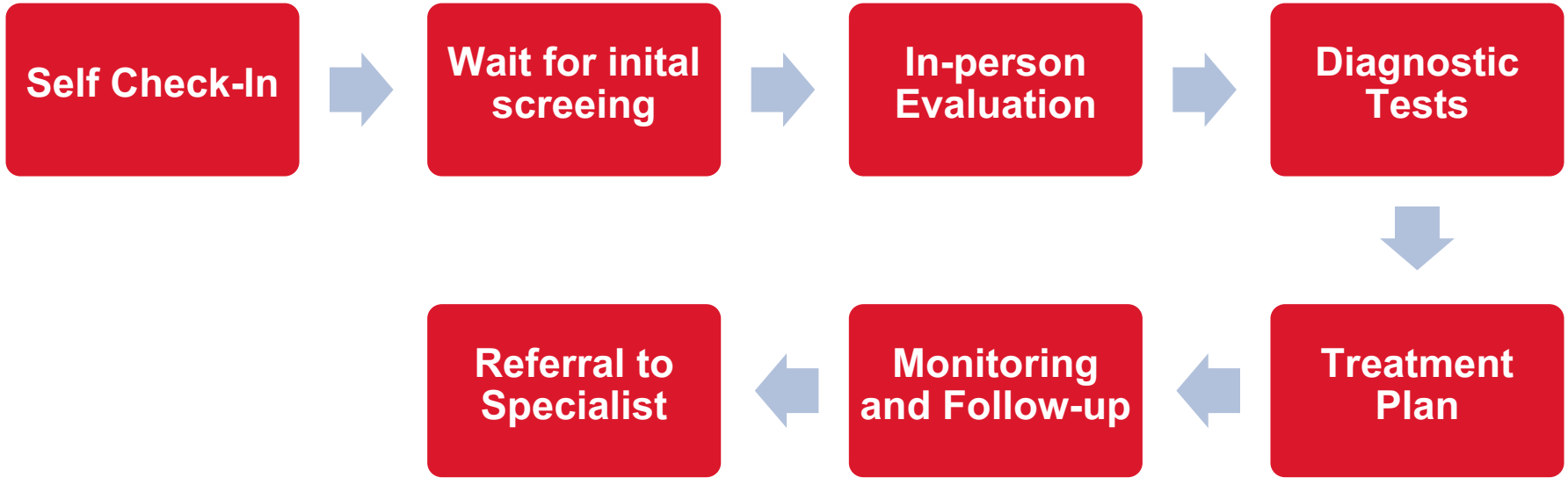
To promote a culture of **ongoing improvement** through staff and patient feedback, leading to iterative enhancements in service efficiency.

Motivation & References

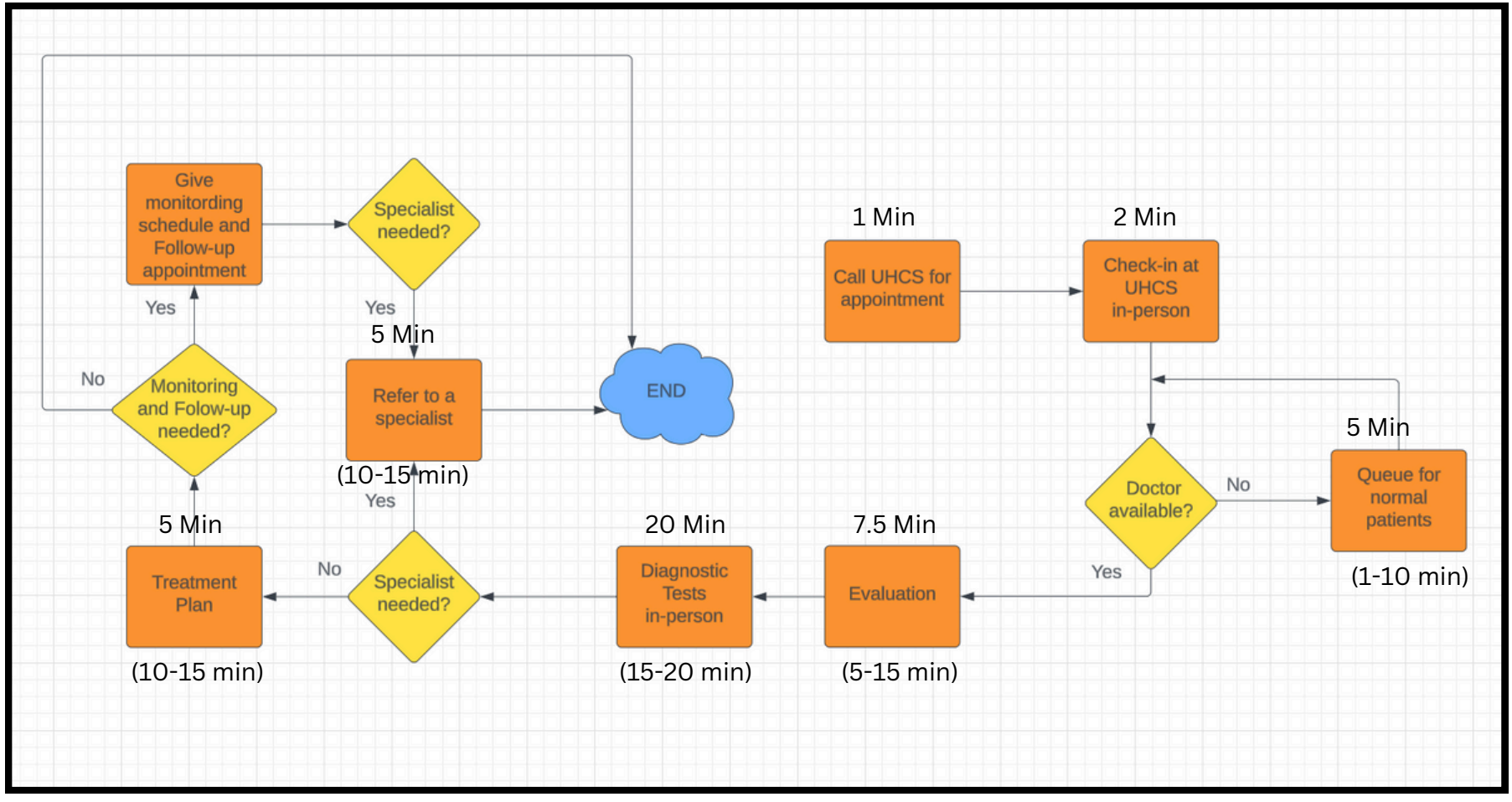
The motivation behind choosing this lean implementation idea came from our commitment to addressing the issues faced by Northeastern University students at the UHCS. We experienced Long wait times and inefficient urgent care prioritization. Hence, by leveraging tools like Value Stream Mapping, Standard Work, Kanban Systems, and kaizen for continuous improvement, we aim to systematically identify and eliminate inefficiencies and optimize resource allocation. Our goal is to enhance both patient experience and operational efficiency, ultimately ensuring that UHCS can better fulfill its mission of providing high-quality healthcare services to the university community.

- **Rother, M., & Shook, J. (1999). Learning to see: Value stream mapping to add value and eliminate muda. Cambridge, MA: Lean Enterprise Institute.**
- **https://www.virginiamasoninstitute.org/what-is-lean-health-care/**
- **https://postgraduateeducation.hms.harvard.edu/trends-medicine/importance-adopting-lean-mindset-culture-health-care-organizations**

Northeastern's UHCS Current Emergency Care Flow

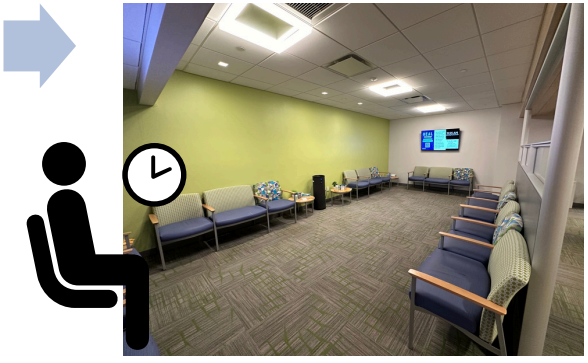


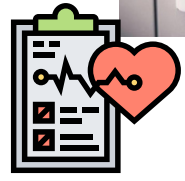
Value Stream Mapping
Current Flow

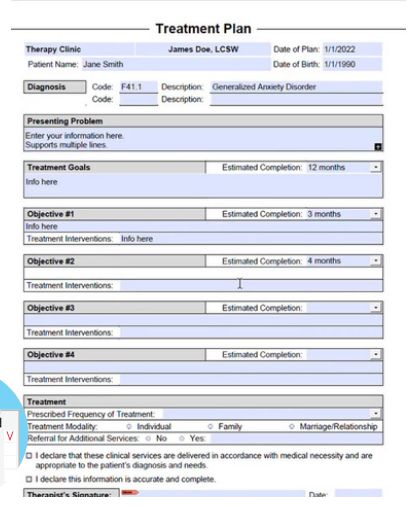


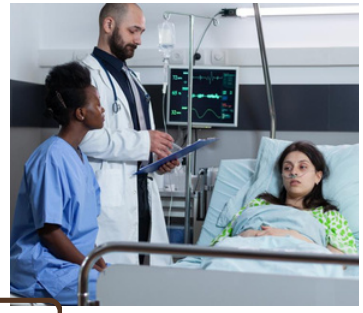
Total Cycle Time- 55.5 minutes

Current Emergency Care Flow









Analysis and Goals

What is wrong with the current state

The current state of the University Health and Counseling Services (UHCS) at Northeastern University presents several challenges that negatively impact both patient satisfaction and the overall efficiency of healthcare delivery.

Documented Issues:

- Extended waiting periods for patients suggest bottlenecks due to overbooking, understaffing, or inefficient scheduling and triage.
- The inability to effectively prioritize urgent care cases, risking emergency care delays, indicates unclear urgency criteria or poor communication.

Interpretations:

- The mismatch between patient demand and healthcare capacity suggests inefficient resource allocation due to limited visibility into patient flow and staff availability.
- Prioritization issues signal process inefficiencies, with a lack of visual management tools hindering staff's ability to meet dynamic patient needs.
- Possible communication gaps, as staff lack timely, clear information on patient status, complicating triage and care delivery.

Implementation

1. Standardized Triage Criteria:

Establishing clear urgency criteria for efficient prioritization of urgent cases, minimizing delays. Utilizing the Conwin approach will help maintain balanced patient flow, ensuring optimal service speed.

2. Visual Management with Kanban Board:

Implementing a digital Kanban board for real-time patient flow tracking, reducing wait times and enhancing transparency. This system will be run using the Conwin approach to ensure balanced inflow and outflow, maintaining smooth and effective operations.

3. Process Streamlining:

Optimizing specialist referrals and in-person evaluations to reduce duplication and improve efficiency, enhancing the patient experience. The Conwin approach will be integrated to keep operations smooth and effective at all times.

4. Eliminating Bottlenecks:

In case of emergency situations eliminate long process of scheduling an appointment (Bot call - appointment selection, which is probably 1/2 days ahead)

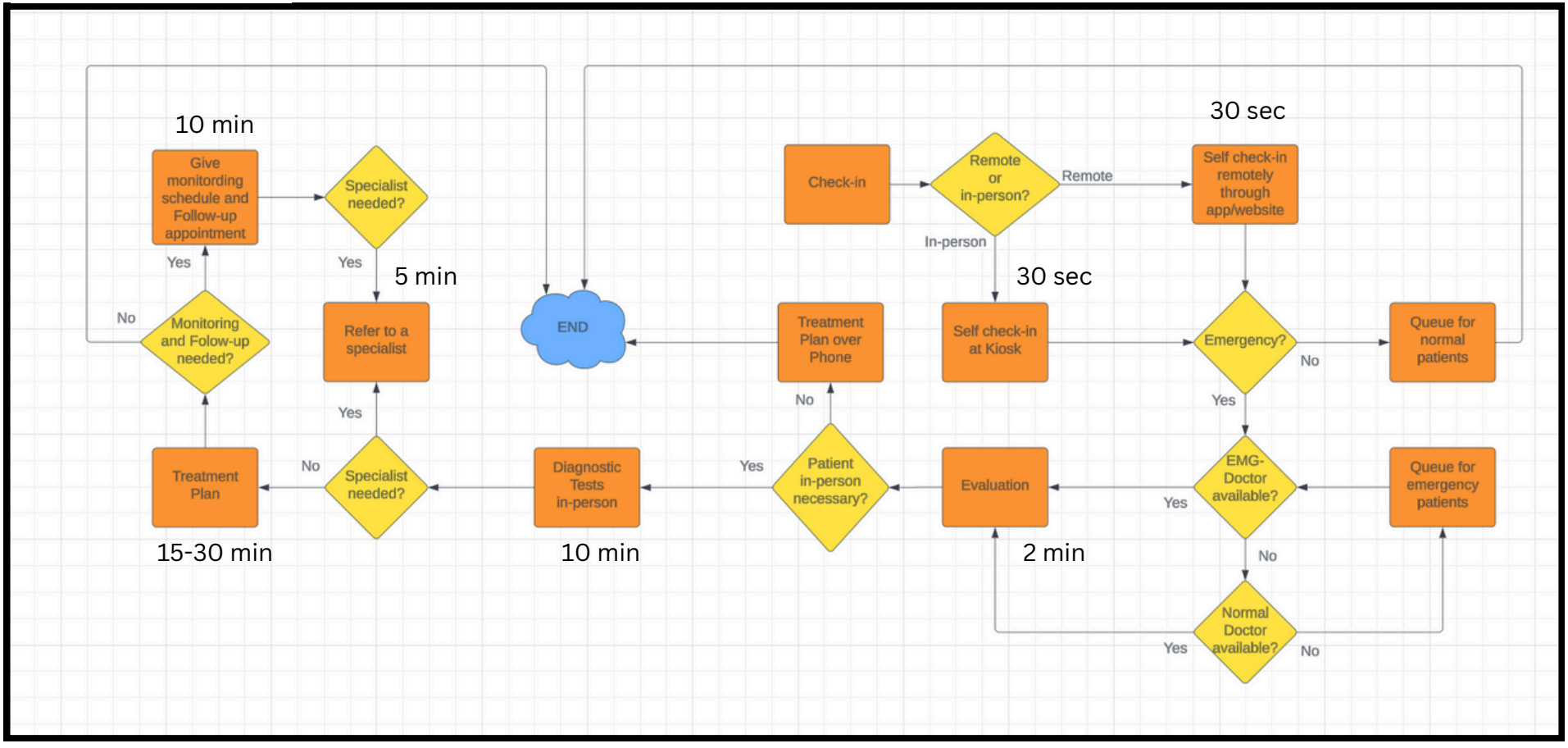
Value Stream Mapping

This Value Stream Map outlines our healthcare facility's patient flow, incorporating both remote and in-person check-in options to streamline the triage process. Our system includes **self-check-in kiosks, specialist referral pathways, and designated queues for emergency situations.** Initial analysis indicates potential bottlenecks in specialist referrals and in-person evaluations. Further examination has revealed areas where process duplication could be streamlined for efficiency.

Benefits:

- **Enhanced Patient Experience:** Patients can visually track their progress and estimated wait times, reducing anxiety and improving satisfaction with the care process.
- **Increased Operational Efficiency:** Enables staff to quickly identify patient status, prioritize care based on urgency, and manage patient flow more effectively, thereby reducing bottlenecks and improving the overall speed of service.

Value Stream Mapping - New



Total Cycle Time- 47.5 minutes

Improved Cycle Time by 8 Minutes

Standard Work

In the bustling university healthcare system, managing patient flow and delivering timely care are crucial. The new Triage Protocol addresses these challenges by categorizing patients by the **urgency** of their needs. This streamlined approach ensures quick care for critical cases and organizes treatment efficiently for others, utilizing clear criteria to prioritize care effectively and equitably throughout the system.

Benefits:

- **Enhanced Patient Safety:** Quick identification and prioritization of critical cases reduce risks and improve outcomes.
- **Improved Patient Satisfaction:** Transparent communication about wait times and care levels boosts patient experience.
- **Optimized Resource Utilization:** Efficient use of resources and staff, reducing delays and improving care delivery.

STEPS TO CARE

Triage Protocol UHCS

Objective

To ensure prompt, efficient, and appropriate prioritization and care for all patients based on the urgency of their condition.

Level 1: Emergency (Immediate)
Criteria: Life-threatening conditions that require immediate medical intervention. Examples include severe respiratory distress, uncontrolled bleeding, major trauma, and signs of heart attack or stroke.
Action: Immediate evaluation by a healthcare provider; no waiting time.

Level 2: Urgent (High Priority)
Criteria: Conditions that are not immediately life-threatening but could rapidly progress to serious problems without timely intervention. Examples include moderate trauma, severe pain, high fever, and acute anxiety or distress.
Action: Evaluation by a healthcare provider within 30 minutes.

Level 3: Semi-Urgent (Moderate Priority)
Criteria: Conditions requiring medical attention that have little risk of progressing to a serious state on a short-term basis. Examples include minor fractures, moderate flu symptoms, and non-severe abdominal pain.
Action: Evaluation by a healthcare provider within 1 hour.

Level 4: Non-Urgent (Low Priority)
Criteria: Conditions that are non-urgent and could be managed in routine care. Examples include chronic conditions without acute exacerbation, prescription refills, and general health checks.

Action: Evaluation by a healthcare provider within 2-4 hours or scheduled appointment.

ERP Integrated Kanban Board

We propose an Excel-based Kanban board that will be linked with the EHR system or other digital tools. This setup can help in automatically updating the Kanban board as patients move through different stages of their healthcare journey, revolutionizing patient flow management from registration to treatment in the initial assessment area.

Benefits:

Improved Operational Efficiency

- Automated Updates: Automates patient progress updates, reducing manual tasks.
- Real-Time Visibility: Allows for quick adaptation to patient flow changes, improving resource use.

Enhanced Patient Experience

- Reduced Wait Times: Helps promptly identify and address bottlenecks.
- Increased Transparency: Keeps patients informed about their care timeline.

ERP Integrated Kanban Board

Kanban Board

Sprint Backlog

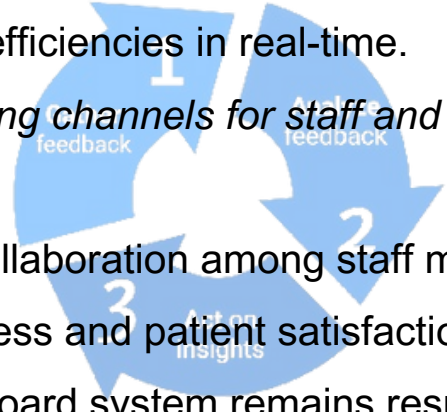
Sprint Backlog	Check-In	Waiting for Initial Assessment	Under Assessment	Awaiting Lab Tests/Results	Urgent Case/ Treat	Monitoring and Follow-up	Completed
1 John Doe Low	3 Michael Brown Low	2 Jane Smith Moderate	6 John Doe Moderate	1 John Doe Low	4 Emily Johnson High	5 David Wilson High	
2 Jane Smith Moderate							
3 Michael Brown Low							
4 Emily Johnson High							
5 David Wilson High							
6 John Doe Moderate							

Kaizen (Continuous Improvement)

Continuous refinement and enhancement are at the core of our project. By adopting the Kaizen Continuous Improvement approach. Our project aims to achieve sustained improvements in patient flow management and healthcare delivery at UHCS. Here's how Kaizen will be integrated into our project:

Benefits:

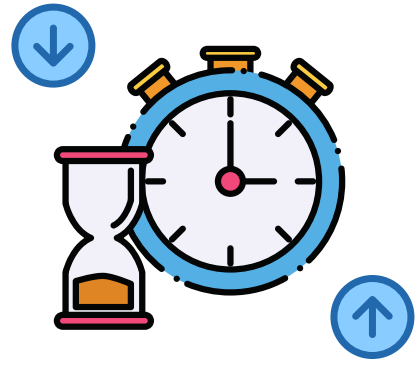
- Proactively address challenges and inefficiencies in real-time.
- Continuous Feedback Loop: *Establishing channels for staff and patient feedback to gather insights into the effectiveness.*
- Cultivate a culture of innovation and collaboration among staff members.
- Enhance overall operational effectiveness and patient satisfaction.
- Ensure that the Excel-based Kanban board system remains responsive and adaptable to the dynamic healthcare environment.



Follow Up

Results would be achieved

1. Reduced wait times
2. Improved prioritization of urgent care
3. Increased operational efficiency



Next Steps:

1. Implement electronic health record (EHR) integration
2. Develop a phased plan to implement the system across other UHCS facilities

Lessons Learned:

1. Importance of visual management tools
2. Emphasized on how data analysis from wait times and patient feedback helped refine the system and improve outcomes