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Description automatically generated with medium confidence

**Project 1 – Case Study**

**INFO-6106-(01)-24F – Gathering and Managing Requirements**

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# Introduction

Emergency departments play an important role in providing immediate and life saving care under severe resource limitations. In this case study we examine the present condition of the emergency department of a medium-sized hospital that has almost 55000 patients in a year. The ED faces struggle in resource overuse and efficiency in workflows like registration, triage, and patient routing. The goal of this project is to create a streamlined system that improves patient flow, staff satisfaction, and resource utilisation, ultimately providing high-quality, efficient treatment, by utilising key performance indicators (KPIs) and BPMN and UML to analyse present processes.

# UML Use Case Diagram:

## Use Case Actors:

Patient: A person is at the Emergency Department seeking medical attention.

ED Employees: Emergency department staff in accountable for registration, patient records, and other ED services.

Triage Nurse: A licensed nurse who does the triage evaluation to identify the patient's condition's severity.

ED Nurse: Registered nurses are responsible for providing patients with direct treatment.

Doctor: The medical staff in charge of diagnosing and treating patients at the emergency department.

## Use Cases Identified:

|  |  |
| --- | --- |
| **Use Case ID** | **Use Case Name** |
| UC001 | New Patient Registration |
| UC002 | Triage Evaluation |
| UC003 | Patient Medical History Collection |
| UC004 | Conduct Preliminary Diagnosis |
| UC005 | Guiding to Appropriate Doctor |
| UC006 | Prescribes a Treatment Plan |
| UC007 | Request an Examination |
| UC008 | Patient Hospitalization |
| UC009 | Patient Transfer to External Clinic |
| UC010 | Patient Transfer to Morgue |
| UC011 | Patient Discharge |
| UC012 | Patient Leaves Without Treatment |

## UML Diagram for Current ED System:

A diagram of a diagram

Description automatically generated

# BPMN Diagram for Current ED System:

A diagram of a flowchart

Description automatically generated

# Issues Identified for the Current ED System:

## ISU118835: Extended Wait Time [Issue]

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118835>

**Version:** 3

**Description:**

Patients, particularly those with low-severity diseases that are not urgent, are waiting a long time to receive medical services. If the wait is too long, it can affect the health of patients who have urgent needs and cause patient dissatisfaction, which may lead to patients leaving without treatment. Long wait times are another factor in the system's general inefficiency.

| **Name** | **Value** |
| --- | --- |
| ID | ISU118835 |
| Name | Extended Wait Time |
| Created By | Student 4 |
| Created On | 11/27/2024 7:38:08 PM GMT-08:00 |
| Last Edited By | Student 4 |
| Last Edited On | 11/27/2024 8:03:52 PM GMT-08:00 |

## ISU118832: Excessive Usage of Emergency Services [Issue]

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118832>

**Version:** 1

**Description:**

There are too many people in the emergency department who don't need emergency medical treatment. As a result of this, overuse by low-severity situations (ESI levels 3 and 4), there is less room for patients with more urgent medical emergencies. This causes emergencies to receive consideration more slowly.

| **Name** | **Value** |
| --- | --- |
| ID | ISU118832 |
| Name | Excessive Usage of Emergency Services |
| Created By | Student 4 |
| Created On | 11/27/2024 7:53:45 PM GMT-08:00 |
| Last Edited By | Student 4 |
| Last Edited On | 11/27/2024 7:53:45 PM GMT-08:00 |

## ISU118833: Dissatisfaction and High Stress among ED Employees [Issue]

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118833>

**Version:** 1

**Description:**

Employees are often overloaded by lengthy hours, large workloads, and continual patient flow in the high-stress environment of the emergency department. Frustration and staff dissatisfaction are usual, which can result in low productivity and poor service to patients.

| **Name** | **Value** |
| --- | --- |
| ID | ISU118833 |
| Name | Dissatisfaction and High Stress among ED Employees |
| Created By | Student 4 |
| Created On | 11/27/2024 7:58:21 PM GMT-08:00 |
| Last Edited By | Student 4 |
| Last Edited On | 11/27/2024 7:58:21 PM GMT-08:00 |

## ISU118834: Patients Leaving Without Taking Treatment or Seeing Medical Personal [Issue]

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118834>

**Version:** 1

**Description:**

Some patients decide to leave the emergency department (ED) without seeing a doctor, usually because they are frustrated with long waiting time or there are too many delays in the patient flow. This raises the possibility that patients won't receive the care they need and costs the hospital money that could have been made.

| **Name** | **Value** |
| --- | --- |
| ID | ISU118834 |
| Name | Patients Leaving Without Taking Treatment or Seeing Medical Personal |
| Created By | Student 4 |
| Created On | 11/27/2024 8:02:32 PM GMT-08:00 |
| Last Edited By | Student 4 |
| Last Edited On | 11/27/2024 8:02:32 PM GMT-08:00 |

## 

## ISU118837: Poor Patient Flow [Issue]

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118837>

**Version:** 1

**Description:**

Patients are not moved through the ED in an efficient manner. For example, patients may wait in inappropriate locations, have delays in obtaining the correct doctor, or be transferred improperly between various departments (triage, registration, treatment). Patients as well as medical personnel lose time as a result of unnecessary waits.

| Name | Value |
| --- | --- |
| ID | ISU118837 |
| Name | Poor Patient Flow |
| Created By | Student 4 |
| Created On | 11/27/2024 8:16:42 PM GMT-08:00 |
| Last Edited By | Student 4 |
| Last Edited On | 11/27/2024 8:16:42 PM GMT-08:00 |
|  | |

# Requirements for Improvements of Current ED System:

**PF118530: Requirements for Improvements of Current ED System [Folder]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118530>

**Version: 1**

**Description:**

| **Name** | **Value** |
| --- | --- |
| ID | PF118530 |
| Name | Requirements for Improvements of Current ED System |
| Created By | Student 24 |
| Created On | 26/11/2024 18:07:54 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 26/11/2024 18:07:54 GMT-08:00 |

## Epic 1 -Reduce average patient wait time

**EP118531: Epic 1 -Reduce average patient wait time [Epic]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118531>

**Version:** 1

**Description:**

Patients spend excessive time waiting in queues before being attended to. This problem is especially prominent for non-urgent cases (ESI Levels 3 and 4), which constitute 90% of the cases. Delays occur during the registration, triage, and examination phases due to bottlenecks.

| Name | Value |
| --- | --- |
| ID | EP118531 |
| Name | Epic 1 -Reduce average patient wait time |
| Created By | Student 24 |
| Created On | 26/11/2024 18:08:44 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 26/11/2024 18:08:44 GMT-08:00 |

### US-01-01-Self-Service Registration Kiosks

**US118852: US-01-01-Self-Service Registration Kiosks [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118852>

**Version:** 3

**Description:**

* The system has to automatically obtain the patient's ESI based on vitals and symptoms entered for triage.
* Automatically identify ESI levels 1 and 2 for immediate concern.
* The system should indicate, through a visual dashboard, all patients in real time, sorted by their ESI scores. 5

| **Name** | **Value** |
| --- | --- |
| ID | US118852 |
| Name | US-01-01-Self-Service Registration Kiosks |
| Created By | Student 24 |
| Created On | 28/11/2024 09:36:00 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 09:52:12 GMT-08:00 |
|  | |
| **Custom Properties** | |
| ST-Acceptance Criteria | * Complete the registration process efficiently and avoid waiting in long queues. * Ensure that my personal and medical details are accurately recorded without having to repeat information to multiple staff members. * Get immediate feedback about my queue position and estimated wait time. * Have a seamless experience even during peak hours, avoiding stress and confusion. * should be able to choose my native tongue or the accessibility version that best suits me (large text, audio prompts). |
| ST-Business Rules | * The kiosk shall display a pre-defined list of common symptoms that the patient can select from. * Patients must be able to insert symptoms in a free-text field when their symptoms do not feature in the list. * In case there is no symptom entered within 5 minutes, the kiosk will ask the patient to perform the symptom entry step. Symptom data shall be kept secure and transmitted to the ED system immediately upon entry. * Insurance information on patients to be registered should be valid * The system should cross-check in real time the insurance details entered against the insurance database at the hospital * The kiosk needs to inform the patient if his/her insurance is invalid or expired and can ask him/her to continue as a self-paying patient or approach a hospital staff for further processing. * The kiosk shall default to Touchscreen Mode for the general user. * Enable Voice Command Mode when selected by visually impaired or non-literate users. * Assisted Mode shall walk the patient through the registration process step-by-step using audio and visual prompts * Patients should be allowed to switch between interaction modes at any time during the registration process. * If a patient selects a symptom related to life-threatening conditions - such as chest pain or difficulty breathing - the kiosk should immediately alert ED triage staff. * Priority notifications must bypass the usual queue and notify triaging staff within 5 seconds of entry. * The high-priority patients should be advised to stay around the triaging desk for immediate attention. * On registration, patients should be offered the facility to receive queue updates via SMS or through a mobile app. * The queue management system needs to refresh estimates of waiting time on a 15-minute periodicity or when changes affecting actual estimations are detected. * The high-priority patients should not get the normal queue update but instead be routed directly to the triage desk. * Feedback should be solicited from patients either upon completion of their registration process or during their waiting period.  Rating scales, multiple-choice questions, and an optional free-text field should be included in the feedback collection. * Aggregated responses must be anonymized and stored for analysis by the hospital administrators. * All patient data entered into the kiosk must comply with healthcare data protection regulations (e.g., HIPAA, GDPR). * The kiosk must implement secure data transmission protocols (e.g., HTTPS, encryption). * Accessibility features (e.g., large text, high-contrast mode, audio guidance) must be available for patients with disabilities. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | 1. Symptom Entry:  Patient can enter their symptoms  a. Patients are able to select from a predefined dropdown (eg: Fever, Cough)  b.Free text space to enter symptoms  2. Insurance Verification Field that should verify the insurance number entered by the patients  3. Multiple Interaction Modes:   * Touchscreen Mode: Default interface for most users. * Voice Command Mode: For visually impaired or non-literate users. * Assisted Mode: Allows the kiosk to guide the patient step-by-step with audio prompts.   4. Emergency Priority Alerts  The system should notify the ED staff if the patient selects any of the symptoms 8in the emergency list.  5. Digital Queue Updates  Queue updates should be sent to the patients.  6. Feedback Field  Patients should be able to enter feedback. |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | US-01-Self-Service Registration Kiosks |
|  |  |

## Epic-2-Automated Triage Prioritization

**EP118751: Epic-2-Automated Triage Prioritization66 [Epic]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118751>

**Version:** 2

**Description:**

Implement a system that will automatically prioritise patients to make sure that critical cases are identified and handled immediately.

| Name | Value |
| --- | --- |
| ID | EP118751 |
| Name | Epic-2-Automated Triage Prioritization66 |
| Created By | Student 24 |
| Created On | 27/11/2024 06:27:04 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 29/11/2024 07:12:54 GMT-08:00 |
|  | |
| Custom Properties | |
| Priority |  |
|  |  |
| Work Status |  |

### US-02-01: Automate Patient Severity Scoring

**US118820: US-02-01: Automate Patient Severity Scoring [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118820>

**Version:** 2

**Description:**

Primory Actor: Triage Nurse

As a Triage Nurse,  
I want an integrated system that can automatically obtain the ESI level for arriving patients,  
so that I will be able to work on high-severity cases while not having to manually plan priorities.

| Name | Value |
| --- | --- |
| ID | US118820 |
| Name | US-02-01: Automate Patient Severity Scoring |
| Created By | Student 24 |
| Created On | 27/11/2024 06:27:44 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 09:32:55 GMT-08:00 |
|  | |
| Custom Properties | |
| ST-Acceptance Criteria | 1. The system has to automatically obtain the patient's ESI based on vitals and symptoms entered for triage. 2. Automatically identify ESI level 1 and 2 for immediate concern. 3. The system should indicate, through a visual dashboard, all patients in real time, sorted by their ESI scores. |
| ST-Business Rules | 1. The ESI scoring algorithm shall adhere strictly to the official ESI triage guidelines. 2. Patients with specific symptoms-presenting complaints-such as chest pain or difficulty breathing must default to at least a score of ESI level 2. 3. ESI level 1 patients should be flagged with a critical priority status and given immediate medical attention. 4. ESI level 2 patients should be flagged with high priority and queued ahead of levels 3–5. 5. All mandatory fields-AGE, VITALS, and PRESENTING SYMPTOMS-must be filled in before calculation of the ESI score is performed. 6. If some data entries are incomplete, then warnings should appear, prompting the nurse to make complete entries. 7. A patient triaged to Flagged ESI Level 1 or 2 shall automatically trigger escalation of an alert to the attending physician and the ED manager if they have not been attended to within 2 minutes. 8. The system should log all triage activity, including data entry, ESI calculations, and alerts, with timestamps for audit purposes. 9. Logs should be kept for at least 7 years, as required by regulatory standards. 10. Only authorized personnel should have access to enter or modify triage data. This would include triage nurses and ED physicians. 11. Role-based permissions must be in place to restrict access to sensitive data and administrative settings. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | 1. The system needs to compute ESI scores within 2 seconds of entering the triage data. 2. ESI level 1 and 2 patient alerts must be automatically sent within 5 seconds of scoring. 3. The system shall ensure that 99.9% of time, the triage operation can function continuously. 4. The system shall use failover mechanisms in the case of server or software failure for smooth operations. 5. The system should handle a peak load of 500 patients simultaneously without degradation in performance. 6. The dashboard interface shall be user-friendly, using clear color-coded indicators regarding the level of severity. 7. The system should integrate well with the hospital's existing EHR (Electronic Health Record) system and vital sign monitors |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | Automate Patient Severity Scoring |
| Tshirt |  |

### US-02-02 : Real-Time Alerts for Critical Cases

**US118821: US-02-02: Real-Time Alerts for Critical Cases [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118821>

**Version:** 3

**Description:**

Primary Actor: ED Nurse

As an ED Nurse,I want to receive real-time notifications for critical cases flagged by the triage system,  
so that I can ensure immediate care for high-severity patients.

| Name | Value |
| --- | --- |
| ID | US118821 |
| Name | US-02-02 : Real-Time Alerts for Critical Cases |
| Created By | Student 24 |
| Created On | 27/11/2024 06:27:49 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 09:37:37 GMT-08:00 |
|  | |
| Custom Properties | |
| ST-Acceptance Criteria | 1. An alert shall be generated for every patient triaged as ESI level 1 or 2 within 5 seconds of completing the triage.  Notifications shall be sent on mobile devices and the central triage dashboard 2. The alert system should allow configuration for escalating alerts after 2 minutes of inactivity. |
| ST-Business Rules | 1. For those patients whose ESI levels are triaged as either level 1 or 2, alerts should be produced in the system. If any patient's severity level is updated after triaging, then the alert should be updated or revoked by the system. 2. In the case of an ESI level 1 or 2 alert, where no action has been logged for 2 minutes, a secondary alert will be forwarded to the attending physician and ED manager. 3. Escalation rules should be configurable to extend time limits or add more recipients. 4. Staff shall respond to an alert within 1 minute, after which the system should generate a follow-on notification. 5. Acknowledgment shall log for auditing purposes. 6. ESI level 1 and 2 should be alerted to authorized personnel only, examples are ED nurses, and doctors. 7. Role-based access control shall lock the ability for configuration changes down to just senior staff or administrators. 8. Events that will be recorded shall include all generated, delivered, acknowledged, and escalated alerts. 9. Log data is retained for at least 7 years; it also satisfies the regulations within health care. 10. Staff must be able to customize alert delivery methods (e.g., push notifications, SMS) and escalation recipients. 11. Default settings must ensure compliance with hospital protocols for critical case alerts. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | 1. Alerts for flagged patients must be generated and delivered within 5 seconds of the completion of triage. 2. In the event of no action being logged, escalation alerts should be automatically triggered exactly 2 minutes from the time the first alert was sent. 3. Partial system outages shall be supported with backup systems to allow the delivery of alerts. 4. Notifications should be easy to read and act upon, including information such as patient ID, severity level, and location 5. Configurable alert settings should be easy to work with for staff to adjust priority levels or escalation times. 6. Notifications should be supported on many device types, including smartphones, tablets, and desktop systems. 7. The mobile application should be compatible with both Android and iOS platforms. 8. Authentication should be enforced by the system to ensure that alerts are given only to authenticated personnel. 9. Alerts must be well-integrated with the hospital's current communication tools, including pagers, messaging apps, and EHR systems. |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | Real-Time Alerts for Critical Cases |
| Tshirt |  |
|  |  |

### US-02-03-Dynamic Triage Dashboard

**US118819: US-02-03-Dynamic Triage Dashboard [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118819>

**Version:** 2

**Description:**

Primary Actor : ED Manager

As an ED Manager,  
I want a dashboard displaying real-time updates of patient severity and wait times,  
so that I can allocate resources to critical cases more effectively.

| Name | Value |
| --- | --- |
| ID | US118819 |
| Name | US-02-03-Dynamic Triage Dashboard |
| Created By | Student 24 |
| Created On | 27/11/2024 06:27:04 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 08:34:49 GMT-08:00 |
|  | |
| Custom Properties | |
| ST-Acceptance Criteria | 1. The dashboard should display details about the patients, ESI scores, wait times, and assigned staff. 2. It should update in real-time whenever the patient conditions change or new data is entered. 3. Managers should be able to filter patients according to ESI levels, room assignment, or staff availability |
| ST-Business Rules | * The key information to be displayed on the dashboard includes but is not limited to, patient name, ESI score, wait time, assigned room, and staff. * The dashboard should refresh data automatically when there is a change in patient conditions, new data is entered, or when assignments are updated. * Managers should be able to filter patients by criteria such as ESI level, room assignment, or assigned staff. The dashboard should highlight critical cases-ESI level 1 or 2 that require immediate resource reallocation. * Access to the dashboard should only be allowed for authorized persons, including ED managers and senior staff. * Every interaction with the dashboard, like updating data, filtering action, or assigning resources, should log on with timestamping. Settings within the dashboard need to be capable of customization by managers based on alert thresholds for wait times or resource allocation rules. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | * The dashboard should be refreshed within 1 second of any change in patient conditions or new data entry. * The system should support simultaneous updates for up to 500 patients without performance degradation. * The dashboard should maintain 99.9% uptime, ensuring that during critical operations, the system is available. * Automatic failover mechanisms should ensure the dashboard remains operational during system outages. * The dashboard should support integration with additional hospital systems and future expansion to accommodate increased patient inflow. * The interface of the dashboard should be intuitive and user-friendly, allowing the user to reach critical data in no more than 3 clicks. * The dashboard will be accessible from desktops and mobile devices, including tablets and smartphones. |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | Dynamic Triage Dashboard |
| Tshirt |  |
|  |  |

## Epic-3-Streamline Access to Patient Medical Information

**EP118849: Epic-3-Streamline Access to Patient Medical Information [Epic]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118849>

**Version:** 3

**Description:**

Enable seamless and secure access to comprehensive patient medical records to improve decision-making, reduce delays, and enhance care quality in the Emergency Department.

| Name | Value |
| --- | --- |
| ID | EP118849 |
| Name | Epic-3-Streamline Access to Patient Medical Information |
| Created By | Student 24 |
| Created On | 28/11/2024 08:48:25 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 08:54:06 GMT-08:00 |
|  | |
| Custom Properties | |
| Priority |  |
| Tshirt |  |
|  |  |
| Work Status |  |

### US-03-01: Centralized Electronic History Storage

**US118850: US-03-01: Centralized Electronic History Storage [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118850>

**Version:** 3

**Description:**

Primary Actor: Doctor

As a doctor,  
I want a centralized electronic storage system for patient histories that collects all the medical records.  
So, I can access all necessary information in a very fast way to make informed treatment decisions.

| Name | Value |
| --- | --- |
| ID | US118850 |
| Name | US-03-01: Centralized Electronic History Storage |
| Created By | Student 24 |
| Created On | 28/11/2024 09:11:22 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 29/11/2024 13:20:16 GMT-08:00 |
|  | |
| Custom Properties | |
| ST-Acceptance Criteria | * The system consolidates patient history, including past visits, lab results, prescriptions, and allergies. * Patient history shall be retrieved within 2 seconds of a search query. * Patient history access is secure; it requires two-factor authentication. * It automatically updates whenever new records are added to a patient's history through EHR integration. |
| ST-Business Rules | * Only authorized personnel shall have access to patient history, such as doctors, nurses, and ED managers. * Role-based permissions limit the access of a user depending on his role in the organization-for example, nurses see current treatment plans but not full histories. * Patient medical history needs to be retained for at least 15 years according to the healthcare regulations. * Any access or modification of patient records shall be audited along with user information, timestamps, and details of what was done. * The searches should enable the user to query the patient records by patient ID, name, or date of birth. * All patient information shall be validated for completeness and accuracy at the time of data entry or update. * Patient data shall not be disclosed to third parties without the explicit consent of the patient, except in cases of emergency. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | * The patient history shall load in less than 2 seconds from the start of the search query. * The system should handle at least 1000 concurrent users without performance degradation. * The centralized storage system shall handle up to a 10% increase in patient records per year without major infrastructure upgrades. * The system shall be up 99.99% of the time to ensure it is always available during operational hours. * Automatic backups of patient records shall happen on an hourly basis. * Two-factor authentication, such as password + OTP, should be compulsorily deployed for all users. * Provide training material and support necessary to ensure easy adoption of the system by staff. * The system shall ensure smooth integration with available EHR systems and all other software used in the hospital for online syncing of new records. |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | Centralized Electronic History Storage |
| Tshirt |  |

### US-03-02: Real-Time Test Results Integration

**US118851: US-03-02: Real-Time Test Results Integration [User Story]**

**Original Artifact:** <https://172.17.196.254/?ArtifactId=118851>

**Version:** 2

**Description:**

Primary Actor : Triage NurseAs a Nurse,  
I want to have real-time access to lab and diagnostic test results linked to patient records,  
so that I can provide timely updates to doctors and ensure efficient care.

| Name | Value |
| --- | --- |
| ID | US118851 |
| Name | US-03-02: Real-Time Test Results Integration |
| Created By | Student 24 |
| Created On | 28/11/2024 09:31:07 GMT-08:00 |
| Last Edited By | Student 24 |
| Last Edited On | 28/11/2024 09:34:08 GMT-08:00 |
|  | |
| Custom Properties | |
| ST-Acceptance Criteria | * Test results should automatically populate the patient's record within 1 minute of being available. * Notifications should alert the assigned nurse and doctor when results are ready. * The system must include a flag for abnormal results requiring urgent attention. |
| ST-Business Rules | * Only nurses, doctors, and other relevant staff directly involved in the patient's care can access the test results. * Test results should include patient identifiers (e.g., name, ID) to ensure correct assignment to records. * Notification of the test results should be sent to the assigned nurse and doctor within 5 seconds of the test results being uploaded. Abnormal results shall be flagged based on predefined thresholds set by the medical institution. * Nurses and doctors should acknowledge abnormal result alerts within 2 minutes after the alert is flagged. * Test results should be available in the system for at least 15 years according to healthcare regulations. * It should be possible for staff to see historical test results in order to compare over time, filtered by test type and date range. |
| ST-Iteration |  |
| ST-Non-Functional Requirements | * Test results are to be integrated into patient records within 1 minute from the time they are available. * The system should be able to notify at least 500 simultaneous users without delay. * The system should sustain up to 20% yearly growth of test result data without degradation of performance. * Ensure that uptimes are 99.99% to ensure continuous availability of test results. * Automatic failovers: To handle system outage scenarios. * All test results and related data are to be encrypted using AES-256 encryption for storage and transmission. * Notification- Clear, concise notifications should be provided and must be visible on both desktop and mobile interfaces. * Every access to the test results should be logged, capturing user details, timestamps, and actions performed. It should synchronize real-time updates from all integrated lab and diagnostic services. |
| ST-Rank |  |
| ST-Release |  |
| ST-Status |  |
| ST-Story Points |  |
| ST-Title | Real-Time Test Results Integration |
| Tshirt |  |
|  |  |

# Revised BPMN Diagram for ED System:

A diagram of a flowchart

Description automatically generated

# State Transition diagram for ED System:

**A diagram of a company

Description automatically generated**