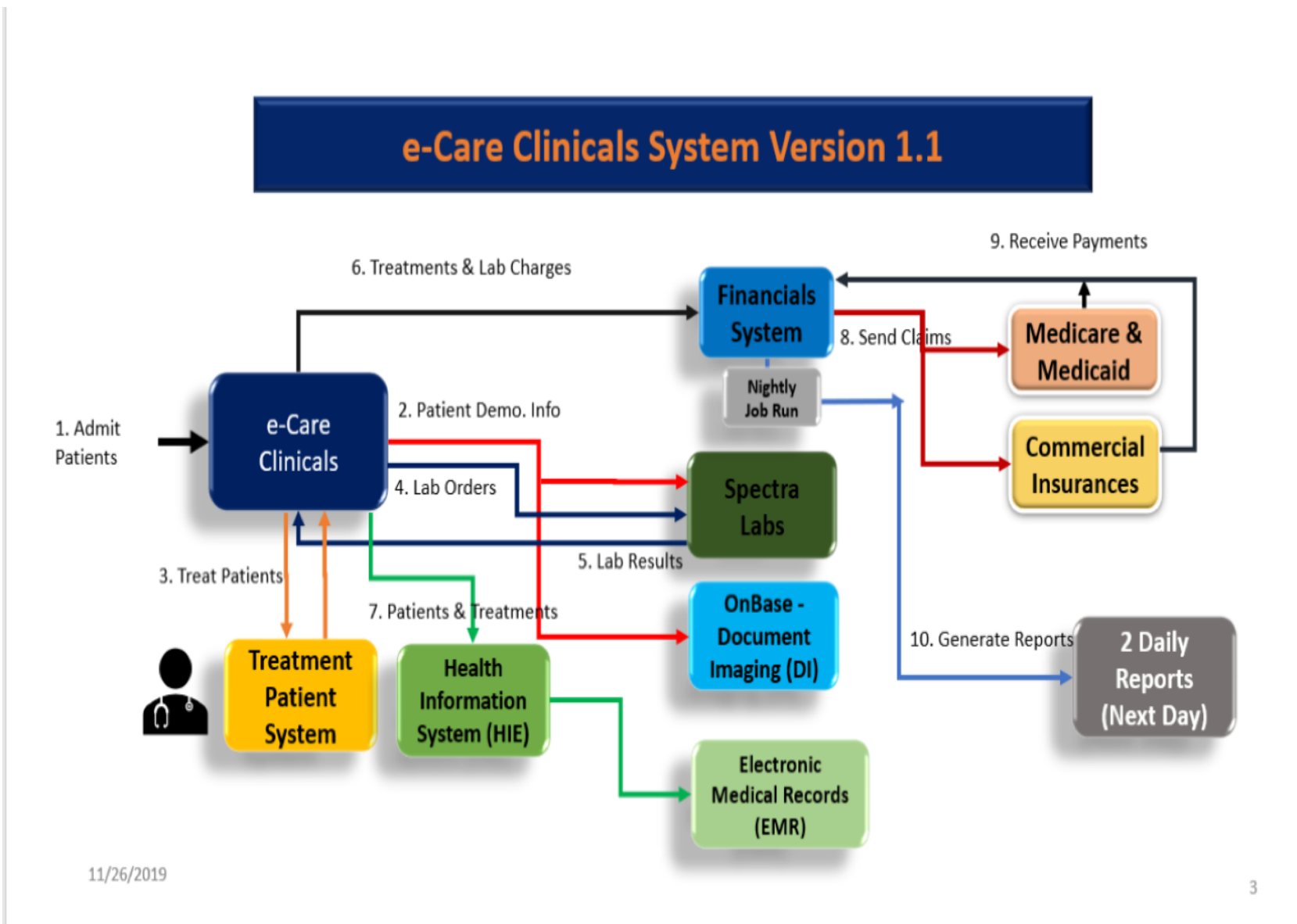
1.INTRODUCTION

The Pro-Care legacy application is being replaced by the new e-Care clinicals systems.The new e-Care clinicals system provides a better comprehensive functionality,for the nurses to do their job in an efficient manner than before.
The system allows the Admission and Treatment of Patients, depending upon their insurance type(Medicare,Medicaid or Commercial Insurance like Blue Cross,United etc).Upon admission,the Patient's demographic information will be sent to the OnBase Systems or Document Imaging and Spectra Labs.Patient's demographics and treatments are sent to an external Electronic Medical Records System through a Health Information System.The e-Care Clinicals sends the treatment and lab charges present on the e-Care database, to the Financial Systems every night for billing purposes.The Financial System then sends claims to the respective Insurance companies,so that they can be paid accordingly.In addition to that,the Financial System also generates two reports the next day namely,Daily Treatments Report and the Daily Admissions Report.



2.TEST PLANNING:

2.1 OBJECTIVES:

The objective of the test is to find out all the bugs present in the software and make sure that e-Care clinicals is free of bugs and it's functionality adheres to required specifications.The application should be tested for the proper working of the two flags namely the Financial clearance flag and the Clinical Clearance flag.Also,it has to be made sure that the reports generated by the Financial Systems are error free.
The test scripts shall be executed and verified.All the high and medium severity bugs are identified,fixed and retested as per the entrance criteria.Lower priority bugs are fixed with the help of CR.The end products of the tests include a software that is ready to enter the production environment and a set of stable test scripts that can be used during User Acceptance Testing and Functional Testing.

2.2 TASKS

1. Planning the test:

    - Gather the requirements needed to perform the test.
    - Develop Test Strategy
    - Assess Risk
    - Create a Test Schedule
    - Identify the resources required
    - Generate a Test Plan accordingly

2. Designing the test:
    - Develop a test suite
    - Analyse the work load
    - Identify and write down the test cases
    - Write down the test scripts
    - Make sure that the testing of the software is within the scope.

3. Implementing the Test:
- Setup the test environment.
- Write the Test Scripts
- Develop Test Stubs and Drivers
- Create external data sets
- Check the test specific functionality in both the design and implementation models.

4. Run the test:
- Run the test scripts.
- Evaluate execution of Tests.
- Recover from halted tests.
- Verify the results
- Analyze the unexpected results.
- Log Defects

5. Evaluate the test:

- Make sure that the test includes all the test case scenarios
- Evaluate the code coverage.
- Analyze defects.
- Make sure that the test completion criteria and the success criteria are met.
- Create Test Evaluation Report

2.3 SCOPE

The scope of the test plan is to test the objectives mentioned before:

- Validate the Financial Clearance flag for the new and existing patients.
- Make sure that the patient's demographics are sent to the DI and Spectra Labs.
- Validate the Clinical Clearance flag for patient admission.
- Check for the insurance type.
- Validate the financial claim status
- Check Reports.

TEST ENVIRONMENTS

TEST DATA:

Test data in some cases is used to produce the expected outcomes, while in some cases it differs from the expected outcomes.The test data can be automatically read from excel files or databases using the automation tools.Most of the times in regression testing the test data is re-used, it is always a good practice to verify the test data before reusing it in any kind of test.

TEST TOOLS

Automation Tool: Selenium
Bug Tracking: HP ALM
Performance Testing: Loadrunner
Test Case Reporting:MS Excel

ROLES AND RESPONSIBILITIES:

Test Manager:

- Manage the whole Project
- To check if the team has all the necessary resources to execute the testing activities.
- Updating project manager regularly about the progress

Test engineers/QA testers/QC testers :

- To read all the documents and understand what needs to be tested.
- Based on the information procured in the above step decide how it is to be tested.
- Inform the test lead about what all resources will be required for software testing.

- Develop test cases and prioritize testing activities.
- Execute all the test cases and report defects, define severity and priority for each defect.
- Carry out regression testing every time when changes are made to the code to fix defects.
- Take in charge of quality assurance.

ENTRY AND EXIT CRITERIA

ENTRY:

- Testing environment established
- Defined and Approved Requirements
- The readiness of test cases
- Access to sufficient and desired test data
- Setting up of test environment with all the necessary resources like tools and devices
- Spot checks to ensure all the preconditions are met, and eradicate any defects or tasks that are delaying the process timelines
- Test plans are completed.

EXIT:

- Ensuring all critical Test Cases are passed
- Achieving complete Functional Coverage
- Identifying and fixing all the high-priority defects
- Acceptable sign-off on testing was obtained.
- Meets the desired and sufficient coverage requirements and functionalities

ASSUMPTIONS,CONSTRAINTS,RISKS AND DEPENDENCIES

ASSUMPTIONS:

- The test environment will be available by the start date given in the schedule to execute test scripts,and sign off has been handed over to the Test Manager.
- The various specifications related to the release will be the basis for testing the functionality of each release of the e-Care clinicals.These documents will be available to the test team leader by the given start date for preparing test scripts for each schedule.
- All the approved decision and change requests will be forwarded upon approval to the test team leader to ensure that the test scripts are modified and the function is re-tested when necessary.
- All project members are available during the entire duration of testing.
- There are no budget issues for the entire duration of the project.

LIMITATIONS

Project limitations may fall into several categories.There are some preset expectations or requirements like:

- The patient has an insurance already
- Exist patient’s DI folder is up to date
- Clinical Reports are generated the next day without any delay
- Nurses do their jobs without any delay.

RISKS

Risk identification and management plays a crucial role in any healthcare system,failure to do so might result in a potential loss.

- Testing should be done keeping in mind the safety and regulatory standards- as any error can cause a direct effect on patient's life
- Testing team needs to be well aware of the various functionalities, clinical usage, and the environment the software will be used for
- Difficult project modules integration.
- Resources are not tracked properly
- Unexpected scope expansion(Mitigation Strategy: Document the project scope in a Project Initiation)
- Cost overruns
- Lack of communication, causing lack of clarity and confusion.
- Delay in earlier project phases jeopardizes the ability to meet fixed date.

DEPENDENCIES:

In our application,the dependency can be categorised as Finish to Start because for the patient to be admitted into the hospital,his financial clearance flag has to be set to “Yes”.After that the clinical clearance flag has to be set to “Yes” for carrying out the further treatment processes.

Other dependencies include availability as well as the task completion of the software developers,testers etc.The database should be updated and made available to test.

10 Test Schedule

Name	Start Time	End Time
Information Gathering	2019.11.24	2019.11.30
Test Planning	2019.11.25	2019.12.1
Review Test Plan	2019.12.1	2019.12.2
Test Scenario Design	2019.12.2	2019.12.4
Test Case Design	2019.12.4	2019.12.8
Test Case Review	2019.12.8	2019.12.8
Test Debugging	2019.12.1	2019.12.10
Test Summary	2019.12.9	2019.12.10

11 Expected Results

Test Case	Expected Result

Test Case 1.1	Admit a NEW patient into the system with "Financial Clearance flag = Yes". The patient will get admitted into the system. A DI folder gets created containing all of the Patient demographics information. The information is also sent to Spectra.
Test Case 1.2	Admit a NEW patient into the system with "Financial Clearance flag = No". The patient will be rejected. No information is sent to DI nor Spectra.
Test Case 1.3	Admit a NEW patient into the system with "Financial Clearance flag = Yes". The patient will get admitted into the system. A DI folder gets created containing all of the Patient demographics information. The information is also sent to Spectra.
Test Case 1.4	Admit a NEW patient into the system with "Financial Clearance flag = No". The patient will be rejected. No information is sent to DI nor Spectra.
Test Case 2.1	Validate the "Clinical Clear" as Not Clinical Clear, no treatments are allowed
Test Case 2.2.1	Treat a NEW Patient with the "Clinical Clearance flag = Yes" and with the Medicare/Medicaid as the insurance. The patient will get treated and will use the "Hep-Ran" drug only.
Test Case 2.2.2	Treat an EXISTING Patient with the "Clinical Clearance flag = Yes" and with the Medicare/Medicaid as the insurance. The patient will get treated and will use the "Hep-Ran" drug only.
Test Case 2.3.1	Treat a NEW Patient with "Clinical Clearance flag = Yes", with a Commercial insurance. The patient will get treated and will use the "Xer-Ran" drug only.
Test Case 2.3.2	Treat an EXISTING Patient with "Clinical Clearance flag = YES", a Commercial insurance. The patient will get treated and will use the "Xer-Ran" drug only.

Test Case 2.4	Check their demographics information and their Treatments are transferred to an external EMR system via an HIE(Health Information Exchange)engine whose status is "Sent"
Test Case 2.5	The Treatment and the Lab Charges will be transmitted from the Clinicals system to the Financial system for a NEW or EXISTING Patient with Medicare/Medicaid insurance.
Test Case 2.6	The Treatment and the Lab Charges will NOT be transmitted from the Clinicals system to the Financial system for a NEW or EXISTING Patient with Medicare/Medicaid with the "Clinical Clearance Flag = No" (No treatment done).
Test Case 2.7	The Treatment and the Lab Charges will be transmitted from the Clinicals system to the Financial system for a NEW or EXISTING Patient with the Commercial Insurance with the "Clinical Clearance flag = Yes".
Test Case 2.8	The Treatment and the Lab Charges will NOT be transmitted from the Clinicals system to the Financial system for a NEW or EXISTING Patient on Commercial Insurance with the "Clinical Clearance flag = No" (No Treatment done).
Test Case 3.1	The Financial system will open Claims for the Treatment and the Lab Charges for a NEW or EXISTING Patient with Medicare/Medicaid. The Claim is accepted and the payment is sent.
Test Case 3.2	The Financial system will open Claims for the Treatment and the Lab charges for a NEW or EXISTING Patient with a Commercial Insurance. The Claim is accepted and the payment is sent.
Test Case 4.1	2 Reports are available the next day for all New/Existing Patients who have been admitted and were treated with their Labs for the previous day. The reports are called: The Patients Report and the Treatments Report.

12 References

Reference Document	Location
Test Schedule and Its Sample Template	https://www.softwaretestinggenius.com/test-schedule-and-its-sample-template/
What is Requirements Traceability Matrix(RTM)?	https://www.guru99.com/traceability-matrix.html
Traceability Matrix	https://en.wikipedia.org/wiki/Traceability_matrix
How to create a Traceability Matrix	https://www.perforce.com/blog/alm/how-create-traceability-matrix
Test Plan	http://softwaretestingfundamentals.com/test-plan/
Test Case	https://www.tutorialspoint.com/software_testing_dictionary/test_case.htm