



IMPLEMENTATION OF THE CARDIAC CATHETERIZATION LAB IN THUMBAY HOSPITAL, DUBAI

Submitted by:

Dr. Anubha Saini

Roll no: 0391

Hospital Management (HM 21)

Under guidance of:

Dr. Monika Chaudhary

Associate Professor



INTRODUCTION

- A **Cardiac catheterization laboratory** or Cath lab is an examination room with diagnostic imaging equipment used to visualize the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.
- Planning and implementing the best Cath lab for hospital requires a wide range of considerations, from current and future planning of the workflow and communication concerns.
- As, **Thumbay Hospital, Dubai** has come up with a **new ADVANCE CARDIAC CARE UNIT**; therefore setting up of the cardiac catheterization laboratory requires utmost care and attention since it deals with the life of innumerable people.
- It is mandatory to follow the standard operating procedure (SOPs) of the hospital in consideration of the **JCI (joint commission international)** and **DHA (Dubai health authority)** guidelines while planning and designing the policy & procedure and mapping the process flow for the Cath lab.

This project has been divided into two phases for the implementation of cardiac catheterization lab in the Thumbay Hospital, Dubai.

- **Phase I include**

Process mapping for the Cath lab in relation to the other departments in the hospital and mapping the cross functional flow for the smooth and effective functioning of the department without any delays to deliver service and quality of care to the patient.

- **Phase II include:**

Designing of the Cath lab service manual for the hospital it is created to serve both as a reference document and a training resource.

- **Phase III Include:**

Time motion study for the first case in the Cath Lab in the hospital.

AIM OF THE STUDY

To achieve well-organized and efficient implementation of the Cardiac Catheterization unit in the hospital and maintaining smooth and effective management of the Cath lab to ensure quality of care in Thumbay Hospital, Dubai.

RATIONALE

To ensure the quality of care by the hospital for cardiac patient:

- Designing and implementing the policy and procedures manual which will help to communicate employees the desired outcomes of the organization and understand their roles and responsibilities within the organization and Tracing the process maps which will help in strategic analysis of identifying and creating a visual depiction of the process flow of various areas of a hospital. It provides benefits to the hospital to improve efficiency and quality of workflow.

OBJECTIVE OF THE STUDY

- To review and understand the current standards of the procedures and the process of the hospital to avoid any delay or gap in the functioning of the department.
- To analyse JCI (Joint commission international), DHA (Dubai Health Authority) and AHA (American heart association) guidelines to implement and design the process mapping, policies and procedure manual for Cath lab.

METHODOLOGY

- **Study design** : Descriptive study
- **Study area**: Thumbay Hospital, Dubai.
- **Duration of study** : February to April 2018; i.e. 3 months
- **Data collection**:

Discussions with the concerned staff and specialist and Expertise opinions were taken.

JCI, DHA and ACC/AHA guidelines are considered to formulate all the policies and manuals.

Analysis of the blue print to the Cath lab to design various process maps.

Phase I

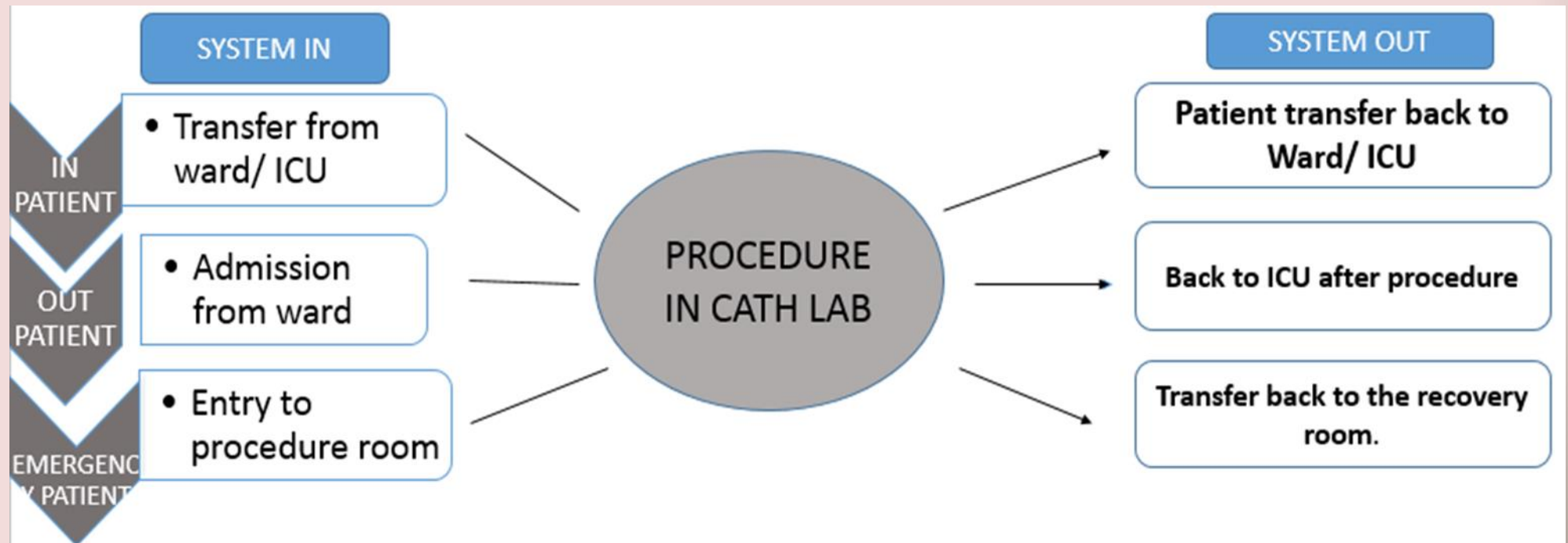
PROCESS MAPPING FOR THE CARDIAC CATHETERIZATION LAB

Process Mapping

For the implementation of the Cardiac catheterization laboratory it is important to map the process flow for the patient to improve the quality of care, therefore process mapping is planned and used as management tool to visually describes the flow of work.

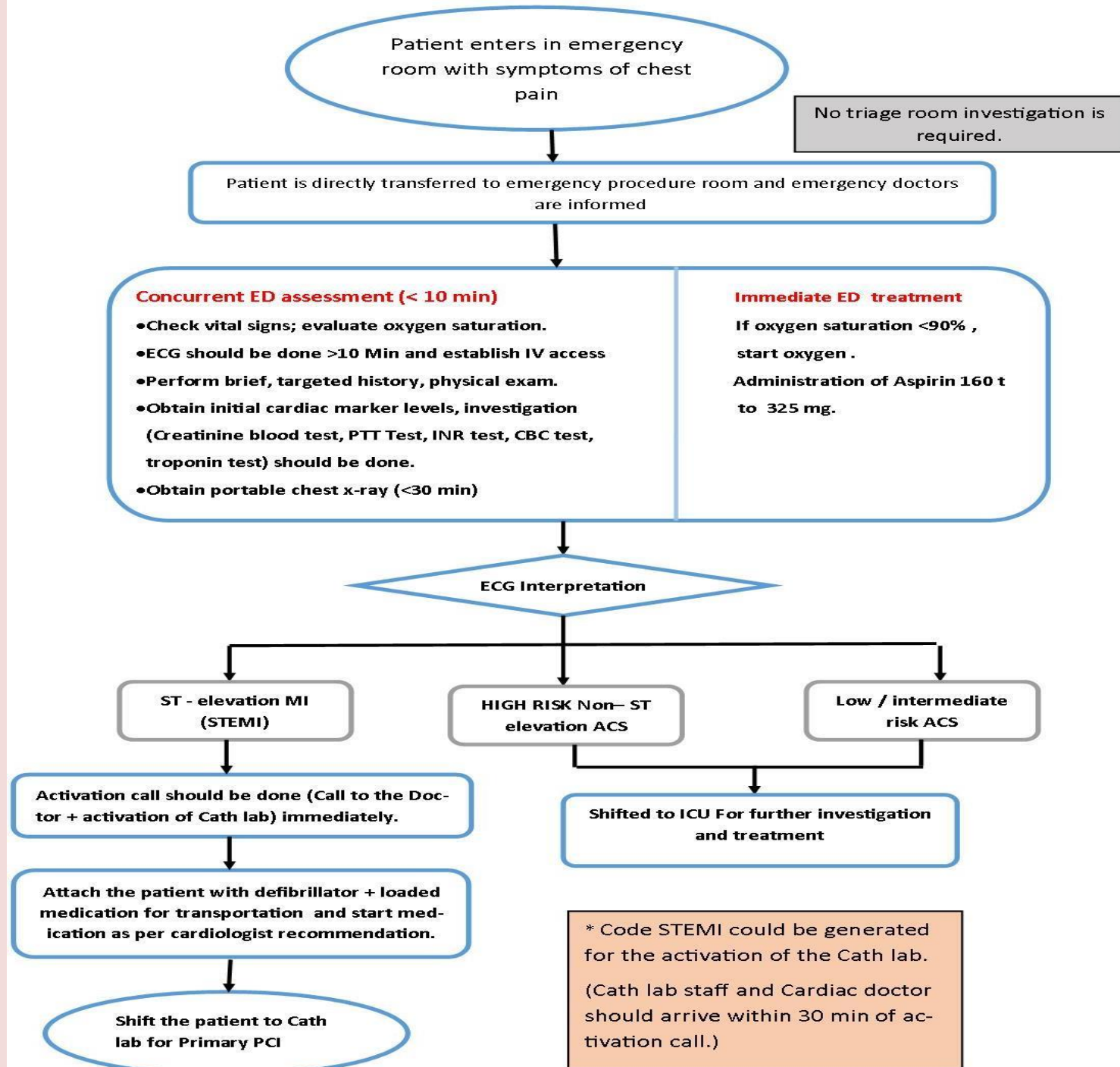
Cardiac catheterization laboratory will have patient flow from three departments or units:

- Emergency patients
- Inpatient
- Outpatient

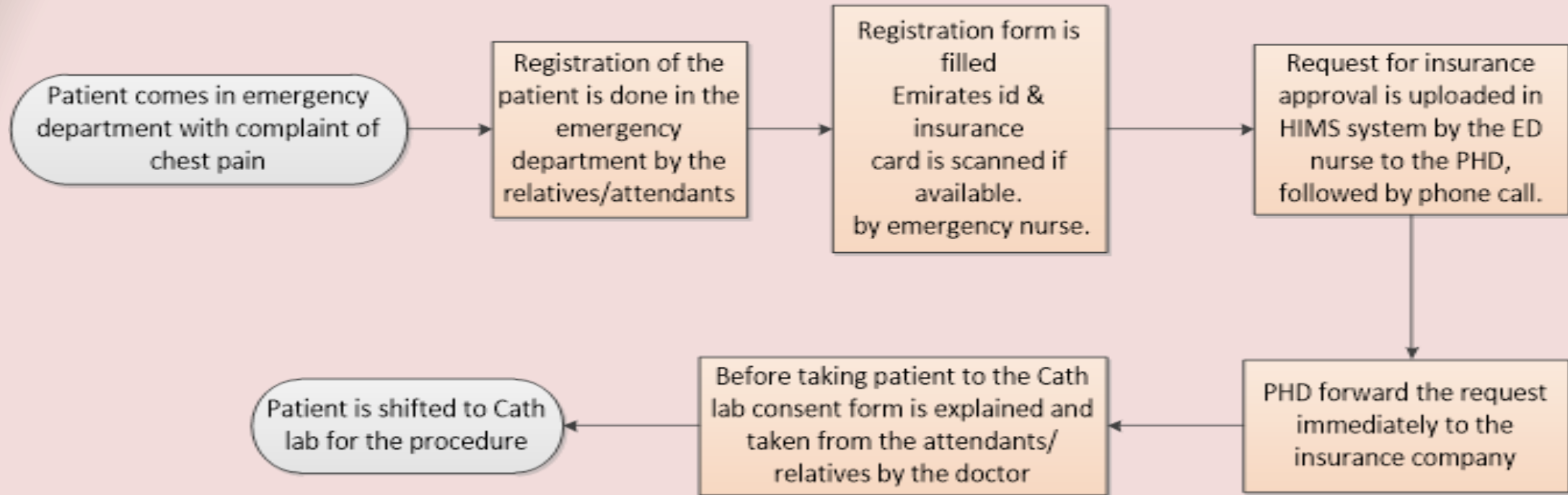


1. Process mapping for Emergency Patient (Door to Balloon time):

- Patient arriving at hospital with the complain of chest pain has to be treated on priority basis, and **Door to Balloon time** is measured for emergency cardiac care (ECC), specifically in the treatment of ST segment elevation myocardial infarction (or STEMI).
- According to ACC/AHA guidelines recommend a door-to-balloon interval of no more than **90 minutes**. The 30-30-30 rule takes the goal of achieving a 90-minute door-to-balloon time and divides it into 3 equal time segments. EMS, the emergency department, and the cardiac Cath lab has 30 minutes to complete assigned tasks and seamlessly "hand off the STEMI patient.
- **Designing the clinical pathway for Door to Balloon time for STEMI – Patient**



- **Administrative process flow for the emergency patient**



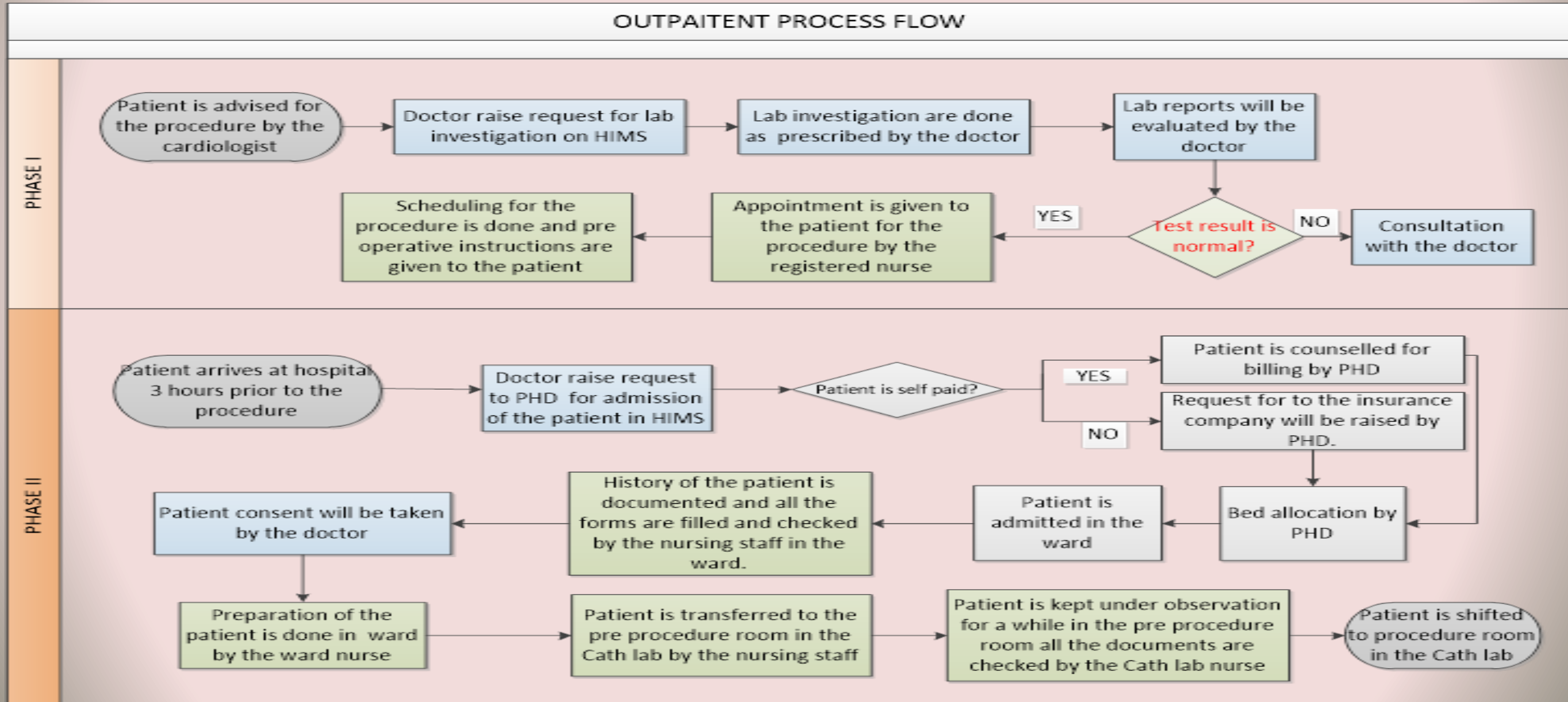
- ❖ **Consideration while admitting emergency cases in Cath lab:**

According to DHA for life threatening cases treating physician has to take the call to initiate the procedure as patient should not be left to wait for any approvals from the insurance but approval has to be sorted within 24 hours of the admission.

Catheterization lab will be functional 24*7 for emergency cases; doctors, Cath lab technicians and nursing staff will be available on call.

2. Process mapping for the Out - patient:

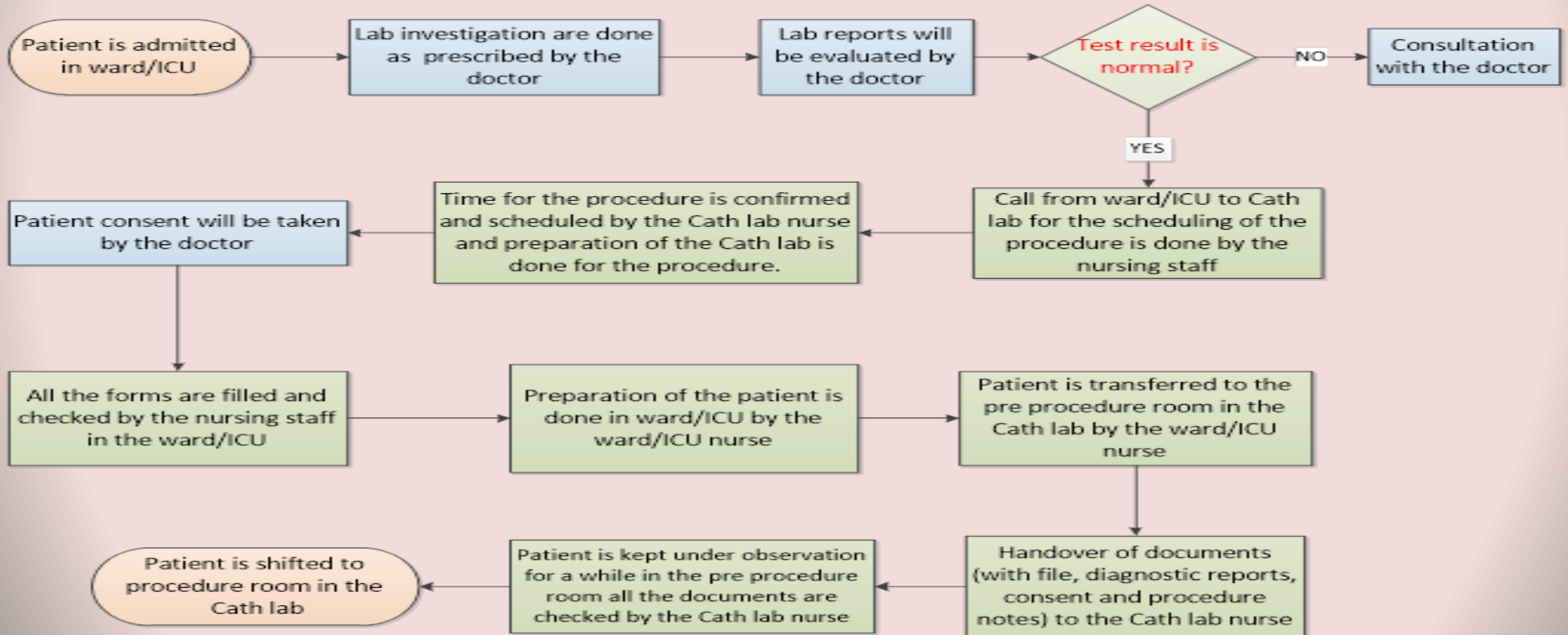
Outpatient elective cases will be schedule by the cardiac doctor during functional hours of the Cath lab and patient will be counselled well before the surgery about the procedure and the complication (if any).



3. Process flow for the In - Patient :

Inpatient transfer from the floor to the procedure room is designed in order to avoid any potential delays during the process.

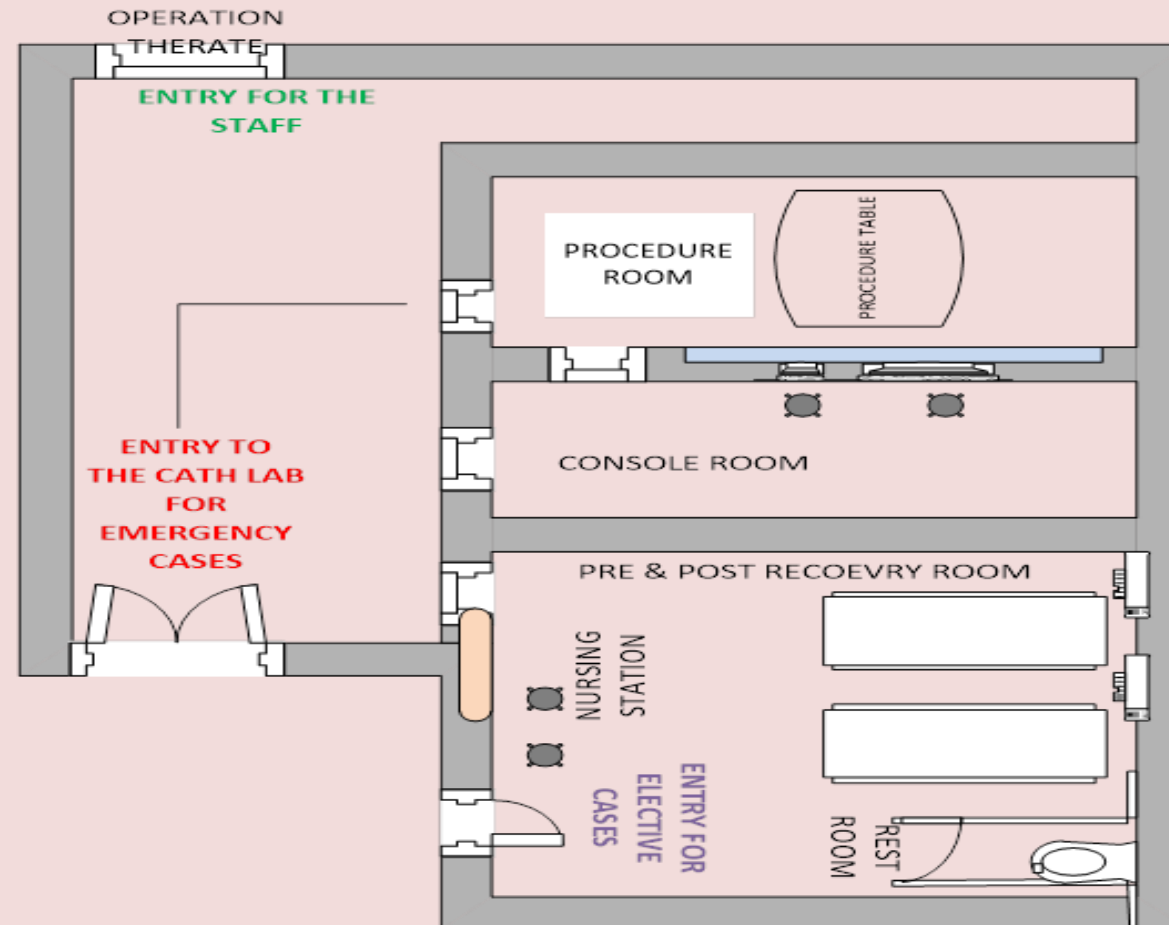
Designing the process flow for the Admission of the In - patient to Cath lab



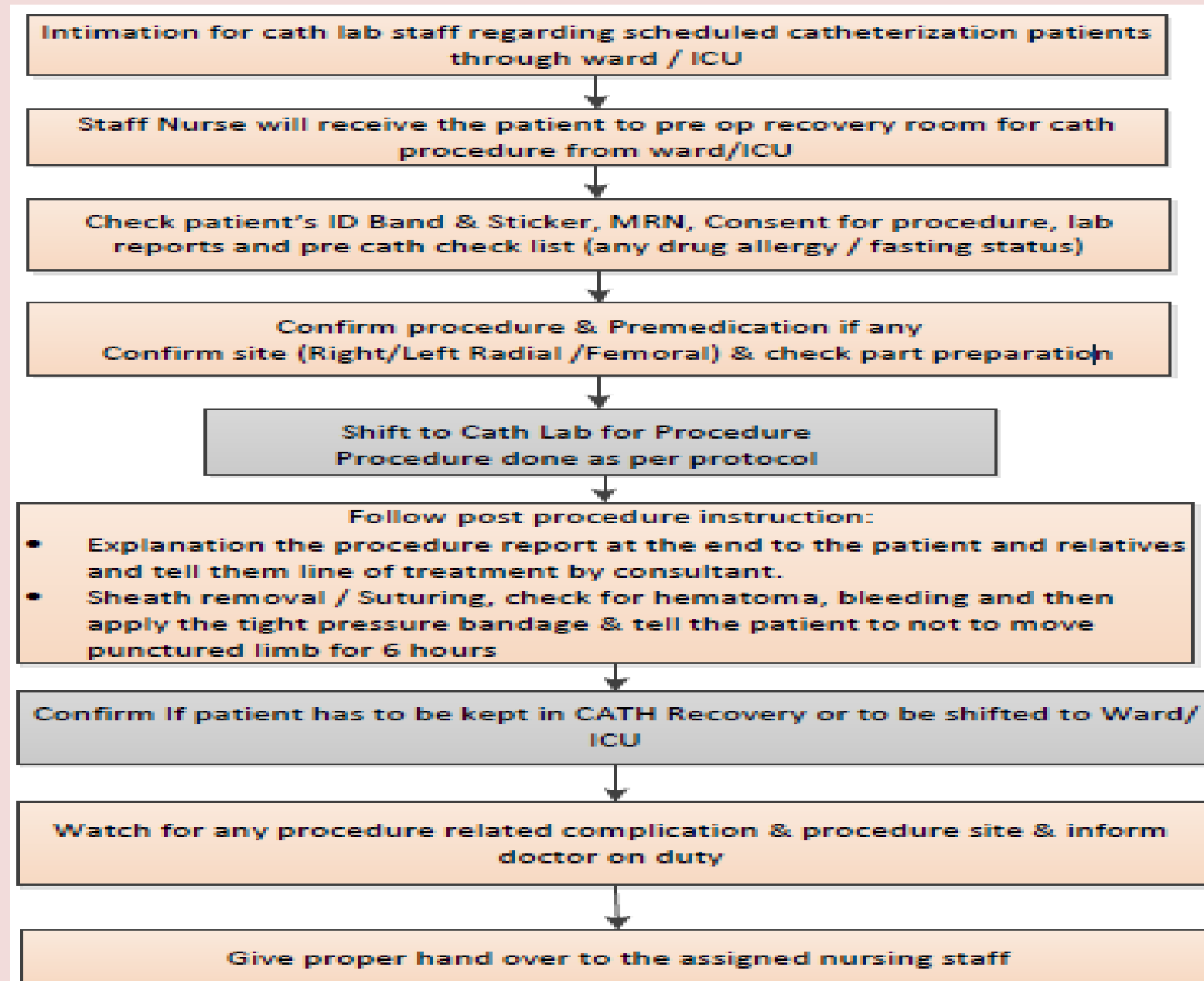
4. LAYOUT OF THE CATH LAB

Cath lab is located the first floor of the hospital which is connected with operation theatre.

- **Doctor and Cath lab staff:** The entry for the staff and doctors has been designed from the operation theatre.
- **Emergency patients:** They can be directly shifted from the main entrance to the procedure room.
- **Elective patient:** The cases which are not urgent or emergency, are first observed in the pre procedure/recovery room for observation and then shifted to the procedure room.

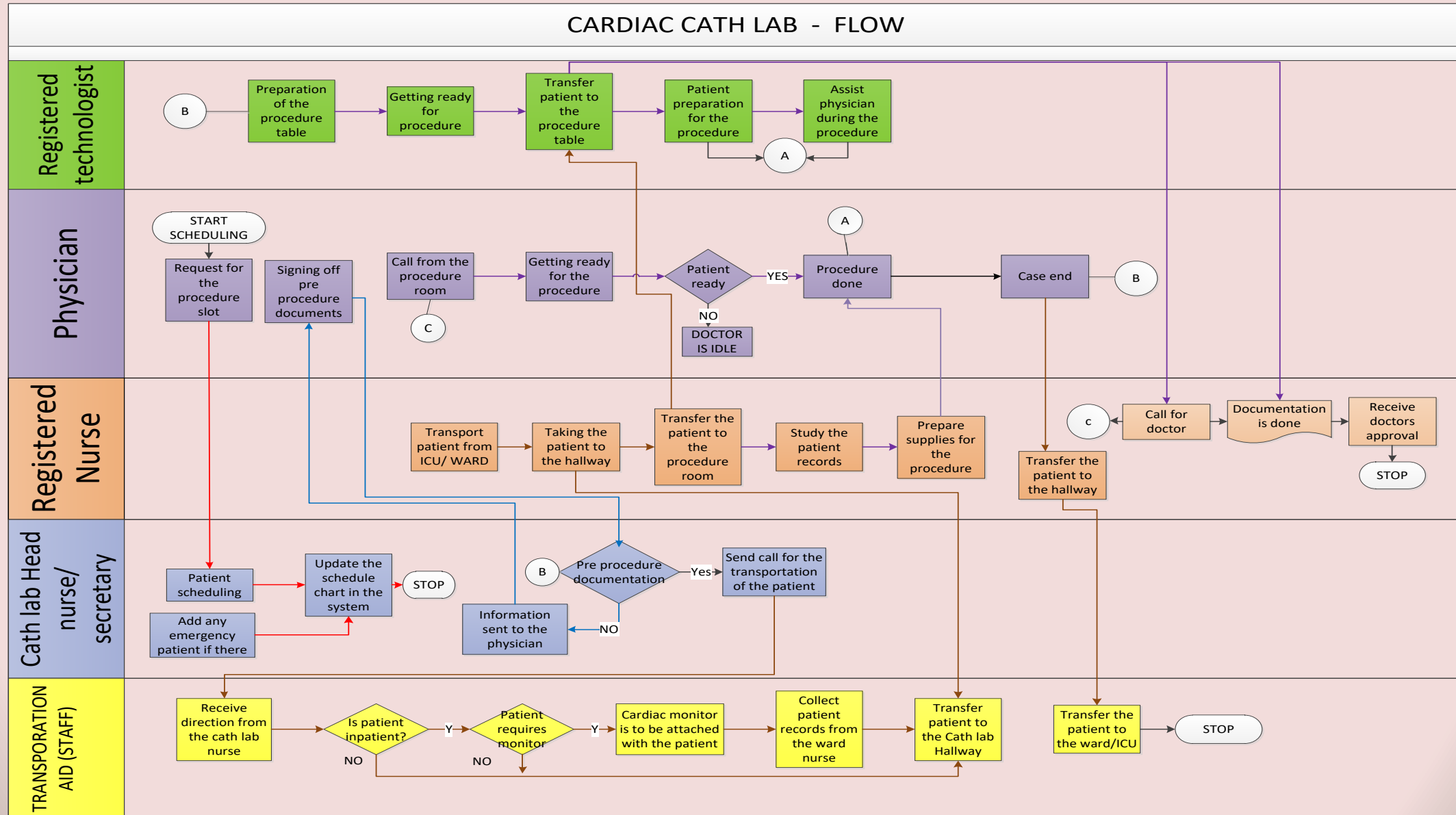


5. Clinical pathway for the elective procedure in the Cath lab



6. Cross functional workflow of the Cath lab

This flow chart shows the cross functional view for workflow of the Cath lab which defines and includes the **duties and responsibilities** of each functional staff of the Cath lab.



Phase II

DOCUMENTATION OF THE CARDIAC CATHETERIZATION LAB SERVICE MANUAL

- Cardiac catheterization lab service manual is created to serve both as a reference document and a training resource.
- The manual touches upon the structural and functional aspects of the department. It covers the procedures integral to effective and efficient delivery of services.
- It also summaries the quality indicators, forms in use and reporting formats. This manual is designed as living document in line with on-going business direction and growth.

Cardiac catheterization lab service manual includes:

- Introduction of the Department
- Role of the Cardiac catheterization laboratory
- Scope of Services : Diagnostic or therapeutic interventions provided:
 - ✓Coronary and bypass graft angiography.
 - ✓Ventricular angiography
 - ✓Abdominal and thoracic aortography
 - ✓Coronary Angioplasty
 - ✓Rotational Atherectomy
 - ✓Physiological Assessment (FFR - QFR) and Intra-Coronary Imaging (IVUS - OCT)
 - ✓Renal angiography and angioplasty
 - ✓Peripheral angiography and intervention
 - ✓Temporary Pacemaker
 - ✓Pacemaker simple and dual chamber
 - ✓Implantable loop recorder (REVEAL)

- Quality Indicators:

- ✓ Time in & time out
- ✓ Door to balloon for primary PCI
- ✓ Amount of contrast used
- ✓ Any complications
- ✓ Bleed
- ✓ Vasovagal shock
- ✓ Requirement of Blood Transfusion
- ✓ Procedure related complication

- Responsibilities and duties:

- ✓ It is been designed to ensure that all hospital's policies are properly implemented.
- ✓ Co-ordination with other units & departments.
- ✓ Maintains good relations with the patients, customers, admitting consultants and workers in the hospital.

Departmental Policies & Procedures:

All the necessary and important policies needed in the department and procedure that require guidelines are documented in the manual with reference to the doctor, nursing staff, Cath lab technicians and other departments involve in the functioning of the Cath lab.

Which includes: Process, Procedure and Documentation of the policy and procedure to be directed in the Cath lab for the following:

- Cardiac Cath Policy
- Pre-Cath preparation
- Receiving of patient to Cath lab
- Laboratories services and equipment
- Scheduling of procedure
- Preparation of sterile trolley
- Patient positioning
- Haemodynamic monitoring

- Management of patient undergoing Cardiac Cath procedure
- Cleaning of Cath lab
- Recording a CD
- Safety Management
- Patient Transfer
- Primary intervention protocol
- Coronary angiography(CA)
- Percutaneous coronary intervention (PCI)
- Conditions associated with cardiac arrest
- Allergic disease in the Cath lab
- Removal of femoral arterial catheters
- Internal Instructions for Cath Lab

❖ Understanding and training for the lab manual is required and was given to the staff.

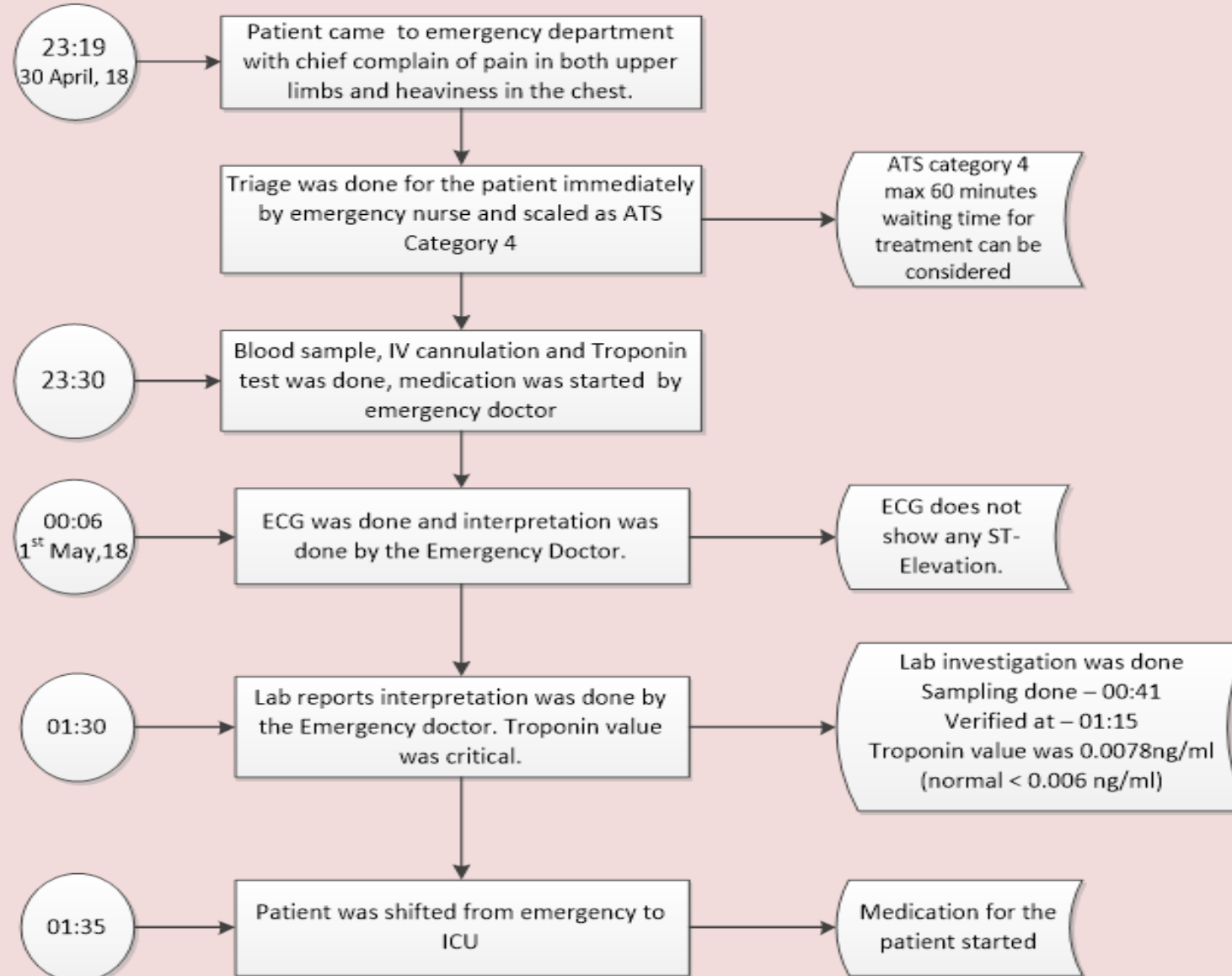
PHASE III

TIME MOTION STUDY FOR THE FIRST CASE IN CARDIAC
CATHETERIZATION LAB

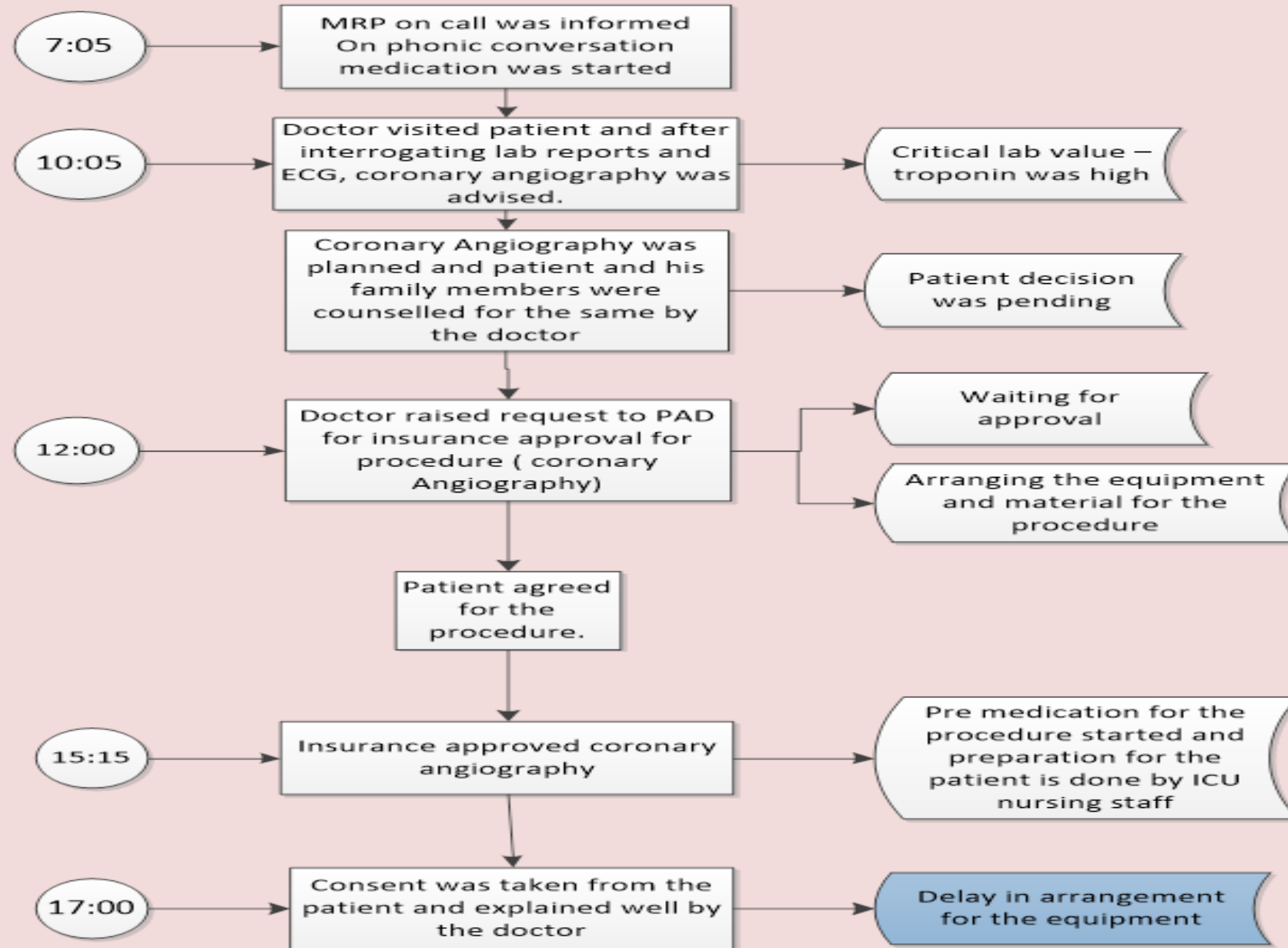
On 1st of May, 2018 first procedure was done in the cardiac catheterization lab in Thumbay Hospital, Dubai.

Case detail: Coronary angiography and angioplasty to left circumflex artery was done

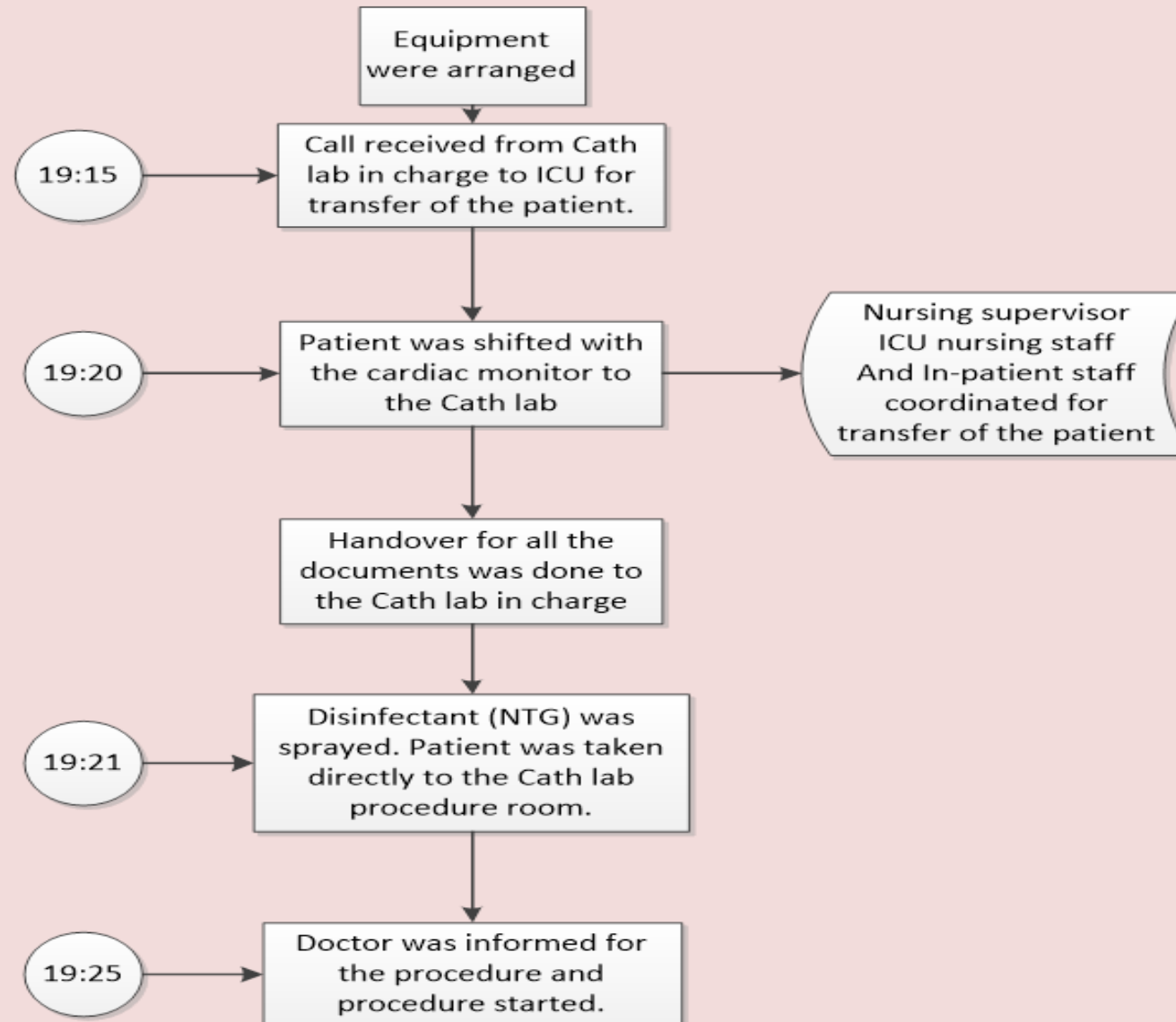
Patient in the Emergency department

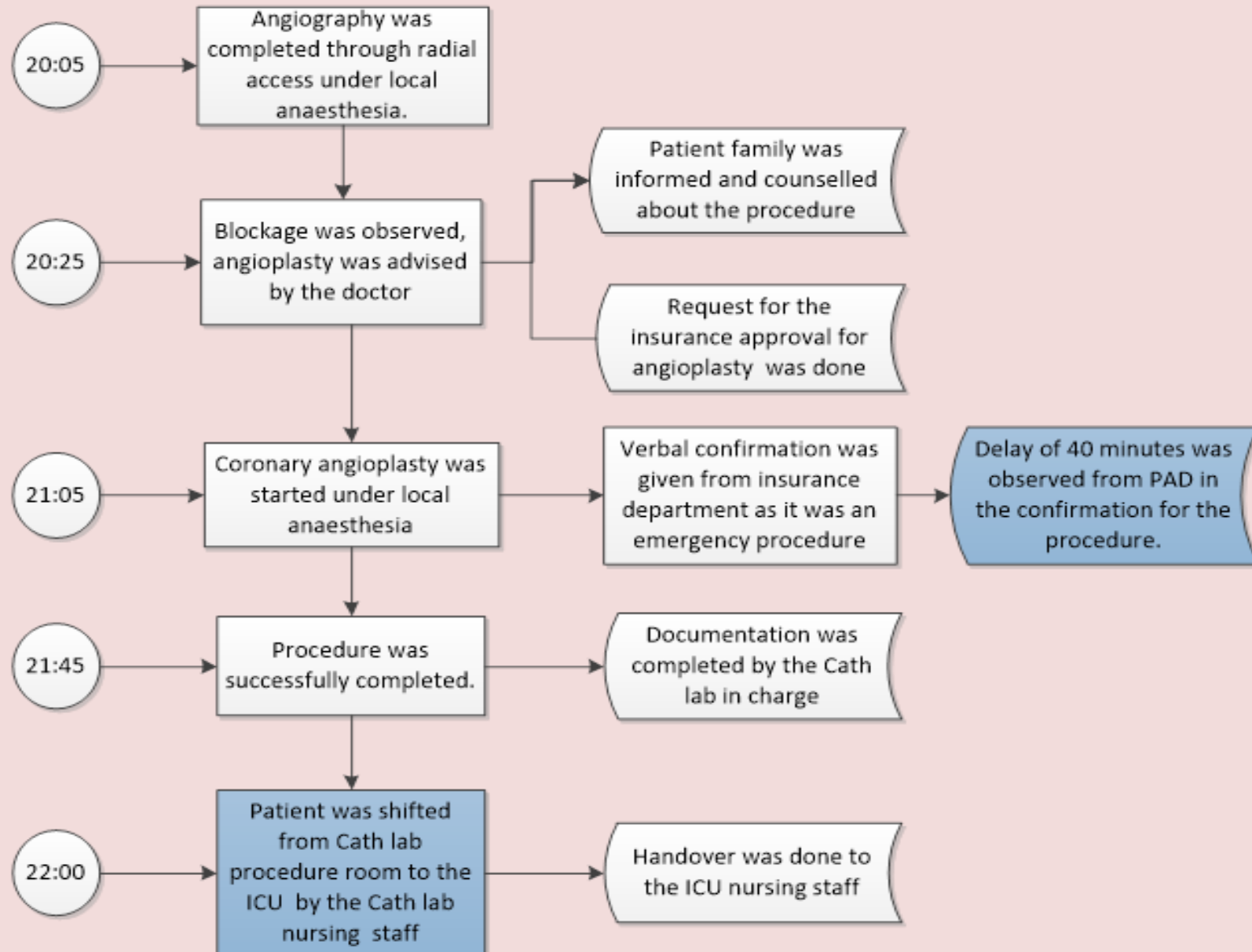


Patient transferred to ICU



Patient transferred to Cath lab





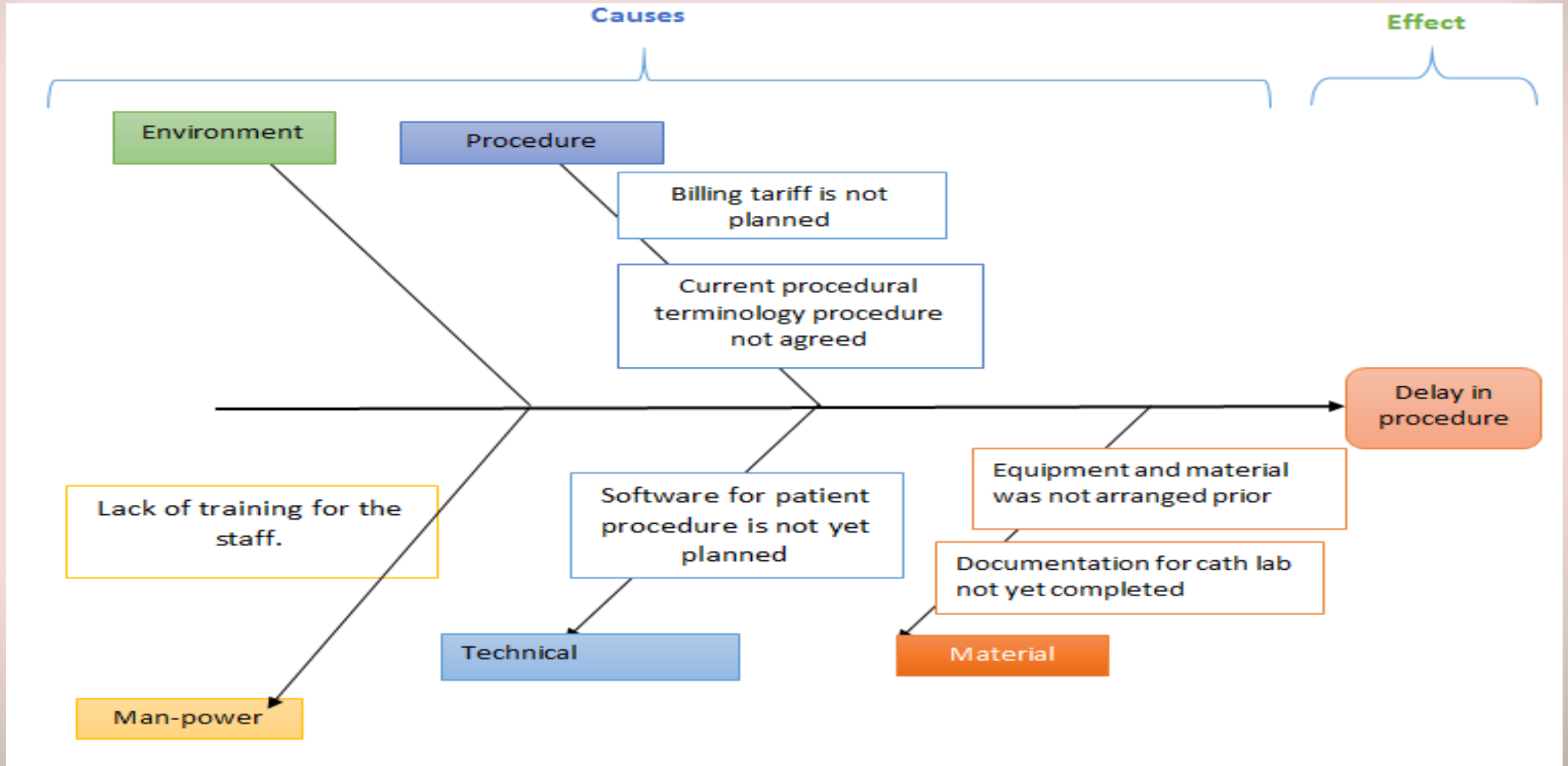
Observations:

- Delay for 5 to 6 hours observed in the arrangement of equipment.
- Delay of 40 minutes in the verbal confirmation for insurance approval for the emergency procedure.
- Documentation for the patient was not completed.
- Process flow for the transportation of patient from was not followed.

Limitation:

- As it was the first case in Cath lab which was not planned therefore equipped material was not present. It needs to be arranged from the Thumbay Hospital, Ajman which causes delay.
- Current procedural terminology procedure not agreed for the procedure of the Cath lab is not yet initiated therefore delay from insurance department occur.
- Software and documentation updating is still in process.

Root cause analysis



Recommendation:

- Training to the staff should be given regarding process flow
- Understanding for the manual and other documents require training for the staff.
- Current procedural terminology procedure and tariff should be planned for the billing.
- Equipment arrangement and inventory management planning required.

Conclusion:

- Training was given to the staff regarding process flows and the manual
- Drills were given to the staff regarding the emergency cases to achieve Door to Balloon time.
- Storage and inventory management was done in the Cath lab.
- Tariff was set for the procedure by the billing department and by the insurance department.

THANK YOU