

# Improvement In Inventory Management And Storage Of Items In National Heart Centre Using Lean Methodology .

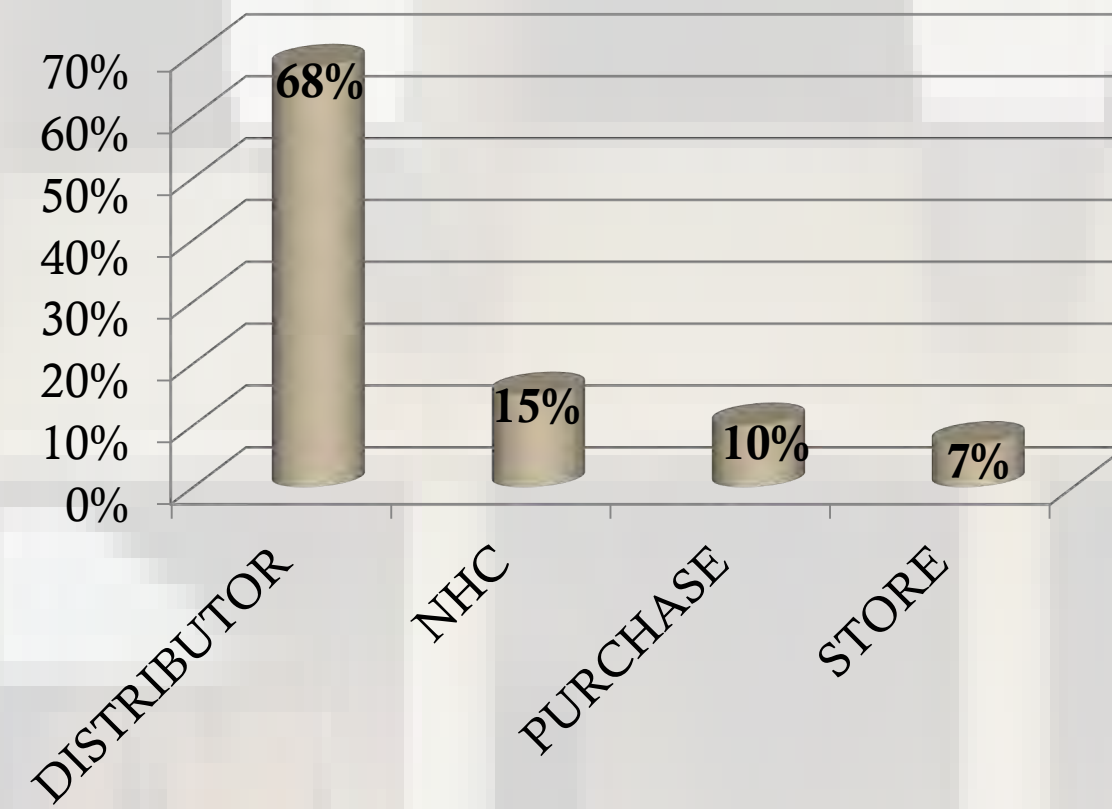
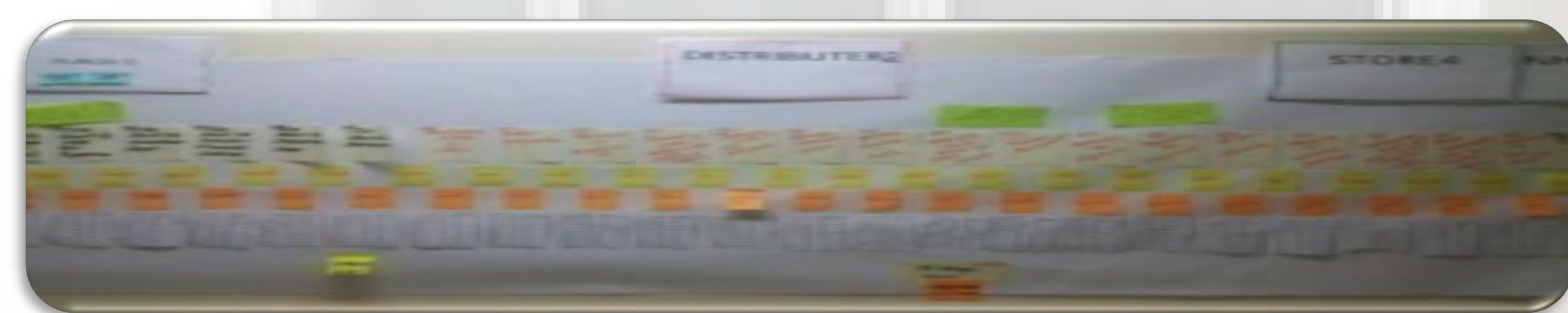
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## Background

The National Heart Centre (NHC) has 139 beds with 4 operating theatres, 5 catheterization labs and 11 in-patient wards. Due to the lack of an electronic inventory system, managing the supply chain in NHC is challenging and time-consuming. In addition, the area where items are stored is limited and not organized. This has a negative effect on patient care and workflow.

## Current Conditions

- Frequent cancellation of procedures: Approximately 15 cases per month.
- Increase in length of stay with an average cost of 150 Omani Riyals per day.
- Underutilization of Cath lab slots. 2 Doctors, 2 nurses, 2 technologists per lab.
- Increase in waiting list.
- Lengthy process of ordering out-of-stock items.
- Value Stream Mapping (VSM - lean method) used to visualize the steps and time taken.
- All stores' items not organized in a scientific way (5S to be implemented).



Reducing the Total Surgical Items Inventory checking time by 90%

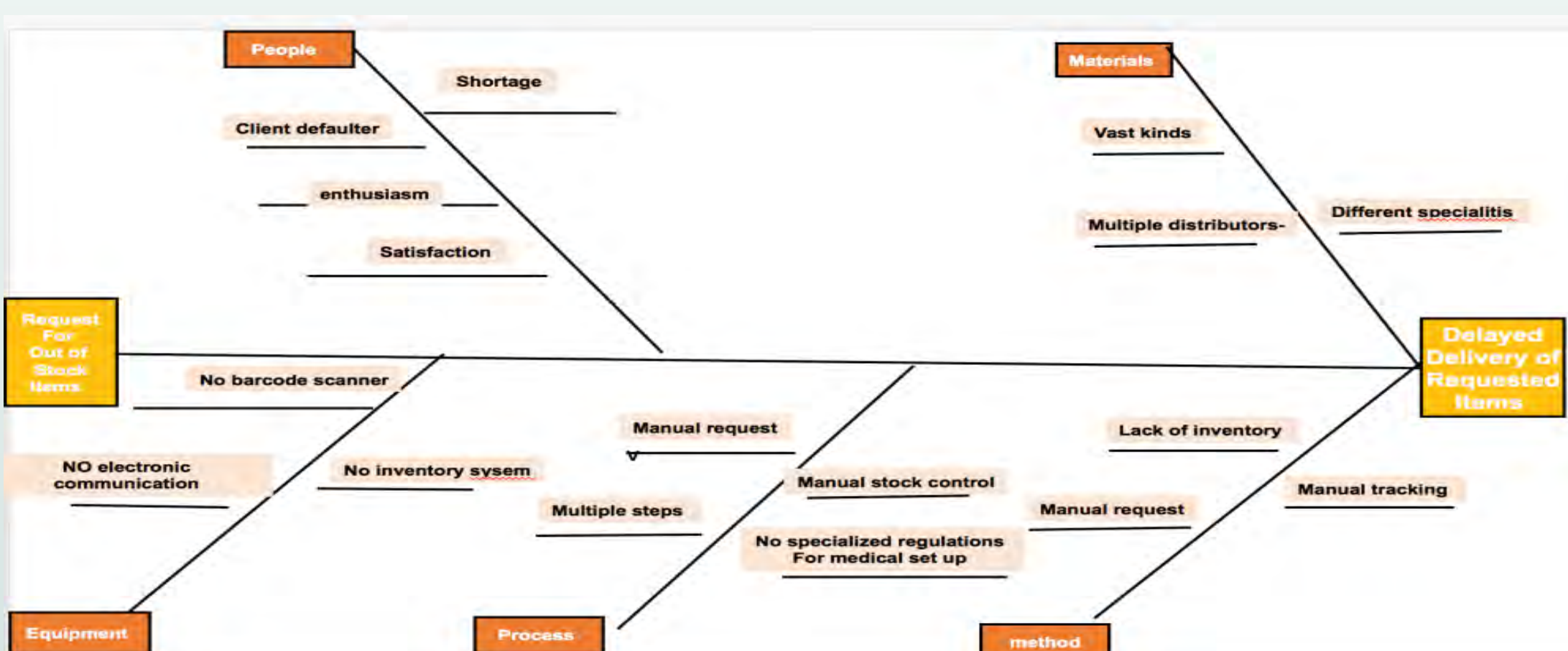
Step	Before (mins)	After (mins)
Count the stock in LAB 1	420	120
Count the stock in LAB 2	420	80
Count the stock in LAB 3	420	140
Count the stock in LAB 4	420	80
Count the stock in Store 1	500	140
Count the stock in Store 2	840	140
Count the stock in Store 3	720	140
Count the stock in Store 4	180	10
Count the stock in Store 5	180	140
Count the stock in Store 6	360	140
Calculate the sum Total	3,660	1,120

Before: VAT mins = 2.54 Days, non-VAT mins = 5.18 Days, TOTAL = 7.72 Days  
 After: VAT mins = 0.01 Days, non-VAT mins = 0.04 Days, TOTAL = 0.05 Days

## Objectives

- Reduce lead time of processing out-of-stock of surgical items in NHC by 50% by December 2018.
- Reducing total surgical items inventory checking time in Cardiac Cath Lab by 90% by December 2018.
- Implementing 5S Methodology in all NHC stores by December 2018.

## Root Cause Analysis

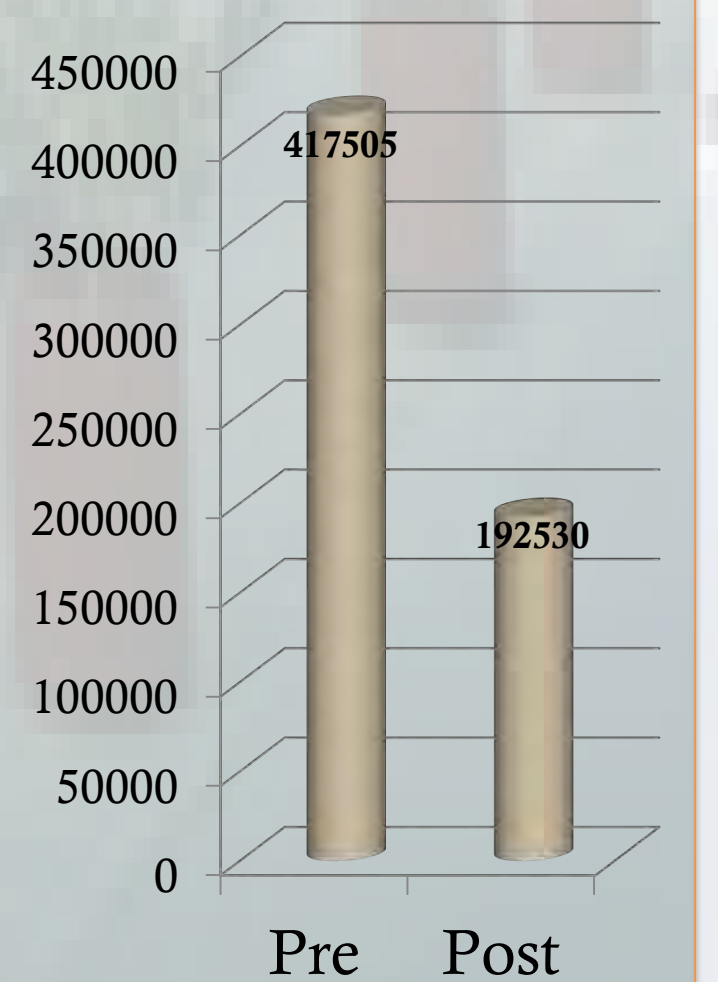


## Action Plan

What	Where	Why	Who	By When
NHC lean team regular meetings	NHC -National Heart Center	To evaluate process in NHC	NHC lean champion and NHC admin	Regular from October 2018 every Tuesday 2-4pm
Contact IT Department	IT Dept.	Create e-portal for communication and inventory system	Jamila	Jun 15, 2018
Contact Surgical Store Dept.	Cath Lab - NHC	Eliminate over-processing	Ala	Dec 20, 2017
Contact distributors	Cath Lab - NHC	Reduce lead time of item delivery	Jamila	Jan 15, 2018
Contact Purchasing Department	Cath Lab - NHC	Eliminate over-processing	Ismail	Jan 15, 2018
Implement 5s in all National Heart Center stores	All national Heart Center stores, cardiac cath lab procedures room and pharmacy	Eliminate waste	Jamila All teams from all department	December 2018

## Outcomes

- No cancellation of procedures.
- Lead time of processing out-of-stock of surgical items in National Heart Center reduced by 50%.
- Other stakeholders contacted and visual map for the ordering process done.
- 5S completed in all NHC stores cardiac cath lab procedures rooms and NHC pharmacy by December 2018 with the following outcome:
  - cost saving around 11,000 O.R
  - Time saving from 7 min to 1 min in searching for any items from any store in the National Heart Center.
  - Saving 1 hrs / day in dispensing medication prescription.
  - Staff Satisfaction 95% based on surveys.
  - For the Cardiac Cath lab procedures time improved by 20%.
- Initiation of inventory system project started by March 2018 with following outcome:
  - Cost saving 25,000 R.O (online coding app)
  - Time saving for tracking surgical items from 7.72 days to 75 min (see figure below)
- Official commitment from vendors to National Heart Center to deliver items one month from the time they receive LPO.



Reducing the Total Inventory checking time by 90%

Step	Before (mins)	After (mins)
Calculate the sum Total	15	15
VAT (mins)	80	15
non-VAT (mins)	60	0.01
TOTAL	75	0.05

Total Inventory Checking Time Reduction = 99 %