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Original Article

The Impact of SIX SIGMA DMAIC Methodology in the Effective Pharmacy Inventory Management System in a Major Trauma Care Center – A Prospective Observational Study

Britto Duraisingh Lourdu^{1,*}, Kumutha Theivasigamani², Anagha Harwin², Kensylin Paulraj², Sandra Paul², Akash Lachmanan²

¹Department of Pharmacy, Ganga Medical Centre and Hospital Pvt. Limited, Coimbatore, Tamil Nadu, INDIA.

²Department of Pharmacy Practice, Nandha College of Pharmacy, Erode, Tamil Nadu, INDIA.

Dr Britto Pharm D
Head – Pharmacy Services
Ganga Medical Centre and Hospitals Pvt Ltd
Coimbatore, Tamil Nadu.



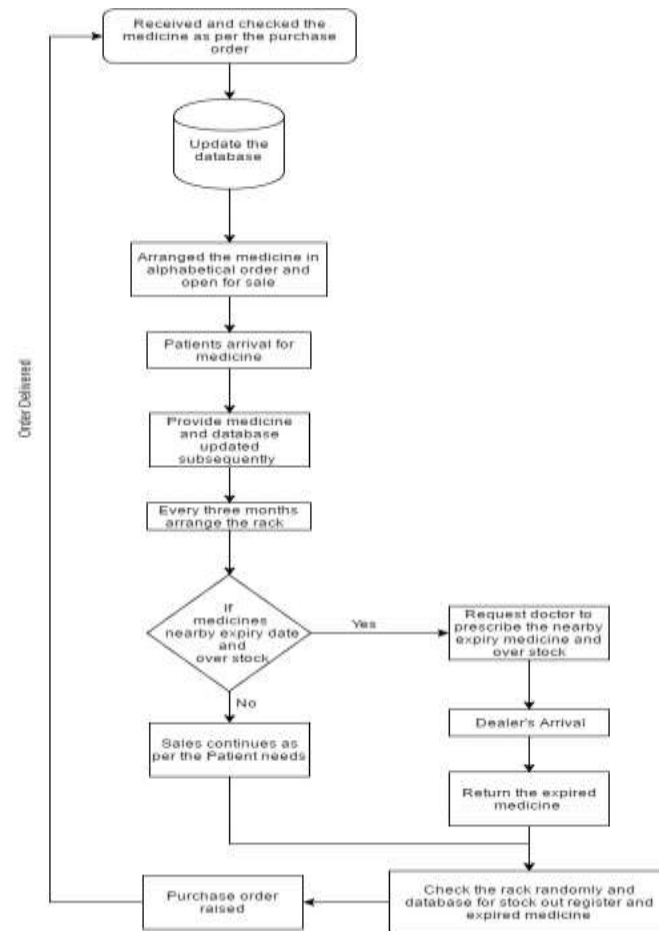
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INTRODUCTION

Inventory control explains *how to optimize the available resources* with a view to reduce the material costs and achieving improved capital turn over.



- Challenging process
- Maintaining sufficient inventory levels
- Avoiding overstock
- Fulfilling customer demand
- Minimize inventory burden

Lean Six Sigma: DMAIC



Define

Define the problem.



Measure

Quantify the problem.



Analyze

Identify the cause of the problem.



Improve

Implement and verify the solution.



Control

Maintain the solution.

Excellent process improvement toll by *eliminating the defects in the processes*



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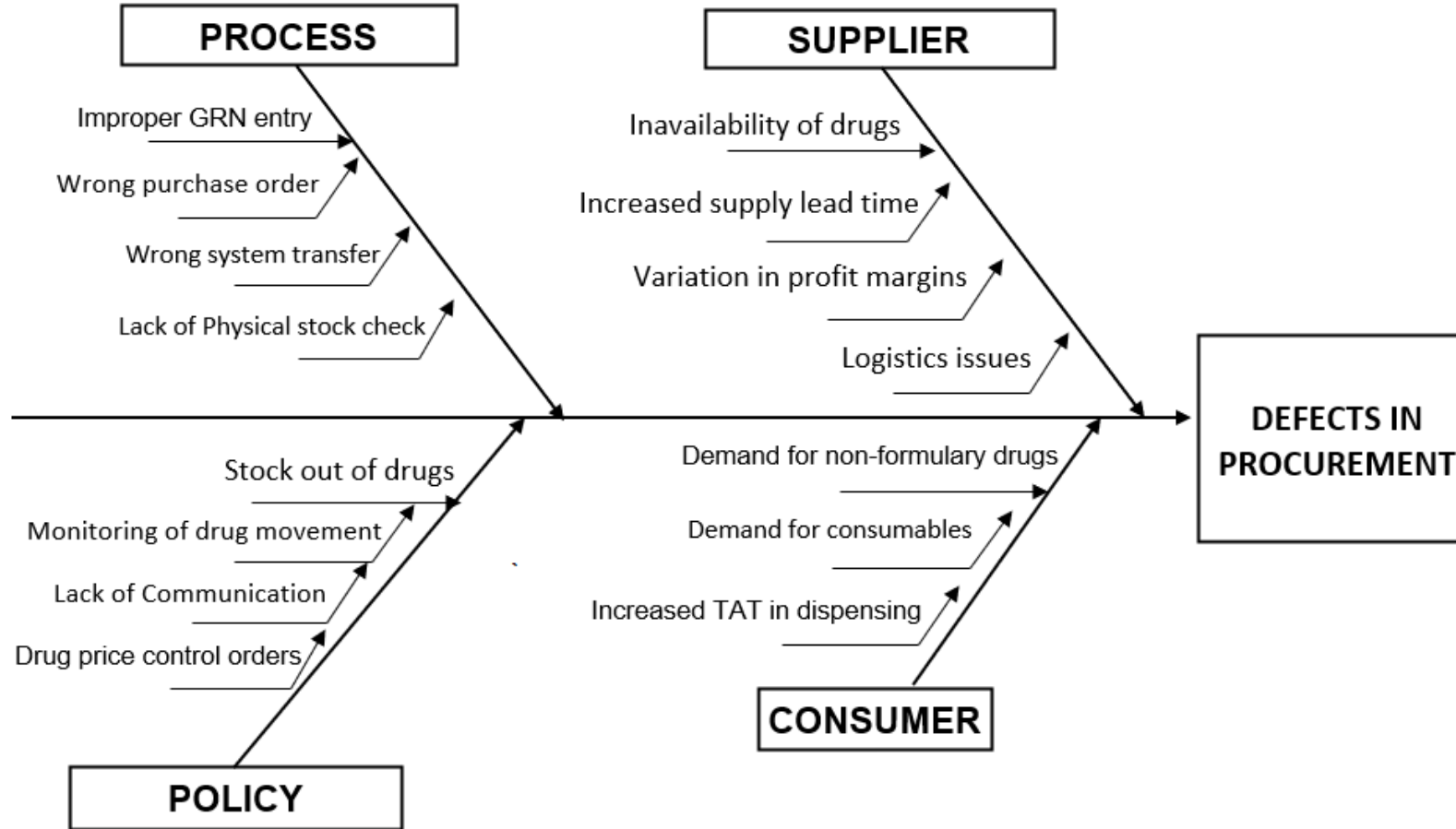
PROBLEM DEFINITION

- **Up-to-date and upgraded inventory management for achieving reliable, consistent accuracy and preciseness for achieving *best practices* in hospitals and to alleviate the defects causing inefficient inventory system.**
- **Misaligned incentives and independent goals can disrupt the flow of the supply chain within the organizations. Any defects occurring during handling these processes may lead to inventory burden.**

PROBLEM DIAGNOSIS

Inventory associated facets	No of samples	No. of errors	DPU	DPMO	Six sigma level
Procurement facets	1200	354	0.059	59000	3.06
Distribution facets	2500	1465	0.244	244166	2.19
Infirmary unit facets	200	686	0.114	114333	2.70
Return medicine unit facets	300	206	0.015	15833	3.32

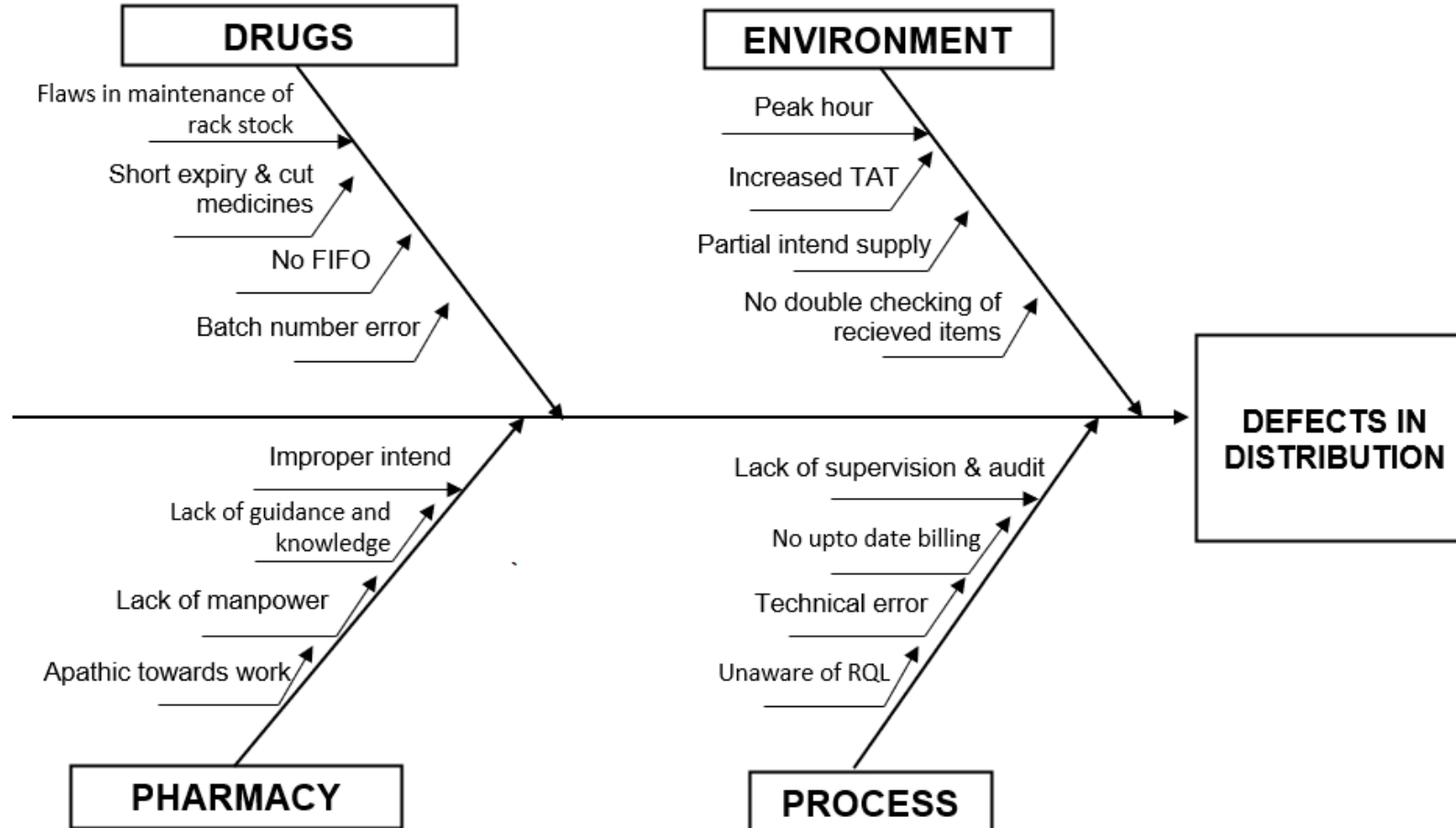
PROBLEM REMEDY



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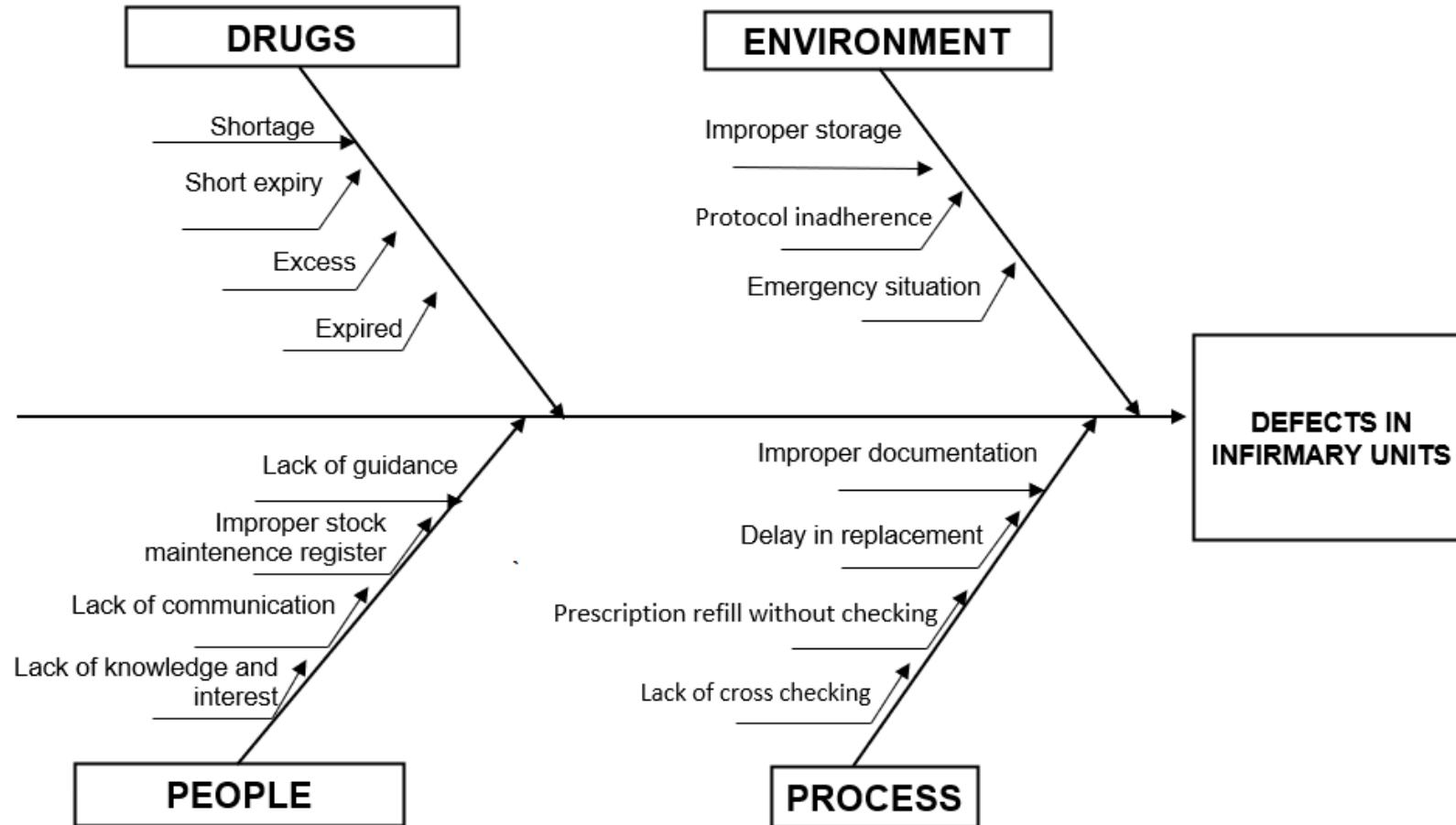
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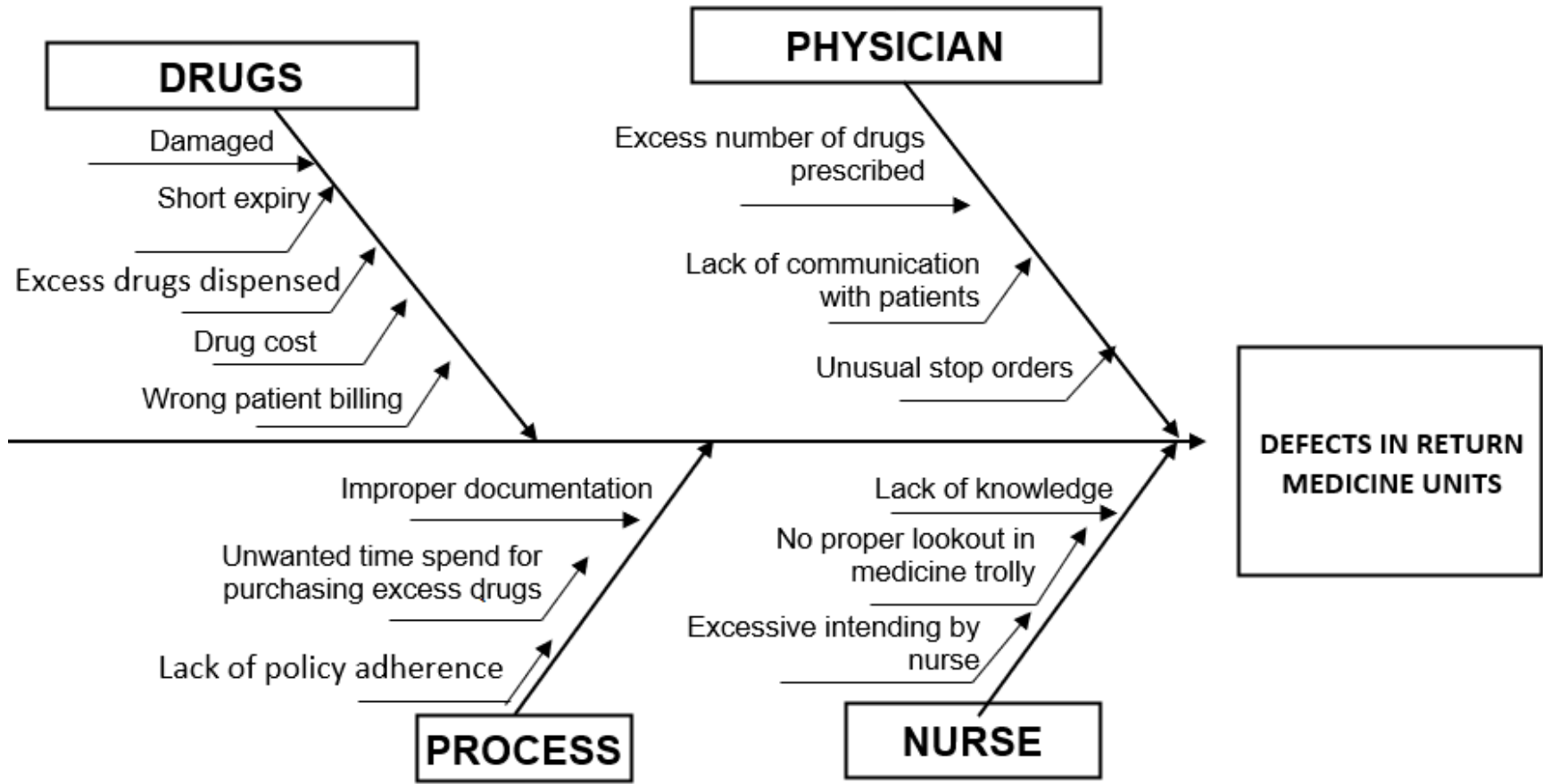
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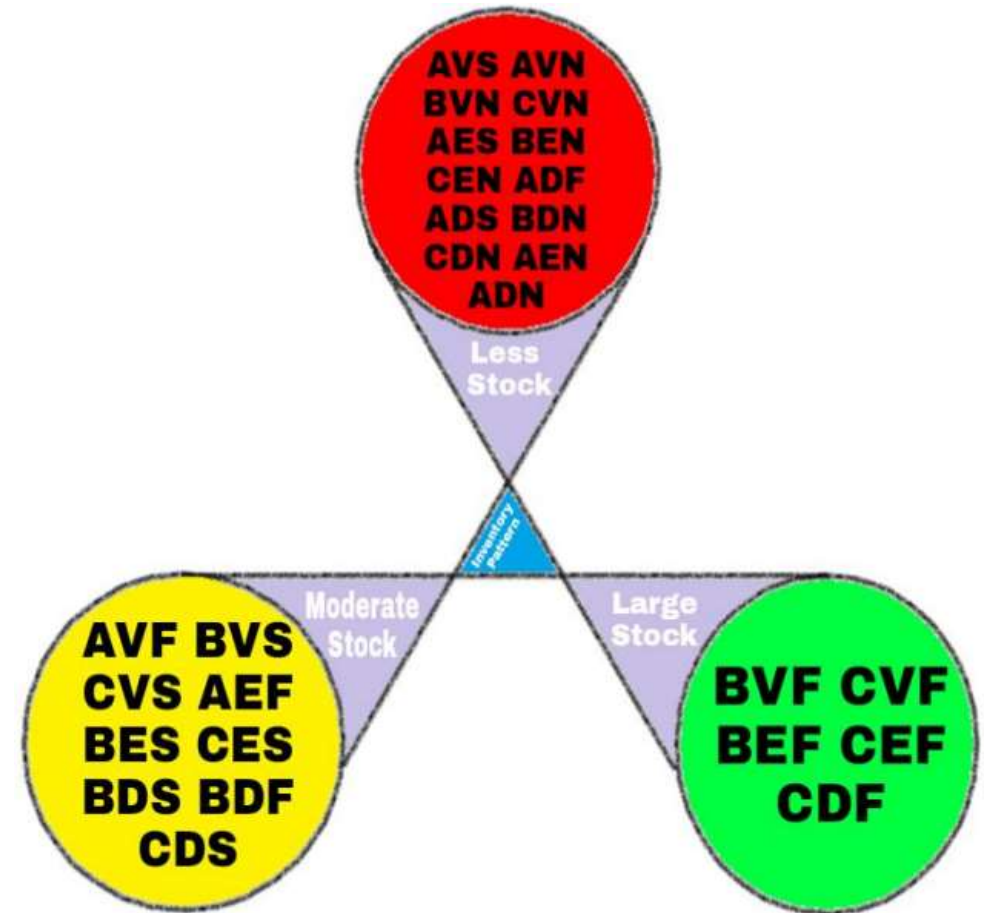
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LOCKING THE IMPROVEMENT

Deploys - ***KAIZEN method*** by which drugs are procured on the basis of their movement and utilization



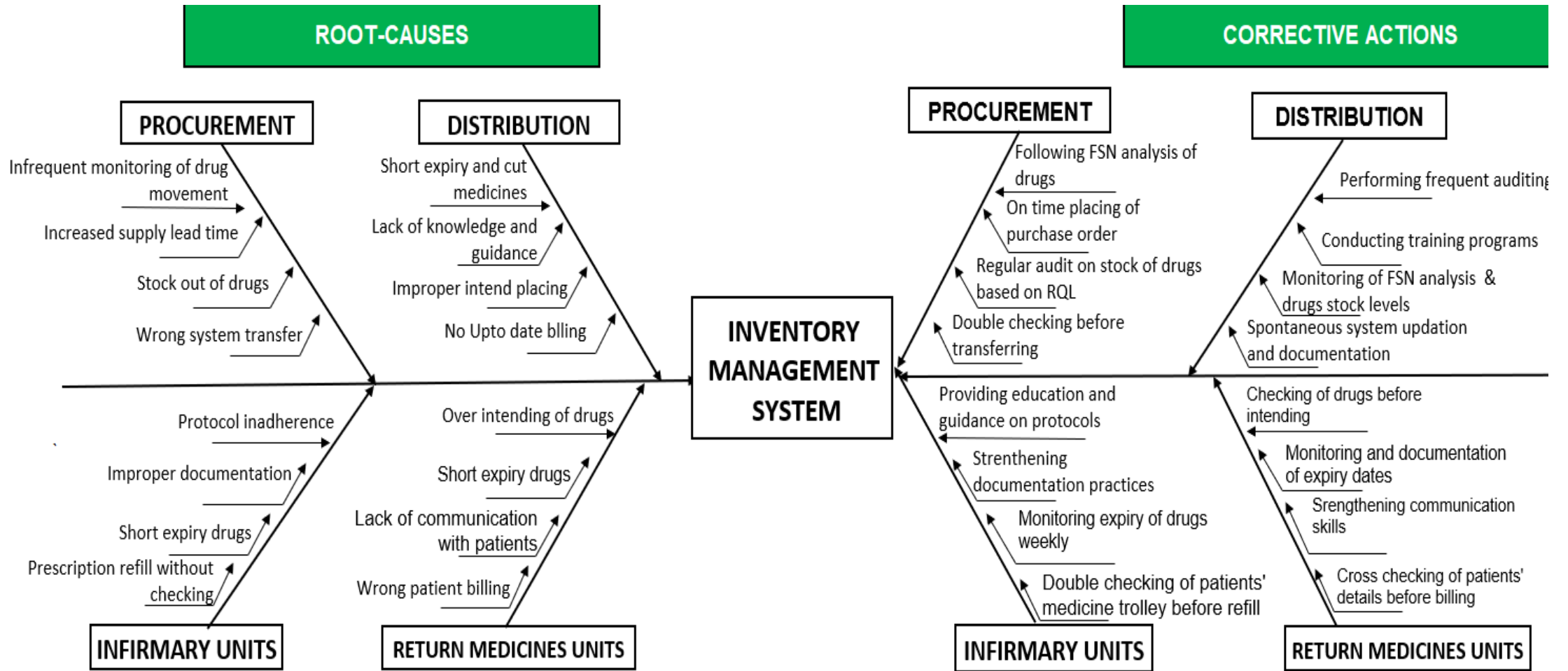
**Supply lead time is to be considered always*



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CLONING THE IMPROVEMENT

Inventory associated facets	No of samples	No. of errors	DPU	DPMO	Six sigma level
Procurement facets	1200	118	0.019	19666	3.56
Distribution facets	2500	413	0.068	68833	2.98
Infirmary unit facets	200	385	0.064	64166	3.02
Return medicine unit facets	300	158	0.026	26333	3.44

- **Financial benefits by preventing indirect loss (0.07% to 0.02%)**
- **Maximized net profits by preventing direct loss**
- **Minimized total inventory investment (7.1%)**
- **Maintaining proper stock level**
- **Minimizing stock out of drugs**
- **Maintaining of re-order quantity level**
- **Minimized returns of short expiry drugs**
- **Reduction in inventory burden**
- **Proper maintenance of infirmary unit stocks**
- **Customer satisfaction on pharmacy services**



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Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2023 102 487

Bezeichnung:

Ein Six-Sigma-DMAIC-basiertes Apothekenbestandsverwaltungssystem in
einem Trauma-Versorgungszentrum

IPC:

G06Q 10/087

Inhaber/Inhaberin:

Chackupurackal, Shilpa Johny, Dr. , Coimbatore, Tamil Nadu, IN
Harwin, Anagha, Dr. , Chennai, Tamil Nadu, IN
Lachmanan, Akash, Dr., Coimbatore, Tamil Nadu, IN
Lourde, Britto Duraisingh, Dr., Coimbatore, Tamil Nadu, IN
Mathew, Midhun, Dr. , Pimpri-Chinchwad, Maharashtra, IN
Nagarajan, Nitya, Dr. , Sullur, Tamil Nadu, IN
Nair, Sruthi, Dr. , Chennai, Tamil Nadu, IN
Nath, Haritha, Dr. , Pimpri-Chinchwad, Maharashtra, IN
Paul, Sandra, Dr. , Chennai, Tamil Nadu, IN
Paulraj, Kensylin, Dr. , Coimbatore, Tamil Nadu, IN
Radhakrishnan, Remya, Dr. , Chennai, Tamil Nadu, IN
Rajamani, Gokul, Dr. , Chennai, Tamil Nadu, IN
Singha, Rajnandini, Dr. , Chennai, Tamil Nadu, IN
Tom, Amirtha, Dr. , Pimpri-Chinchwad, Maharashtra, IN

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Die Präsidentin des Deutschen Patent- und Markenamts

Eva Schewior

Eva Schewior
München, 30.08.2023



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PATENTED THE INVENTORY MODEL



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Thank you