

Rationalization of Departmental Consumption at the
Calcutta Medical Research Institute (CMRI)

By

Rahul Roy

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2017-2019



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

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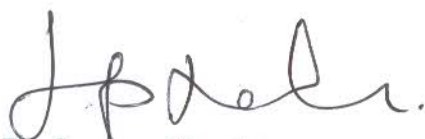
TO WHOMSOEVER MAY CONCERN

This is to certify that **Rahul Roy**, student of MBA Pharmaceutical Management from The IIHMR University, Jaipur has undergone internship training at **The Calcutta Medical Research Institute** from **4th February 2019** to **3rd May 2019**.

The Candidate has successfully carried out the study assigned to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.

A handwritten signature in blue ink, appearing to read 'Sandeep Narula'.

Dr. Sandeep Narula
Acting Dean & Associate Professor
The IIHMR University, Jaipur

A handwritten signature in blue ink, appearing to read 'Ashok Peepliwal'.

Dr. Ashok Peepliwal
Associate Professor
The IIHMR University, Jaipur

8th May, 2019

TO WHOM IT MAY CONCERN

This is to certify that Mr. Rahul Roy, student of The IIHMR University, Jaipur, has successfully completed his training period at our Institute.

He was with the Institute from 4th February, 2019 to 3rd May, 2019 in the Commercial Department, as a part of the training required for his academic endeavour.

During this period he has worked diligently in the assigned area and has shown keenness to learn.

We wish him success in all future endeavours.

Thanking you,

For **The Calcutta Medical Research Institute**



Srijita Mukherjee
Assistant Manager – HR

THE IIMMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“Rationalization of Departmental Consumption at The Calcutta Medical Research Institute (CMRI)”** and submitted by **Rahul Roy** Enrollment No **IIHMR-U/02/2017-19/0111** under the supervision of **Dr. Ashok Peepliwal** for award of MBA in Pharmaceutical Management of the University carried out during the period from **4th February 2019 to 3rd May 2019** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

Abstract

Objective:

1. To minimize the departmental consumption at CMRI from 50% to 30%.
2. To increase the profit margin.
3. Streamlining the inventory.

Methodology:

- **Study Design:** Secondary Research Study
- **Sampling Method:** Purposive Sampling
- **Sample Population:** Implants, Medical Consumables (MC), Non-Medical Consumables (NMC), Pharma
- **Sample Size:** 3688 Line Items
- **Sample Area:** The Calcutta Medical Research Institute (CMRI)
- **Time Period:** 4th February to 3rd May 2019
- **Data Analysis:** Data analysis was done using MS-Excel and interpreted.

Result:

- Departmental Consumption reduced from 50% to 42% of total consumption in CMRI.
- Potential Savings of 26.40 lakhs in departmental consumption has been achieved for identified 120-line items.
- MIN and MAX of 2038 line items has been finalized and auto-population option implemented in HIS for streamlining inventory.

Conclusion & Suggestion:

- Implementation of Proposed Implant Billing process in OT with help of nursing team and billing team to further minimize department consumption.
- Fine tuning of Auto-Populate indenting process in HIS in coordination with IT team to further streamline department consumption.

Acknowledgement

I humbly owe the completion of this Dissertation and Internship work to the almighty and my family whose love and blessings will be with me in every movement of my life.

I would like to extend my sincere gratitude to **Mr. Bobby Varghese** (Unit Head - CMRI) and **Mr. Kunal Kumar Sen** (Deputy General Manager - HR) for providing me an opportunity to learn and develop professionally.

I also extend my gratitude to my project guide **Dr. Ashok Peepliwal** (Associate Professor, IIHMR University Jaipur) for his valuable suggestions, support and keen interest throughout the study that helped me in completing this work. I thank him for the freedom of thought, expression and trust which was greatly bestowed upon me.

I would also like to pay my gratitude to the entire team of The Calcutta Medical Research Institute who has helped me by sparing their valuable time and extended their support and guidance to help me achieve my task successfully.

Last but not the least I would like to thank my family for supporting and standing with me in successfully completing the project.

Rahul Roy

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List of Symbols and Abbreviations

NABH	National Accreditation Board for Hospitals and Healthcare Providers
NABL	National Accreditation Board for Laboratories
TPA	Third Party Administrator
ICU	Intensive Care Unit
ICCU	Intensive Critical Care Unit
PICU	Pediatric Intensive Care Unit
NICU	Neonatal Intensive Care Unit
HDU	High Dependency Unit
SCBU	Special Care Baby Unit
MRI	Magnetic Resonance Imaging
CT Scan	Computed Tomographic Scanning
EEG	Electric Encephalography
EMG	Electromyography
PFT	Pulmonary Function Testing
HBsAG	Hepatitis B Surface Antigen
HIV	Human Immunodeficiency Virus
HCV	Hepatitis C Test
VDRL	Venereal Disease Research Laboratory Test
CSSD	Central Sterile Services Department
ROL	Re-order Limit
ROQ	Re-order Quantity
HIS	Hospital Information System
PR	Purchase Request
PO	Purchase Order
GRN	Goods Receipt Note

About CK Birla Hospitals:

CK Birla Hospitals consist of three landmark identities, CMRI (The Calcutta Medical Research Institute), BMB (BM Birla Heart Research Centre) and its recent project, RBH (Rukmani Birla Hospital).

It has set milestones within the healthcare industry for over forty years now. The hospitals are internally bounded by three integrated philosophies — Clinical Excellence, Ethical Conduct and Patient Centricity. These operating philosophies have been pivotal in the growth of the hospitals and serve people who need quality healthcare.

The three units of CK Birla Hospitals, which are established in Kolkata and Jaipur, offer 800 plus beds with comprehensive outpatient and inpatient services. Working with a mission to provide quality healthcare to all, the hospitals so far have performed over 5.5 lakh successful surgeries, 1.9 lakh Cath lab procedures and 22,000 critical cardiac surgeries. Supported by the latest and new technologies and ultra-modern infrastructure, these hospitals are continuing to set new standards of treatment in India.

Vision

To provide best of Patient Service & Clinical Excellence.

Mission

To create Clinical Centres of Excellence on a strong backbone of research, academics and evidence-based medicine.

Commitment Towards Quality

To constantly upgrade our human and technological resources aligned with the best global developments in medical science.

Quality Policy Statement

To maintain highest standard of quality in the service delivered at the hospital.

About CMRI:

CMRI (The Calcutta Medical Research Institute) — the flagship brand of the CK Birla Group of Hospitals, has been a powerful name in providing quality health care for over 50 years. This multi-specialty tertiary unit is based on three key principals —Clinical Excellence, Ethical Conduct and Patient Centricity. Going beyond India, in countries like Bangladesh, Bhutan, Nepal and Myanmar, this institution is a symbol of trust in medical sciences.

Centrally located in Kolkata with 450 beds and state-of-the-art infrastructure, CMRI is an ISO 9001:2008 certified hospital accredited by the NABH, NABL & CAP (College of American Pathologists) recognized for its Quality Healthcare Service Delivery.

Vision

To be the leading multi-specialty Healthcare and Research Institute in Eastern India, with world-class standards in quality.

Mission

- To offer the highest standards of medical treatment.
- To treat patients with care, compassion and commitment.
- To touch every section of society and offer them value for money.

Quality Policy

The Calcutta Medical Research Institute is committed to provide excellence in patient care and it is dedicated to provide comprehensive, excellent, efficient and high quality medical care with human touch at optimum cost. Meet the ever increasing demand of the patient needs through continual improvement of the system.

Introduction

Departmental Consumption is that the calculation of overall resources that are used to run a department in any tertiary hospital. It's vital to calculate if there's any over or underutilization of resources so as to extend the revenue and gross margin. It decreases the holding stock and thus results in correct utilization of resources by a specific department.

Till February'19 the departmental consumption was 50% of the entire consumption in CMRI. Controlling prices and consumption optimization can ultimately increase the savings and gross margin.

The departmental consumption is calculated based on ERP value and minimizing the departmental consumption in the hospital significantly results in higher savings and directly improves the EBITDA (Earnings before interest, tax, depreciation and amortization could be a measure of a company's operational performance. basically, it is a way to judge a company's performance while not having to think about funding choices, accounting choices or tax environments).

Inventory price is outlined as the price of holding available goods. If we are trying to find the simplest way to scale back the inventory price, likelihood is that we are stocking an excessive amount of inventory. An excessive amount of on-hand inventory will increase the storage prices—thus the cost of products sold—and ties up liquid money.

		Lead Time for Replenishment
ROL	Re-Order Level which trigger for replenishment of stock.	7 Days
ROQ	The maximum quantity allowed to be indented.	10 Days (Lead Time + Buffer Stock)
MIN	ROL trigger quantity	
MAX	Maximum quantity allowed holding.	

Literature Review

Author	Year	Study Location	Sample Size	Salient Features
Miguel Gómez-Chaparro; Justo García-Sanz-Calcedo, and Luis Armenta Márquez	August, 2018	Spain	12	Analytical Determination of Consumption of Medical Gas and their Impact on Sustainability of Hospital.
Abhishek Goel; Nitin Soni	December, 2010	BHMRC, Kerala	130 Departments	Change of Process at Bharat Hospital and Medical Research Center
Paula Morgenstern; Maria Li; Rokia Raslan; Paul Ruyssevelt; Andrew Wright	April, 2016	United Kingdom	27 Departments across 8 UK Hospitals	Benchmarking of acute hospitals based on Composite electricity targets based departmental consumption intensities.
Justo García-Sanz-Calcedo, Fernando López-Rodríguez, Talal Yusaf and Awf Al-Kassir	April, 2017	Spain	13 Public Hospitals	Average Annual Water Consumption Analysis in the Hospitals of Extremadura (Spain)
Shih-Cheng Hu; JD Chen; Yew Chuah	January, 2004	Taipei City, Taiwan	1 Large Acute Hospital	Consumption and Energy Cost in a Large Acute Hospital
Alfonso González González, Justo García-Sanz-Calcedo, David Rodríguez Salgado	August, 2018	Germany	23 Public Hospitals	Energy Consumption Evaluation in German Hospitals and Benchmarking in the Public Sector
Dr. Shaleen Vasishta	June, 2016	Global Hospital, Hyderabad	Dialysis Dept.- 432 patients	Analysis of Dialysis Departmental Consumption & Scope for Improvement

Study Objective

This is a secondary research study conducted in The Calcutta Medical Research Institute to optimize the departmental consumption for increasing savings and profit margin.

4. To minimize the departmental consumption at CMRI from 50% to 30%.
5. To increase the profit margin.
6. Streamlining the inventory.

Research Methodology

Study Design: Secondary Research Study

Sampling Method: Non-Convenience Purposive Sampling

Sample Population: Implants, Medical Consumables (MC), Non-Medical Consumables (NMC), Pharma

Sample Size: 3688 Line Items

Sample Area: The Calcutta Medical Research Institute (CMRI)

Time Period: 4th February to 3rd May 2019

Data Analysis: Data analysis was done using MS-Excel and interpreted.

Analysis

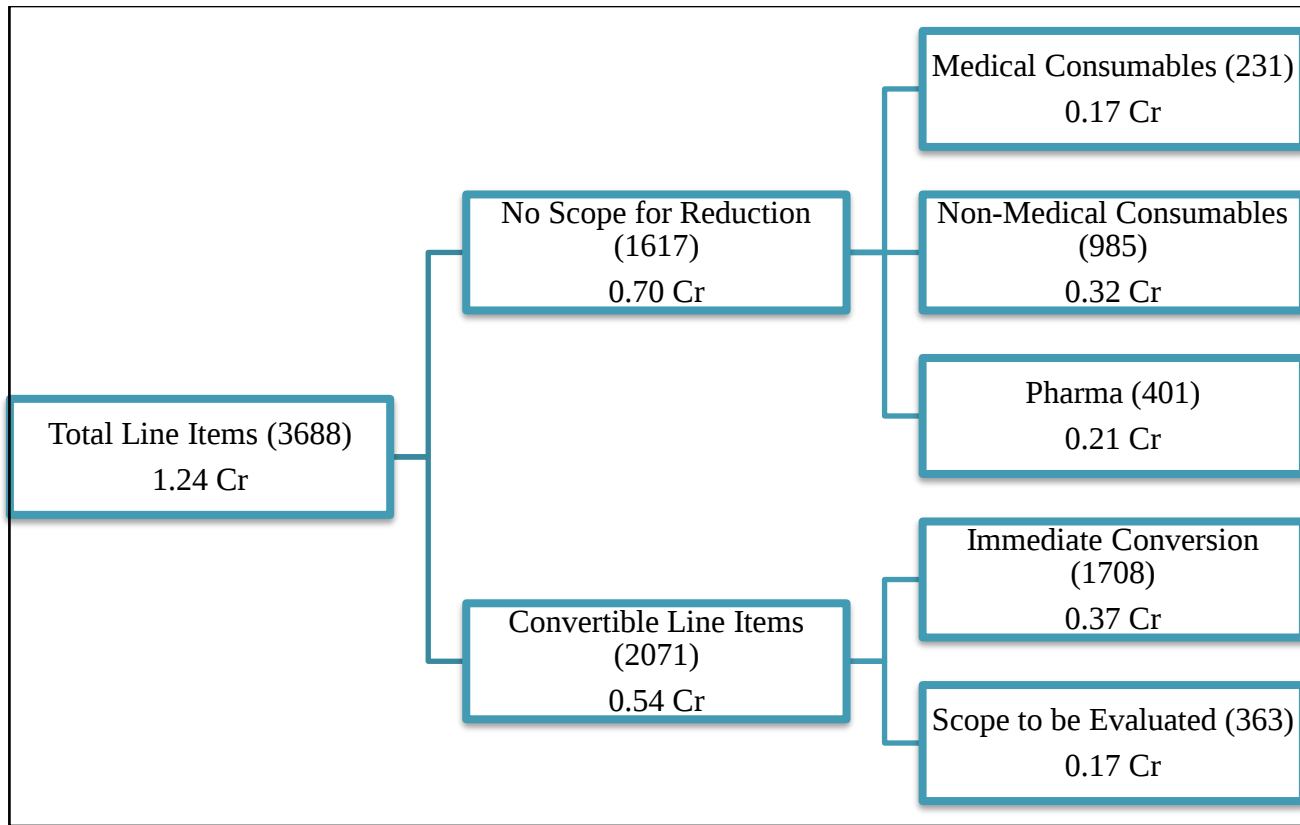


Fig.1: Analysis of Per Month Departmental Consumption (April'18 to February'19)

- In the above figure, analysis of average per month departmental consumption has been calculated from eleven months data (April'18 to February'19).
- The figure in the bracket indicates the number of line items in each category and the consumption value of the line items has been calculated based on cost price value.
- The line items under category “No Scope for Reduction” are items which cannot be directly billed to patients like Ward Consumables, Housekeeping, Printing & Stationary, Branding, Biomedical Maintenance, Lab Store Items, etc.

- 1708 line items under category “Immediate Conversion” are implants which are presently billed under departmental consumption and hence needs to be converted immediately to patient billing.
- The scope of conversion from departmental consumption to patient billing of 363 line items are to be evaluated through user departments of the hospital and at the end of the exercise 120 line items were identified and implemented for patient billing.

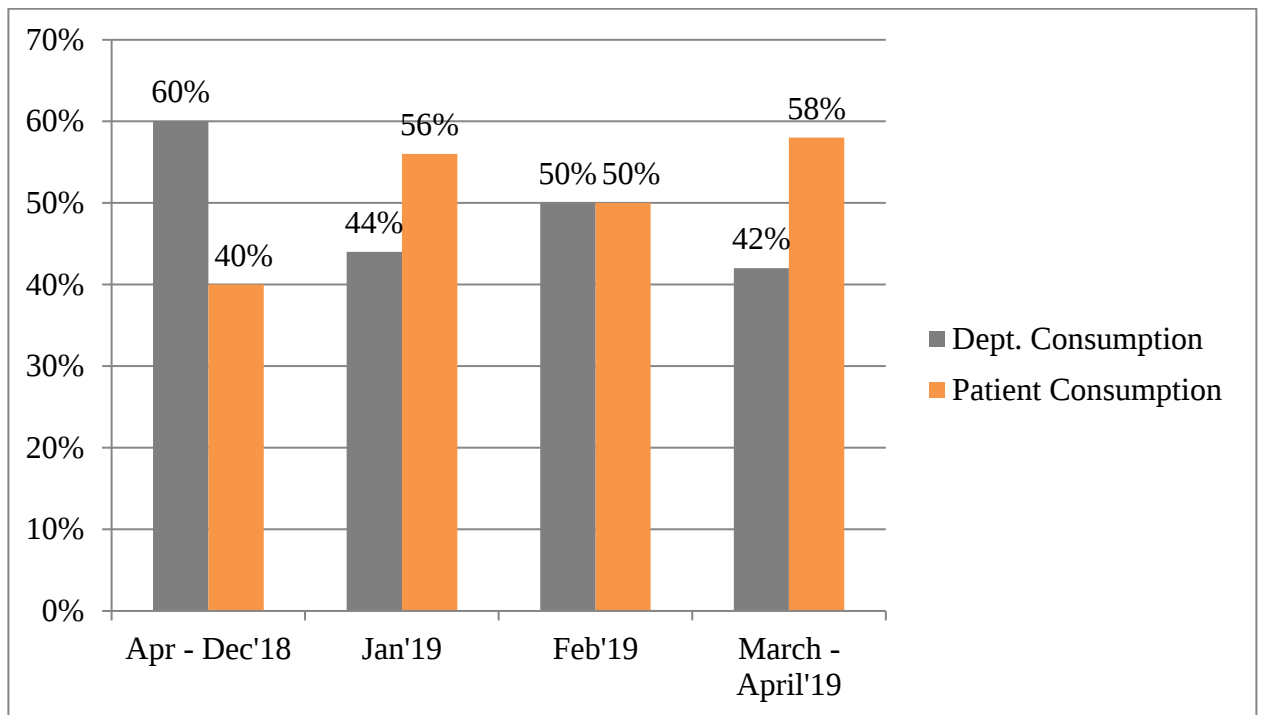


Fig. 2: Department vs. Patient Consumption

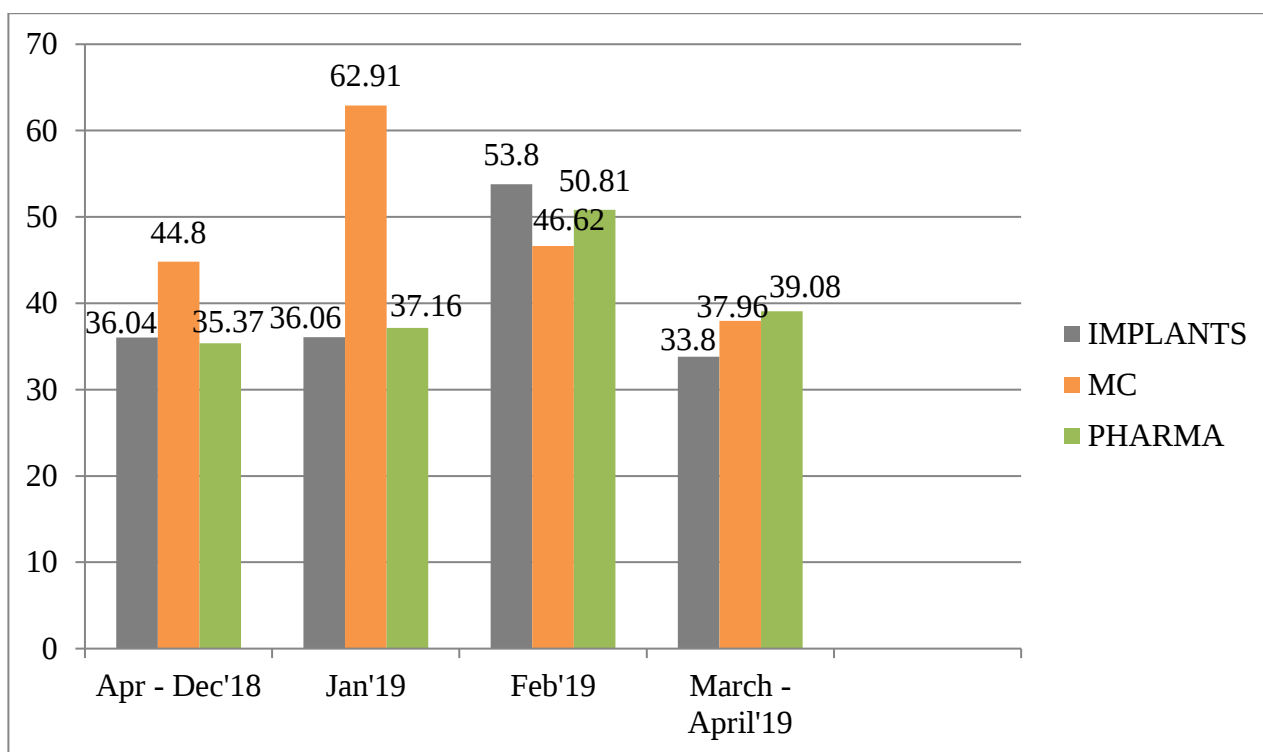


Fig.3: Department Consumption Trend (Value in Lakhs)

Material Code	Name of Item	Quantity	Value
M-N-PH-V009-000005	ADRENALIN BITARTRATE 1ML INJ	1446.11	23789
M-N-PH-S002-000060	ADRENOR INJ.	2788.22	150954
M-N-SU-R012-000013	AIRWAY TUBE NO. 0	6.67	638
M-N-SU-R012-000018	ALCOHOL SWABS	35129.89	87825
M-N-PH-C004-000031	ASTHALIN INHALER	6.00	779
M-N-PH-A012-000002	ATROPINE INJ/TROPINE	762.67	3043
M-N-SU-B052-000002	BACTIGRAS 10CM X 10CM DRESSING	475.00	12540
M-N-SU-LZZZ-000765	BANDAGE 4	0.00	0
M-N-SU-LZZZ-000002	BANDAGE 6	0.00	0
M-N-SU-LZZZ-001038	BANDAGE 7.5 C.M X 3MTRS	0.00	0
M-N-SU-LZZZ-000810	BEDPAN PLASTIC	1343.33	128960
M-N-PH-W004-000007	BETADINE OINTMENT 15GM	25.78	3068
M-N-PH-W004-000008	BETADINE SOLUTION 10% 100ML	2409.56	218134
M-N-SU-S074-000001	BOUGIE -ADULT- 70CM x 15FR. (SUNMED USA)	6.11	6518
M-N-SU-R004-000001	BURETTA	234.11	84514

M-N-PH-H003-000002	CALCIUM GLUCONATE 10% 10ML INJ	476.22	4079
M-N-SU-B001-000012	CERTOFIX TRIO V715 7FR X 15CM B BRAUN	19.33	68827
M-N-SU-LZZZ-001449	CHEST DRAINAGE CATH. WITH TROGER 28	6.11	7028
M-N-SU-LZZZ-001442	CHEST DRAINAGE CATHETER 32	11.67	3372
M-N-SU-A015-000007	CHEST ELECTRODE (AMBU)	537.56	11289
M-N-SU-D010-000042	CHEST ELECTRODE (DYNA)	10558.0 0	263950
M-N-PH-C004-000206	DALCINEX INJECTION 2ML	132.11	15840
M-N-PH-W013-000002	DECADRON INJ	5.00	29
M-N-PH-Z004-000009	DEXONA INJECTION 2ML	598.11	3576
M-N-PH-LZZZ-000513	DEXTROSE 25% 100ML GLASS BOTTLE	647.56	11701
M-N-SU-S021-000008	DISPOSABLE GLOVES - LATEX STERILE/SURG	20753.2 2	101690 8
M-N-SU-V016-000004	DISPOSABLE APRON ASPIRE	4049.00	182205
M-N-SU-S023-000025	DISPOSABLE GLOVES-LATEX STERILE-TRUSKIN	67.00	3551
M-N-SU-V016-000005	DISPOSABLE NITRILE NON STERILE GLOVES ME	4900.00	220500 0
M-N-SU-A014-000005	DISPOSABLE SURG. CAP STERILE-M AMARYLLIS	170.11	2426
M-N-PH-S002-000002	DIXIN INJECTION 2ML	3.00	21
M-N-PH-T007-000085	DOMIN INJECTION 200MG 5ML	348.00	9566
M-N-SU-3001-000012	DURAPORE 1INCH 3M	123.89	57815
M-N-SU-3001-000013	DURAPORE 2INCH 3M	65.89	61496
M-N-SU-3001-000014	DURAPORE 3INCH 3M	79.56	111378
M-N-PH-S002-000068	DURON INJ 3ML	543.11	33570
M-N-SU-D010-000004	DYNAFIX 10CM	77.33	76560
M-N-PH-T005-000291	DYNAPAR AQ 1ML	2396.78	66310
M-N-SU-G012-000003	ELASTIC ADHESIVE CLINIPLAST 10 CM X 4/6M	37.00	35705
M-N-SU-G012-000004	ELASTIC ADHESIVE CLINIPLAST 8 CM X 4/6M	7.44	5360
M-N-SU-P010-000058	ET TUBE SUCTION CUFF 7.5MM SACETT PORTEX	82.67	66133
M-N-SU-P010-000060	ET TUBE SUCTION CUFF 8.5MM SACETT PORTEX	415.22	332178
M-N-SU-LZZZ-000834	FACE MASK DISPOSABLE 2 PLY	4038.22	30287
M-N-PH-B010-000014	FLURACIL 250 MG 5 ML INJ	8.11	94
M-N-SU-S022-000046	FULL GOWN NONOVEN MAE812CM ECONOMIC SURG	5.00	1220

M-N-SU-S022-000037	FULL GOWN NONWOVEN (SURGIWEAR) E812 M	55.67	36016
M-N-SU-LZZZ-000933	GAMJEE PAD 10CM X 26CM 1`S/PKT	158.78	3969
M-N-SU-LZZZ-000934	GAMJEE PAD 18CM X 28CM 1`S/PKT	291.70	14585
M-N-SU-LZZZ-000680	GAMJEE ROLL 10CM X 3MTR	238.33	31514
M-N-SU-D015-000006	GAUZE SWAB STERILE 7.5CMX7.5CM 8PLY DATT	12674.0 0	111531 2
M-N-SU-S021-000004	GLOVES 7.0 STERILE SURGICARE	2304.89	149818
M-N-SU-S021-000005	GLOVES 7.5 STERILE SURGICARE	1389.44	90314
M-N-SU-A016-000014	GLOVES SIZE 7.5 ENCORE MICROOPTIC ANSELL	1871.11	177756
M-N-SU-K013-000003	GLOVES SIZE 7.5 NEURO PF SURGICARE	70.89	6734
M-N-SU-S023-000004	GLOVES STERILE SIZE 6.5 TRUSKIN SUTURE	2146.00	113738
M-N-SU-S023-000007	GLOVES STERILE SIZE 7 TRUSKIN SUTURE	1458.00	77274
M-N-SU-S023-000006	GLOVES STERILE SIZE 7.5 TRUSKIN SUTURE	1613.00	85489
M-N-PH-V011-000001	GLYCERIN 250 ML	26.33	8667
M-N-PH-P007-000007	HAEMACCEL 500 ML	13.33	4858
M-N-PH-S031-000003	HEALEX PLUS SPRAY 90 GMS	2.22	471
M-N-SU-B006-000028	I V CANNULA 24G NEOFLON 391360 BD	170.11	24666
M-N-SU-3001-000062	I.V.DRESSING KIT	376.00	67680
M-N-SU-R012-000085	INFANT FEEDING TUBE 06FR FEEDY ROMSONS	139.44	6406
M-N-SU-D015-000010	IV DRESSING KIT VELFIX DATT MEDIPRODUCTS	3512.78	609093
M-N-PH-S004-000004	LASIX INJECTION 4ML	2207.37	15319
M-N-PH-N001-000016	LOX 2% 30ML INJ	138.33	4233
M-N-PH-N001-000019	LOX 2% WITH ADRENALINE 30ML INJ	196.67	5654
M-N-PH-N001-000016	LOX INJECTION 2% 30ML	138.33	4233
M-N-PH-N001-000005	LOX JELLY 2% 30GM	1476.00	50036
M-N-PH-N001-000042	LOX SPRAY 10% 50ML	2.00	907
M-N-PH-N001-000064	LOX TOPICAL INJECTION 4% 30ML	3.00	95
M-N-PH-N001-000015	LOXICARD 50ML INJ	20.78	1064
M-N-SU-A014-000006	MASK SPECIAL(3 Coat) 3 PLY AMARYLLIS	2217.11	22171

M-N-PH-N008-000030	METHERGIN INJECTION 0.2MG 1ML	20.44	306
M-N-PH-N001-000069	MEZOLAM INJECTION 10ML	721.33	44723
M-N-SU-3001-000004	MICROPORE 1INCH (2.5CM X 10YDS) 3M	206.89	15517
M-N-SU-3001-000006	MICROPORE 2INCH (5CM X 10YDS) 3M	305.56	45833
M-N-SU-3001-000003	MICROPORE 3INCH (7.5CM X 10YDS) 3M	436.56	98225
M-N-PH-C004-000440	MUPINASE OINT	500.56	50932
M-N-PH-S013-000012	MUPON OINT. 5GM	241.90	23992
M-N-SU-R012-000249	NASAL CANNULA ADULT (OXY SET) ROMSONS	14.00	2048
M-N-SU-R012-000254	NASOPHARYNGEAL AIRWAY 7.0MM ROMSON	4.67	1703
M-N-SU-S021-000007	NITRILE GLOVES (SURGICARE SYNTHO)-M 30S	1364.44	610870
M-N-PH-A069-000001	NORMAL SALINE 100ML POLY BT(STERIPOINT)	7530.00	267466
M-N-PH-A069-000001	NORMAL SALINE 100ML POLY BT(STERIPOINT)	2936.33	104299
M-N-PH-E048-000013	NORMAL SALINE 9 100ML(EUROHEAD)EUROLIFE	15322.0 0	544237
M-N-PH-I008-000105	NUMMIT SPRAY	10.00	4190
M-N-SU-J003-000157	NW 2123	17.89	7910
M-N-SU-J003-000166	NW 2472	29.44	12204
M-N-SU-J003-000171	NW 4201	22.67	5458
M-N-SU-J003-000174	NW 4241 EP	24.22	3344
M-N-SU-J003-000181	NW 5003	72.00	12770
M-N-SU-J003-000182	NW 5037	186.56	33966
M-N-SU-A002-000015	OXYGEN MASK PAEDIA WITH TUBING AIRWAYS	38.00	8300
M-N-SU-R012-000266	OXYGEN MASK PAEDIATRIC FLEXI MASK ROMSON	118.67	24016
M-N-SU-V007-000006	P.M. LINE(VIGGO) 200CM	1431.11	343629
M-N-SU-V018-000006	PM LINE MF 200CM VINJOH	1302.00	358050
M-N-PH-LZZZ-000819	PROPOFOL LIPURO 1% 20ML	1235.11	334339
M-N-SU-B071-000003	ROLLED BANDAGE 2 INCH	278.56	4688
M-N-SU-B071-000002	ROLLED BANDAGE 4 INCH	1049.11	21504
M-N-SU-B071-000001	ROLLED BANDAGE 6 INCH	961.33	26420
M-N-SU-B006-000018	SCALP VEIN SET 21G	3.56	68
M-N-SU-S067-000002	SILICON AMBU BAG - ADULT (STARMED)	29.00	8582
M-N-PH-A024-000001	SOFRAMYCIN CREAM 30GM	226.33	4566
M-N-PH-P007-000044	SORBITRATE TABLET 5MG	1871.89	44887

M-N-SU-V016-000001	STERILE EVA GLOVES- M(ASPIRE)/PAIR	6141.33	148433
M-N-SU-H018-000023	SURGICAL BLADE NO 10 GLASS VAN HMD	456.00	2280
M-N-SU-H018-000024	SURGICAL BLADE NO 11 GLASS VAN HMD	0.00	0
M-N-SU-S025-000003	SURGICAL BLADE NO 15	258.00	1290
M-N-SU-H018-000025	SURGICAL BLADE NO 15 GLASS VAN HMD	401.00	2130
M-N-SU-S025-000005	SURGICAL BLADE-NO-10 (SWAN MORTON)	865.00	25950
M-N-SU-S025-000006	SURGICAL BLADE-NO-11 (SWAN MORTON)	808.00	24240
M-N-SU-S025-000007	SURGICAL BLADE-NO-22 (SWAN MORTON)	481.00	18930
M-N-SU-J003-000051	SUTURE 4/0 NW3319 ETHILON J&J	340.26	80447
M-N-SU-J003-000130	SUTURE SILK 3/0 NW3328 ETHILON J&J	332.33	59538
M-N-PH-G008-000094	T BACT OINTMENT 5GM	110.00	108077
M-N-SU-P008-000035	TRIPLE LUMEN CVC 7 FR X 15 POLYMED	47.00	194674
M-N-SU-R012-000297	VACCUM SUCTION SET ROMSONS	398.00	144047
M-N-SU-H008-000004	WEARON- HICARE / PETAL	1079.00	14235
M-N-PH-C002-000004	XYLOMIST 0.1% NASAL DROP 10 ML	388.67	158090
M-N-SU-A005-000006	YANKEURS SUCTION SET PLAIN TIP(AIRWAYS)	1138.56	479332

Table 1: 120 Line Items identified for conversion from department to direct patient billing.

Out of 363 line items whose scope was to be evaluated in every user departments for conversion from department to direct patient billing, 120 line items were identified and finalized with the help of nursing team and implemented for direct patient billing.

The department and patient consumption trend both in terms of value and quantity is depicted in the graphs below.

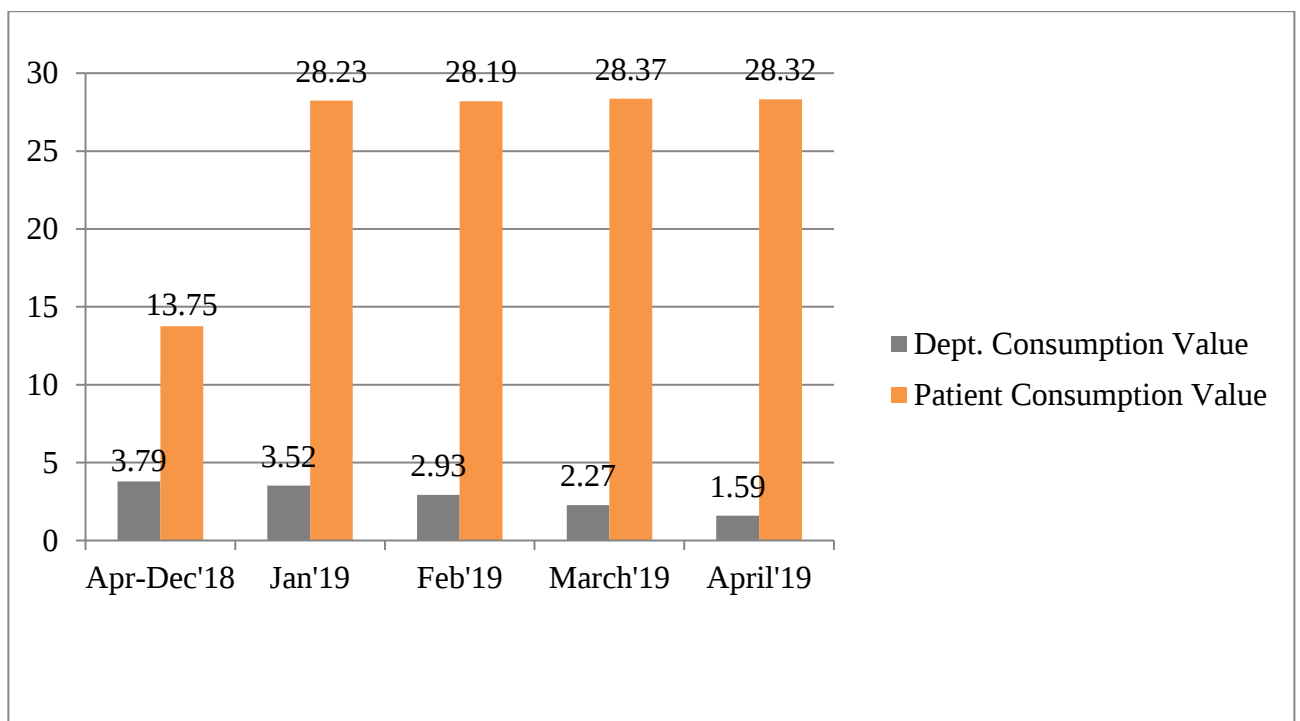


Fig.4: Consumption Trend of 120 Line Items (in Lakhs)

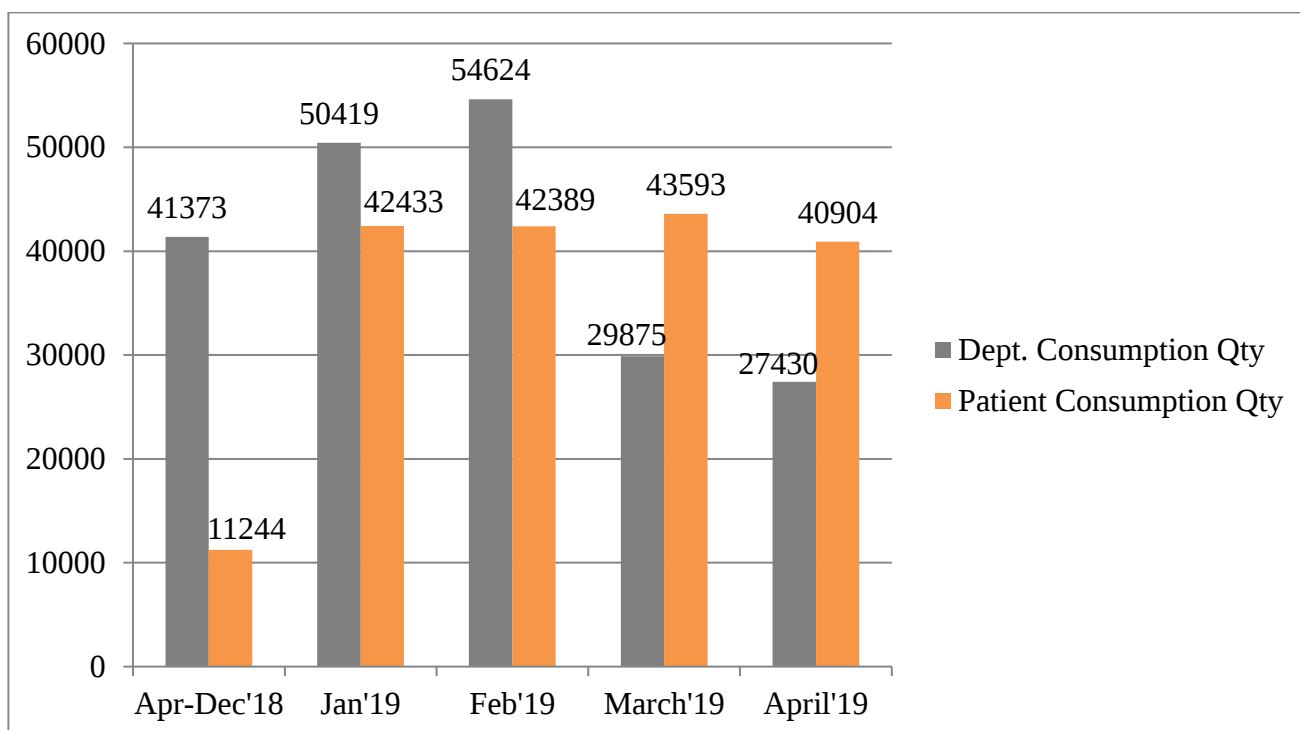


Fig.5: Consumption Trend of 120 Items (Quantity)

Implants Billing Process in Operation Theatre

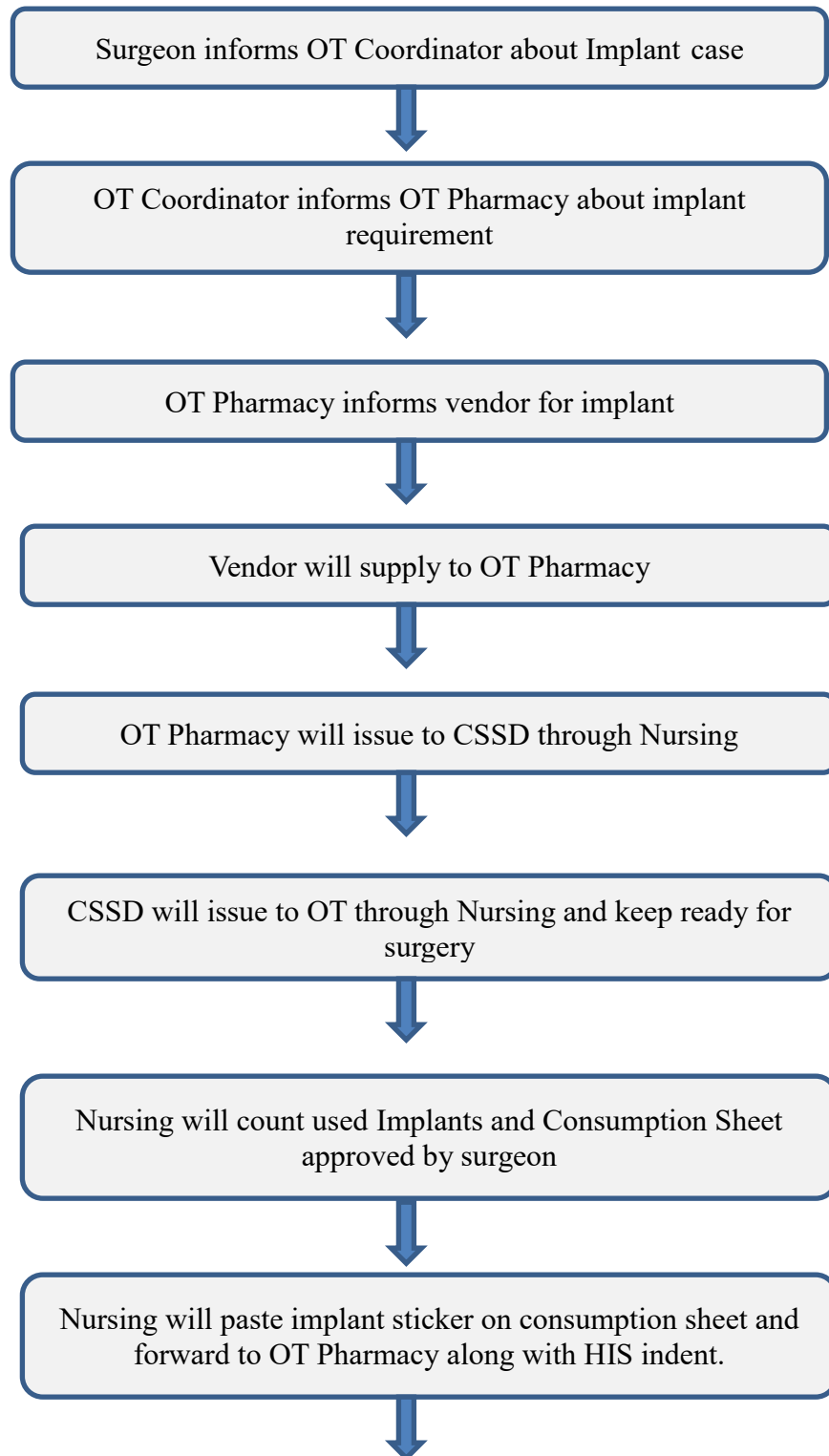
In the current process in CMRI, implants (1708 line items) are booked under departmental consumption with an average value of 39.92 lakhs per month leading to a significant higher departmental consumption of the hospital.

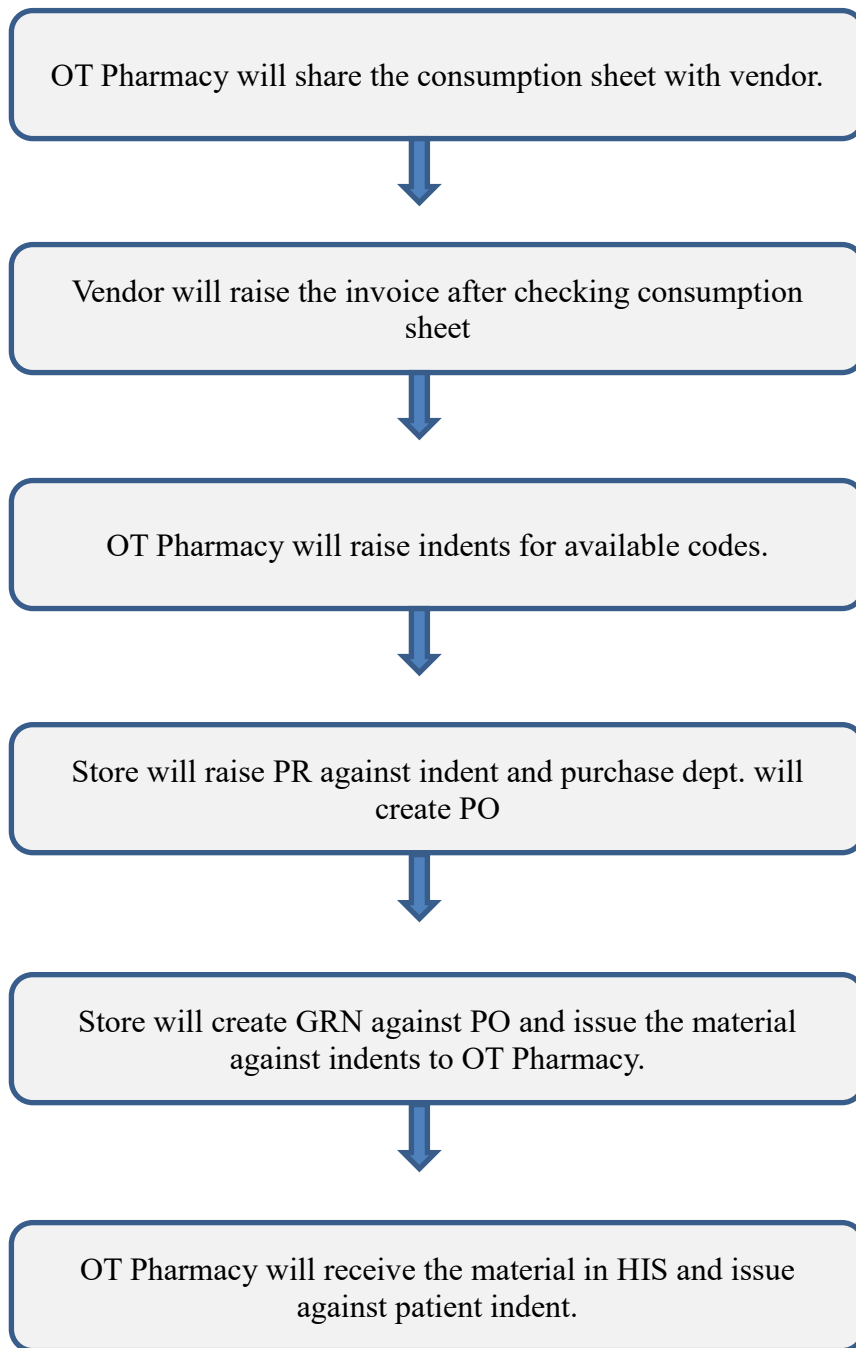
Current Process of Implant Billing followed in CMRI

Step No.	Activity Description	Activity Performed By
1	OT Coordinator comes to know about Surgeon booking OT for implant case.	OT Coordinator
2	Surgeon informed about OT booking confirmation.	OT Coordinator
3	Doctor informs vendor about requirement	Doctor
4	Vendor supplies Sterile Implant Kit to OT and Unsterile Implant and Kit will go to CSSD.	CSSD
5	At time of surgery, sister will receive from CSSD and keep ready for surgery.	Nursing
6	Post-surgery vendor will count for used implants and consumption sheet approved by surgeon.	Vendor
7	Sterile Implants Sticker will be pasted on Consumption sheet and Patient File.	Vendor
8	Damaged Implants is notified in consumption sheet	Vendor
9	Vendor raises invoice post checking consumption sheet	Vendor
10	Based on vendor invoice, billing team will charge amount as MRP or total invoice bill.	Billing
11	Vendor Invoice and Patient Draft Bill will be checked by billing for confirmation	Billing

Table 2: Current Implant Billing Process in CMRI

Proposed Implant Billing Process





- ❖ The proposed implant billing process will be implemented in May'19 by the billing and nursing team.

ROL and ROQ in HIS

The reorder level is that the level of the stock of a specific item, command by the firm, once a nursing order is required to be placed for avoiding the chance of being out of stock. It's supported the common time taken by the provider for refilling, most usage of the item throughout the refilling time, and safety stock demand. It's conjointly called reorder purpose.

The reorder amount is that the amount of the order that's to be placed on a brand-new order for the actual item. The ordered amount or the number of units must be optimum taking under consideration the assorted factors like price of order, price of transportation, carrying prices, etc. The reorder amount is that the amount that, given the traditional usage, provides the most effective balance between the assorted factors like amount discounts, freight, storage prices, and dealing capital needs.

The formula for reorder level is:

Reorder level = (average daily usage rate x average lead time in days) + safety level

The formula for reorder quantity is:

Reorder quantity = $\text{SQRT}(2 \times \text{quantity required} \times \text{cost per order} / \text{carrying cost per unit})$

		Lead Time for Replenishment
ROL	Re-Order Level which trigger for replenishment of stock.	7 Days
ROQ	The maximum quantity allowed to be indented.	10 Days (Lead Time + Buffer Stock)
MIN	ROL trigger quantity	
MAX	Maximum quantity allowed holding.	

- MIN and MAX of 2038 line items have been calculated based on last 6 months consumption.
- Shared with IT team for auto-population of line items in HIS (Hospital Information System), so that whenever an user department selects request store and issue store in HIS for indenting, the line items are automatically populated along with the Re-Order Quantity which can be edited by the user.

Item Code	Issue Store	Wards	ROL	ROQ	MIN	MAX
M-N-SU-M018-000001	Central Store Pharmacy	3rd Floor DP Ward - West	1	1	1	2
G-N-OF-LZZZ-000335	GENERAL STORE	3rd Floor DP Ward - West	55	128	128	183
G-N-OF-LZZZ-000124	GENERAL STORE	3rd Floor DP Ward - West	8	19	19	27
G-N-BI-LZZZ-000027	GENERAL STORE	3rd Floor DP Ward - West	13	29	29	42
G-N-PR-LZZZ-000471	GENERAL STORE	3rd Floor DP Ward - West	1	2	2	3
G-N-CR-LZZZ-000006	GENERAL STORE	3rd Floor DP Ward - West	80	187	187	267
G-N-PR-LZZZ-000472	GENERAL STORE	3rd Floor DP Ward - West	0	0	0	1
G-N-GE-LZZZ-001138	Central Store Pharmacy	3rd Floor DP Ward - West	0	1	1	1
G-N-GE-LZZZ-001573	GENERAL STORE	3rd Floor DP Ward - West	1	2	2	3
G-N-HO-LZZZ-000894	GENERAL STORE	3rd Floor DP Ward - West	1	3	3	4
G-N-MI-LZZZ-000861	GENERAL STORE	3rd Floor DP Ward - West	1	2	2	3
G-N-MI-LZZZ-000911	GENERAL STORE	3rd Floor DP Ward - West	0	1	1	2
G-N-MI-LZZZ-001023	GENERAL STORE	3rd Floor DP Ward - West	2	5	5	7
G-N-OF-LZZZ-000250	GENERAL STORE	3rd Floor DP Ward - West	0	1	1	1
G-N-OF-LZZZ-000263	GENERAL STORE	3rd Floor DP Ward - West	13	29	29	42

Table 3: Example of ROL and ROQ file as shared with IT team

Results

- Till February'19 the departmental consumption at CMRI was 50% of the total consumption losing on significant savings of the hospital.
- After project implementation in March – April'19, the departmental consumption has been reduced to 42% and patient consumption increased to 58%.
- The average departmental consumption of Medical Consumables (MC) has been reduced from 51.44 lakhs per month (April'18 – Feb'19) to 37.96 lakhs per month after project implementation in March – April'19.
- The major area of concern is still the departmental consumption of Implants with an average monthly value of 33.80 lakhs per month.
- The proposed implant billing process has already been presented and will be implemented in May'19 leading to significant savings in departmental consumption.
- Out of 363 line items whose scope of conversion was to be evaluated through various user departments in hospital, 120 line items were finally identified and implemented from March'19 onwards.
- After 120 line items were converted to patient billing, the potential savings after project implementation is 26.40 lakhs per annum.

Dept. Consumption in Apr – Dec'18 = 3.79 lakhs

Dept. Consumption in Apr'19 = 1.59 lakhs

❖ Savings in dept. consumption = $3.79 - 1.59 = 2.20$ lakhs

❖ Savings for 1 year = $2.20 \times 12 = \mathbf{26.40 \text{ lakhs}}$

- The total departmental consumption quantity of 120 line items has been reduced from 41373 (Apr'18 – Dec'18) to 27430 (Apr'19) and patient consumption quantity increased from 11244 to 40904 during the same period.

Conclusion

- Implementation of Proposed Implant Billing process in OT with help of nursing team and billing team to further minimize department consumption.
- Fine tuning of Auto-Populate indenting process in HIS in coordination with IT team to further streamline dept. consumption.
- The nursing team to be sensitized more to minimize the departmental consumption of identified 120 items and convert more to patient billing to increase savings and profit margin.
- Every user department should also keep a check on stock holding value and consumption should be done as per the occupancy of the hospital.

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