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Inventory Management: An Application to MAUTECH Health Centre

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Abstract

The importance of inventory management cannot be overemphasized in organizations. The aim of this work is to determine the optimum inventory policies for drug storage limitation at University Health Centre Stores and to determine the Economic Order Quantity (EOQ) that will minimize the total cost of drugs and total space requirement for each drug in University Health Centre Stores. This paper demonstrates the usefulness of inventory control to help balance the merits of having inventory control and the cost of carrying them so as determine the optimum order quantity and to minimize the total cost. From the analysis, the University Health Centre Stores should order 1.548485 carton of ACT Forte tablet when λ equal to 1, order 1.5430577 when λ equal to 10, order 1.49174896 when lambda equal to 100, order 1.31307923 when

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λ equal to 500, order 1.15993036 when λ equal to 1000, order 0.78449235 when λ equal to 3700. And continuously using the optimal EOQ for the remaining set of drugs and assuming values of the Lagrange multiplier with the aim to minimize the total average variable cost of unit drugs.

Keywords: Economic Order Quantity, Health Centre, Inventory, Langrange Multiplier, Multi-item

1 Introduction

Inventory management is a critical management issue for manufacturing companies. Inventors are vital to the successful function of manufacturing organizations. According to [2], there are several reasons for keeping inventory. Too much stock could result in tunnels being tied down the increase in holding cost, deterioration of materials, obsolescence, and theft. On the other hand the shortage of materials can lead to interruption of products for sales. Poor customer relations underutilized machine and equipment. Inventories may consist of raw materials, work in progress, spare parts, consumables, and finished goods. Different departments within the same organization adopt a different attitude towards inventory [9].

The use of company resources to purchase goods and service must be based on adherence to specific policies and procedures to reduce the chances of fraud and theft. Inventory management also involves identifying the most effective source of supply for each item in each stocking location forecasting and replenishing.

According to [3], Inventory management is pivotal ineffective and efficient organization. It is also vital in the control of materials and goods that have to be held (or stored) for later use in the case of production or later exchange activities in the case of services. The principal goal of inventory management involves having to balance the conflicting economics of not wanting to hold too much stock. Thereby having to tie up capital so as to guide against the incurring of costs such as storage, spoilage, pilferage and obsolescence and, the desire to make items or goods available when and where required (quality and quantity wise) so as to avert the cost of not meeting such requirement. Inventory management is the process of efficiently overseeing the constant flow of units into and out of an existing inventory. This process usually involves controlling the transfer in of unit in order to prevent the inventory from becoming too high or dwindling to levels that could put the operation of the company into jeopardy. Competent inventory management also seeks to control the costs associated with the inventory, both from the perspective of the total value of the goods included and the tax burden generated by the cumulative value of the inventory.

Balancing the various tasks of inventory management means paying attention to three key aspects of any inventory. In terms of materials acquired for inclusion in the total inventory, this means understanding how long it takes for a supplier to process an order and execute a delivery. Inventory management also demands that a solid understanding of how long it will take for those materials to transfer out of the inventory be established. Knowing these two important lead time makes it possible to know when to place an order and how many units must be order and many units must be ordered to keep production running smoothly.

According to [4], the medical store is one of the most extensively used facilities of the hospital and one of the few areas where a large amount of money is spent on purchases on a recurring basis. This emphasizes the need for planning, designing and organizing the medical stores in a manner that results in efficient clinical and administrative services.

The goal of the hospital supply system is to ensure that there is the adequate stock of the required items so that an uninterrupted supply of all essential items is maintained. Approximately 35% of annual hospitals budget is spent on buying materials and supplies, including medicines. This requires effective and efficient management of the medical stores. Efficient priority setting, decision making in purchase and distribution of specific drugs, close supervision on drugs belonging to important categories, and prevention of pilferage depend on the drug and inventory management. Drug inventory management aims at cost containment and improved efficiency. It is essential that health managers use scientific methods to maximize their returns from investment at a minimal cost [5, 1].

Thus, a hospital materials manager must establish efficient inventory system policies for normal operating conditions that also ensure the hospital's ability to meet emergency demand conditions. Inventory is a necessary part of doing business and provided by most organizations in any sector of the economy [6, 4]. The problem faced by the University Health Center is that they run out of drugs in their store.

Therefore, it is important for the management of an organization to have proper knowledge of inventory concept; ignorance of this can affects the prospects of such an organization. Interaction with the University Health Center's storekeeper indicated that there is a shortage of drugs which results in low patronage of patients. This observation is as a result of improper Inventory Management System; whereby the optimal quantity that will meet the demand of the patients have not been obtained. Hence, this project will apply an inventory control model that will provide information for optimal inventory policy for the University Health Center.

The aim of this study is to apply the economic order quantity model using an inventory management system to manage the store of the University Health Center. This research work has covered the monthly report University Health Centre store for the year 2016 which include the seventy-nine (79) the available number of drugs held in store.

2 Materials and Method

The data was obtained from the University Health center store through a personal interview with the storekeeper. In the study, both primary and secondary data were collected. Primary data was collected through interview and secondary data was collected from the medical monthly report. Data were analyzed using the EOQ multi-item model through the aid of micro-soft excel. The overview of the model used are as follows, see [8].

$$Minimize\ TCU \sum_{i=1}^{n} \left(\frac{K_i D_i}{y_i} + \frac{K_i y_i}{2} \right) \tag{1}$$

Subject to:

$$\sum_{i=1}^{n} a_i y_i \leq A \tag{2}$$

$$y_i > 0 \ i = 1, 2, ..., n \tag{3}$$

where: D_i = Demand Rate, K_i = Set Cost per Order, h_i = Unit holding Cost per unit Time, y_i = Optimum Order Quantity, a_i = Storage Area Requirement per Inventory Unit, and A = Maximum available Storage area for all n items.

The unconstrained optimal value of the order quantities in [6] is given by

$$Q_i^* = \sqrt{\frac{2 \times D \times C_0}{C_h \times 2 \times \lambda \times S_t}} \tag{4}$$

It is very important to check if the constrained optimal values satisfy the storage-constrained if it stops $\{y_i\}_{i=1}^n$ are optimal. Otherwise, apply

$$Y_i = \sqrt{\frac{2 \times K_i \times D_i}{h_i \times h_0 \times a_i}} \leq A \tag{5}$$

Appendix II presents the demand, ordering cost, holding cost and the space requirement for the seventy-nine (79) drugs provided at the University Health Clinic Store. The values of λ were obtained using the heuristic approach. We assume various values for λ, so as to obtain an optimum value of the Lagrange multiplier that will satisfy the space limitation constraint (See Appendix III). Using the above-stated software (Excel) we continue assuming values for λ until the optimum value of λ is obtained.

Note that the demand rate for each drug assumed to be uniform. Also, University Health Center Stores was measured to be 7×14 feet with a total space warehouse of $98 sqft$. The holding cost (C_h), was obtained by the rent and security fees which amount to $N30,000.00$ yearly. And since we are concerned with the number of months we compute below:

Holding cost per item = Total holding cost per year/ total number of drugs held in store (79) which is $N30.000/79$. The holding cost/unit drug per year = $N379.75$ over the number of units in each drug in monthly basis holding cost amount to $N31.65$.

Note that holding cost (C_h) is assumed to be constant, that is there is no variability in the cost of ordering these different drugs. In testing for the warehouse capacity space required for each drug is the total floor area required by all inventory drugs must be less than or equal to the total floor area of the warehouse. That is $\sum_{1=i}^n f_i Q_i^* \leq W_i$. This constraint indicates that even if all drugs reach their maximum inventory levels simultaneously, the warehouse space should be sufficient to store the inventory of these multiple drugs.

Using (4), we compute for the value of λ for the optimum space limitation throughout the seventy-nine (79) set of items in University Health Center Stores (See Appendix III).

3 Results and Discussions

From the above optimum order quantity of each of the drugs held in inventory by University Health Centre Stores, we also deducted from the table above that the maximum space requirement is computed as 98sqft.In order to obtain the optimum value for λ in order to satisfy the constraint equation on the availability of storage space.

1. Order cartons of ACT Forte tablet when the optimum order quantity for the value of λ EOQ one (1) equal to 1.548485 with the lead time of 19.373837, cycle length 0.154848, and re-order when the inventory level drop to 14.51515 Continuing in this process for the rest of drugs when $\lambda = 1$ until when $\lambda = 4$. With a storage space of 0.019201 that do not exceed the space constraint of $98sqrt$ i.e $714 = 98$.

2. Order cartons of ACT Forte tablet when the optimum order quantity for the value of λ EOQ two (10) equal to 1.5430577 with the lead time of 19.441888, cycle length 0.154306, and re-order when the inventory level drop to 14.56942 Continuing for all drugs when $\lambda = 10$. For the rest of seventy-nine (79) set of drugs in store until when λ EOQ equals to 6. With a storage space of 0.019134 that does not exceed the space constraint of $98sqrt$.

In summary, when lambda $\lambda = 1$ order 1 and a half carton of ACT Forte tablet and re-order when the inventory level drops to 14.51515. Order 2 cartons of Lumartem tablet and re-order when the inventory level drops to 14.51515. Order half carton of E-Mal injection and re-order when the inventory level drops to 14.51515. Order half carton of Artesunate injection and re-order when the inventory level drops to 14.51515. Order half carton of Artesunate tablet. And re-order when the inventory level drops to 14.51515. Continuing these same process until when the value of $\lambda = 1$ to one is satisfied for all the seventy-nine (79) drugs in store.

When lambda $\lambda = 10$ order 1 and a half carton of ACT Forte tablet and re-order when the inventory level drops to 14.56942. Order 2 cartons of Lumartem tablet and re-order when the inventory level drops to 14.56942. Continuing in these same process for the remaining drugs until the value for $\lambda = 10$ is satisfied for all drugs. When lambda $\lambda = 100$ order 1 and a half carton of ACT Forte tablet and re-order when the inventory level drops to 15.08251. Order half carton of Lumartem tablet and re-order when the inventory level drops to 15.0851. Continuing in these same process for the remaining drugs until the value for $\lambda = 100$ is satisfied for all drugs.

When lambda $\lambda = 500$ order1 and a half carton of ACT Forte tablet and re-order when the inventory level drops to 16.86921. Order half carton of Lumartem tablet and re-order when the inventory level drops to 16.86921. Continuing in these same process for the remaining drugs until the value for $\lambda = 500$ is satisfied for all drugs.

When $\lambda = 1000$ order 1 carton of ACT Forte tablet and re-order when the inventory level drops to 18.40069. Order half carton of Lumartem tablet and re-order when the inventory level drops to 18.40069. Continuing in these same process for the remaining drugs until the value for $\lambda = 1000$ is satisfied for all drugs. When $\lambda = 3700$ order 1 carton of ACT Forte tablet and re-order when the inventory level drops to 22.15507. Order half carton of Lumartem tablet and re-order when the inventory level drops to 22.15507. Continuing in these same process for all drugs until the value for $\lambda = 3700$ is satisfied for all drugs.

Note that the value of EOQ when $\lambda = 1$ is 1.548485 and decreases when $\lambda = 10$ with 1.5430577, $\lambda = 10$ is 1.49174896, $\lambda = 500$ is 1.31307923, $\lambda = 100$ is 1.15993036 to when $\lambda = 3700$ is 0.78449235 as the economics order quantity varies from one point/ value to the next. The values for all cycle length from when $\lambda = 1$ to when $\lambda = 3700$ decreases for all drugs as the value of λ increase from drug to drug.

The lead time values for each drug independently increase from when $\lambda = 1$ to when $\lambda = 3700$ as the points move above. But a value of lead time remains constant for all drugs. Example when holding $\lambda = 1$, the lead time remains constant and the same for all seventy-nine (79) drugs in store. Same for when

$\lambda = 10$, 100, 500, 1000 and 3700. The effective lead time decrease from when $\lambda = 1$ to when $\lambda = 3700$, and increases at some point. But values for $\lambda = 10$, 100, 500, 1000 and 3700 remains constant for all drugs.

The re-order point values increases from when $\lambda = 1$ to when $\lambda = 3700$ but remains constant from drug to drug. The values for space constraint decreases from $\lambda = 1$ to when $\lambda = 3700$, λ which minimizes the total space requirement of $98sqft$. But remains constant for the drug to drug. As such the store can warrant drugs not exceeding its space limitation for storing a particular drug in store (For space computation, See Appendix I). $\lambda = 3700$ is the best minimum space requirement for storage of each drug.

Since both $\lambda = 10$, 100, 500 and 1000 exceed the space requirement of 98sqft, then store any drug not exceeding the warehouse requirement. Note that $\lambda = 3700$ is the best storage space of drug that satisfied the Kuhn Tucker necessary and sufficient condition that determines the optimal order quantities for different items so as to achieve a minimum value of TVC of the non-negative Langrage Multiplier see[7].

4 Conclusion

In this paper, we discussed on inventory management technique used and covers its practical application using the University Health Centre as a case study. Essential information for this research work was collected through a primary and secondary source that is, through personal interview with the storekeeper of the University Health Centre and which was analysed using the multi-item EOQ model with storage limitation. We focused on improving the inventory policy practiced in University Health Centre Stores. This paper demonstrates the usefulness of inventory control helps to balance the merits of having inventory control and the cost of carrying them so as determine the optimum order quantity and to minimize the total cost. Hence, recommend that the management of the University Health Centre should adopt a scientific method of inventory control as presented in this work so that ordering can be done only when the University Health Centre run out of stock. And to set up a powerful computer-based information system to ease inventory control and stock control problem.

Disclosure statement

The authors declare that there is no conflict of interest regarding the publication of this paper

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Appendix I:

The optimum multi-item EOQ model was computed using the Microsoft excel software package with the formula

$$\sqrt{\frac{2 \times D \times C_0}{C_h \times 2 \times \lambda \times W_i}}$$

Where
2 = the constant sign in EOQ, D_i = is the annual demand for each item, C_o = the total ordering cost for each item, C_h = the holding cost for each item, and W_i = total warehouse and storage requirement.

1. The lead time was 3 days
2. The cycle length was computed with the formula below

$$t_0^* = \frac{y^*}{D}$$

where the lead time exceed the cycle length, we compute for the effective lead time.

The effective lead time was computed using the formula below

$$L_e = L - nt_0^*$$

The re-order point was computed using the formula

$$L_e \times D$$

Where
L_e = the effective lead time and D = the demand for each item held in inventory.

The space required for the storage of each item in the warehouse was computed using the formula below

$$\sum_{1=i}^{n} f_i Q_i^* \leq W_i$$

Where
$f_i Q_i^*$ = the number of space requirement multiplied by the Q optimum for each of the drug and W_i = the total warehouse capacity that does not exceed the space requirement.

Hence, the space requirement would be

$$\sum_{1=i}^{79} f_i Q_i^*$$

Appendix II

S/N	Drugs	Demand/Month	Holding Cost	Ordering Cost Co	Space Requirement
1	ACT Forte tabel	10	31.65	3.7975	0.0124
2	Lumartem tabs	20	31.65	3.7975	0.0124
3	E-Mal inj.	1	31.65	3.7975	0.0124
4	Artesunate inj.	1	31.65	3.7975	0.0124
5	Artesunate tabs	1	31.65	3.7975	0.0124
6	P alaxin tabs	1	31.65	3.7975	0.0124
7	Artemeter inj.(Paluther)	3	31.65	3.7975	0.0124
8	Septrin tabs	5	31.65	3.7975	0.0124
9	Coatem D	2	31.65	3.7975	0.0124
10	Flagyl (M&B)	5	31.65	3.7975	0.0124
11	Ampiclox caps	20	31.65	3.7975	0.0124
12	Amoxyl caps	40	31.65	3.7975	0.0124
13	Ceftrianxone inj,(Avicef)	5	31.65	3.7975	0.0124
14	Co-amoxiclav tabs/caps	3	31.65	3.7975	0.0124
15	Levofloxacin tabs	5	31.65	3.7975	0.0124
16	Cefuroxine (Zinat) tabs	2	31.65	3.7975	0.0124
17	Ciprofloxacin tabs	20	31.65	3.7975	0.0124
18	Cefuroxine susp.	2	31.65	37.975	0.124
19	Ofloxacin tabs	5	31.65	3.7975	0.0124
20	Augmentin susp.	2	31.65	37.975	0.124
21	Septrin syr	5	31.65	37.975	0.124
22	Fluconazole tabs	10	31.65	3.7975	0.0124
23	Fulcin tabs	10	31.65	3.7975	0.0124
24	Ketocanazole tabs	5	31.65	3.7975	0.0124

25	Flagentyl tabs	10	31.65	3.7975	0.0124
26	Aibendazole	10	31.65	3.7975	0.0124
27	Nystatin pessaries	2	31.65	3.7975	0.0124
28	Miconazole cream	2	31.65	3.7975	0.0124
29	Paracetamol inj.	40	31.65	3.7975	0.0124
30	Paracetamol syr.	10	31.65	37.975	0.124
31	Paracetamol tabs	1000	31.65	3.7975	0.0124
32	Ampiclox susp.	5	31.65	3.7975	0.0124
33	Ibuprofen (buprol)	20	31.65	3.7975	0.0124
34	Felxicam	10	31.65	3.7975	0.0124
35	Tramadol (Tradyl)	20	31.65	3.7975	0.0124
36	Tramadol inj.	50	31.65	3.7975	0.0124
37	Pentazocine inj.	5	31.65	3.7975	0.0124
38	Diclofenac potasium	10	31.65	3.7975	0.0124
39	Erethromycin syr.	3	31.65	37.975	0.124
40	Cipta tabs.	3	31.65	3.7975	0.0124
41	Lisinopril tabs	30	31.65	3.7975	0.0124
42	Gastrokit tabs	60	31.65	3.7975	0.0124
43	Loratidine tabs	10	31.65	3.7975	0.0124
44	Diclofenac inj.	1	31.65	3.7975	0.0124
45	Moduretic	1000	31.65	3.7975	0.0124
46	Amlodipine tabs	1000	31.65	3.7975	0.0124
47	Vasoprin tabs	1000	31.65	3.7975	0.0124
48	Rapiflox eye/ear	20	31.65	3.7975	0.0124
49	Glibenclamide	1000	31.65	3.7975	0.0124
50	Metfomin	10	31.65	3.7975	0.0124
51	Jawasil-200mls	8	31.65	3.7975	0.0124
52	Danacid tabs	500	31.65	3.7975	0.0124

53	Cimeticidine tabs	5	31.65	37.975	0.124
54	Micozol plus	1	31.65	37.975	0.124
55	Marcrich tonic	1	31.65	37.975	0.124
56	Omeprazole caps	1	31.65	37.975	0.124
57	Erythromycin tabs	50	31.65	3.7975	0.0124
58	Cough syr.	10	31.65	37.975	0.124
59	Panadol cold & catarrh.	288	31.65	3.7975	0.0124
60	Tegretol CR	3	31.65	3.7975	0.0124
61	Spersallerge	2	31.65	37.975	0.124
62	Amoxicillin syr.	5	31.65	37.975	0.124
63	Rabeprazole tabs	3	31.65	37.975	0.124
64	Prednesolone tabs	10	31.65	3.7975	0.0124
65	Celebrex tabs	5	31.65	3.7975	0.0124
66	Promethazine inj.	10	31.65	3.7975	0.0124
67	5% dextrose saline	60	31.65	3.7975	0.0124
68	Giving set	1	31.65	3.7975	0.0124
69	Syringe and needle	10	31.65	3.7975	0.0124
70	Dolo meta B	1	31.65	37.975	0.124
71	Flagyl syr.	5	31.65	37.975	0.124
72	Cefixime	1	31.65	37.975	0.124
73	Diclofenac eye	2	31.65	37.975	0.124
74	Naproxen	1	31.65	3.7975	0.0124
75	Gentamycin cream	2	31.65	37.975	0.124
76	Biocoten cream	1	31.65	37.975	0.124
77	Meloxicam	2	31.65	3.7975	0.0124
78	Mantra plus	1	31.65	37.975	0.124
79	Buscopan inj.	10	31.65	3.7975	0.0124

Appendix III

Drugs	EOQ (λ=1) Carton/Roll	EOQ (λ=10) Carton/Roll	EOQ (λ=100) Carton/Roll	EOQ (λ=500) Carton/Roll	EOQ (λ=1000) Carton/Roll	EOQ (λ=3700) Carton/Roll
ACT Forte tabel	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1
Lumartem tabs	2	2	2	2	2	1
E-Mal inj.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Artesunate inj.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Artesunate tabs	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
P alaxin tabs	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Artemeter inj.(Paluther)	1	1	1	1	1	$\frac{1}{2}$
Septrin tabs	1	1	1	1	1	1
Coatem D	1	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Flagyl (M&B)	1	1	1	1	1	1
Ampiclox caps	2	2	2	2	2	1
Amoxyl caps	3	3	3	3	$2\frac{1}{2}$	$1\frac{1}{2}$
Ceftrianxone inj,(Avicef)	1	1	1	1	1	$\frac{1}{2}$
Co-amoxiclav tabs/caps	1	1	1	1	1	$\frac{1}{2}$
Levofloxacin tabs	1	1	1	1	1	$\frac{1}{2}$
Cefuroxine (Zinat) tabs	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

Ciprofloxacin tabs	2	2	2	2	$1\frac{1}{2}$	1
Cefuroxine susp.	2	2	2	1	1	$\frac{1}{2}$
Ofloxacin tabs	1	1	1	1	1	$\frac{1}{2}$
Augmentin susp.	2	2	$1\frac{1}{2}$	1	1	$\frac{1}{2}$
Septrin syr	$3\frac{1}{2}$	3	$2\frac{1}{2}$	$1\frac{1}{2}$	1	1
Fluconazole tabs	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1
Fulcin tabs	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1
Ketocanazole tabs	1	1	1	1	1	$\frac{1}{2}$
Flagentyl tabs	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1
Aibendazole	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1
Nystatin pessaries	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Miconazole cream	1	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Paracetamol inj.	3	3	3	3	2	$1\frac{1}{2}$
Paracetamol syr.	5	5	$3\frac{1}{2}$	2	2	1
Paracetamol tabs	15	15	15	13	$11\frac{1}{2}$	8
Ampiclox susp.	1	1	1	1	1	$\frac{1}{2}$
Ibuprofen (buprol)	2	2	2	2	2	1

Felxicam	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
Tramadol (Tradyl)	2	2	2	2	2	1
Tramadol inj.	3	3	3	3	3	2
Pentazocine inj.	1	1	1	1	1	$\frac{1}{2}$
Diclofenac potasium	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
Erethromycin syr.	3	$2\frac{1}{2}$	2	1	1	$\frac{1}{2}$
Cipta tabs.	1	1	1	1	1	$\frac{1}{2}$
Lisinopril tabs	3	3	$2\frac{1}{2}$	2	2	1
Gastrokit tabs	4	4	4	3	3	2
Loratidine tabs	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
Diclofenac inj.	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Moduretic	15	15	15	13	$11\frac{1}{2}$	8
Amlodipine tabs	15	15	15	13	$11\frac{1}{2}$	8
Vasoprin tabs	15	15	15	13	$11\frac{1}{2}$	8
Rapiflox eye/ear	2	2	2	2	2	1
Glibenclamide	15	15	15	13	11	8
Metfomin	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
Jawasil-200mls	1	1	1	1	1	1
Danacid tabs	11	11	$10\frac{1}{2}$	9	8	$5\frac{1}{2}$

Cimeticidine tabs	3	3	$2\frac{1}{2}$	$1\frac{1}{2}$	1	$\frac{1}{2}$
Micozol plus	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Marcrich tonic	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Omeprazole caps	$1\frac{1}{2}$	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Erythromycin tabs	3	3	3	3	$2\frac{1}{2}$	2
Cough syr.	5	5	4	2	2	1
Panadol cold & catarrh.	8	8	8	7	6	4
Tegretol CR	1	1	1	1	1	$\frac{1}{2}$
Spersallerge	2	2	2	1	1	$\frac{1}{2}$
Amoxicillin syr.	$3\frac{1}{2}$	3	3	$1\frac{1}{2}$	1	1
Rabeprazole tabs	3	3	2	1	1	$\frac{1}{2}$
Prednesolone tabs	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
Celebrex tabs	1	1	1	1	1	$\frac{1}{2}$
Promethazine inj.	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1
5% dextrose saline	4	4	$3\frac{1}{2}$	3	3	2
Giving set	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Syringe and needle	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1

Dolo meta B	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Flagyl syr.	$3\frac{1}{2}$	3	$2\frac{1}{2}$	$1\frac{1}{2}$	1	1
Cefixime	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Diclofenac eye	2	2	$1\frac{1}{2}$	1	1	$\frac{1}{2}$
Naproxen	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Gentamycin cream	2	2	$1\frac{1}{2}$	1	1	$\frac{1}{2}$
Biocoten cream	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Meloxicam	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Mantra plus	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Buscopan inj.	$1\frac{1}{2}$	$1\frac{1}{2}$	$1\frac{1}{2}$	1	1	1