Inventory Control Of Disposable Medical Devices in Hospitals Using The Economic Order Quantity (EOQ) Dan Reorder Point (ROP) Method

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Article Info	ABSTRACT
Article history:	Controlling the supply of disposable medical devices at RSUD Dr. Pringadi not completely running well. The purpose of this research is to control the supply of disposable medical devices in order to determine the amount optimal ordering and to find out the number of reorders on all types of disposable medical devices. In this research also did calculating the value of the investment in each type. Calculation results for the investment level group of 0-70% has 11 types of disposable medical devices with a financial value of IDR 64,136,040.00 or 70% of the total investment with Economic Order Quantity can be ordered from a total of 14-152 items, Buffer Stock or safety stock starts stocking from 1-198 items and Reorders Points range from 1-318 items. For the investment level group 71-90% have 21 types of disposable medical devices with a financial value of Rp 181,953,529.00 or 20% of the total investment with EOQ can be ordered from quantity 2-21237item, buffer stock from 2-1237item and ROP from reordered 4-1987item. For the investment level group of 91-100% has 71 types of disposable medical devices with a financial value of Rp 85,103,749.00 or 9.4% of the total investment with EOQ calculations ordered starting from 1-421, buffer stock starting from 2-247 items and ROP starting from 2 - 397items.So this research is useful to help the warehouse Pharmacist at RSUD Dr. Pringadi in controlling the supply of medical devices disposable.
Keywords: Inventory Control Disposable Medica Devices Economic Order Quantity Buffer Stock Reorder Point POM-QM version 4.0	

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1. INTRODUCTION

The hospital is an organization that plays a very important role in provide health services to the maximum extent possible to the community with the aim of improving people's standard of living. The main thing to do in the hospital is channel more services to perform services, care and healing to community (Iqbal, 2019). Disposable medical devices are one of the medical devices used in departments medical devices that are used once and used up are immediately disposed of to prevent transmission disease and viruses to other patients. The main part of the hospital in charge of Availability of medical devices, namely pharmacy warehouses. The pharmacy warehouse is part of the store various goods such as drugs, chemicals, radiological materials, medical gases, and disposable medical devices as a support for hospital needs (Setiawati dkk, 2022). Inventory control (inventory control) is an activity that is intended so that the existing inventory or stock is not will experience a shortage and can be maintained at an optimal level so that the cost of inventory.and can be maintained at an

optimal level so that the cost of inventory optimal (Kartika, 2022). Control of disposable medical devices in the hospital pharmacy warehouse Dr. Pringadi must maintain its stock so that it can assist medical personnel in providing it service to patients. If the availability of disposable medical devices in hospitals is experiencing out of stock and the pharmacy warehouse clerk made a mistake, then the risk of error must be borne by the hospital. While inventory is too large will increase costs storage, investment value and increase the occurrence of damage, and expitarion (Abbas, dkk, 2021). One method of inventory control in the warehouse is usingEconomic Order Quantity (EOQ) method. EOQ aims to determine the amountthe most economical purchase of goods per period of the next purchase period. InHospital Pharmacy Warehouse Dr. Pringadi also made a return order four times inone year but it can not meet the demand for the goods in which the goods are soldstock for three months is not sufficient so that you can place an order againincrease the cost of ordering, therefore this research was conducted at RSUD Dr. Pringadito find out the optimal ordering and the point of reordering againstdisposable medical devices in pharmaceutical warehouses using EOQ and ROP calculation methods.Where the results of this calculation can optimize ordering costs and storage costsso the value of the investment is reduced. Calculation of the inventory control methodcan use POM-QM software to find out accurate results.

2.   RESEARCH METHODE
2.1. Disposable Medical Devices
Disposable medical devices are medical devices that are disposable and not disposable can be used repeatedly for the same patient or other patients, for fear that something will happen the spread of infectious germs and viruses left on the device (Utami, 2023) Pharmaceutical warehouse is a functional implementation unit that organizes all activities pharmacy services in hospitals. When performing pharmaceutical services, pharmacy warehouse the hospital is fully guided by the pharmaceutical service standards that are used as a reject measurement used as a guideline for pharmacists in performing services pharmacy where this pharmaceutical service is a direct and responsible service fully responsible for patient safety related to the availability of pharmaceuticals with The goal is to achieve a definite outcome to improve patient quality. (Priatna et al., 2021).

2.2. Inventory Control
Inventory control is a series of control policies to determine inventory levels that must be maintained, when to place orders for additional inventory, and how large an order should be placed, the amount or level of inventory required (Swasono and Prastowo, 2021). One way of managing goods that can be seen from the amount of usage and price of ach goods. Where the investment value can be divided into levels in percent, namely the investment value 0-70 is a high investment rate of the unit price. 71-90% investment value is the rate investment that includes moderate inventory and investment value of 91-100%, namely the investment level which is of low use.

2.3. Economi Order Quantity (EOQ) Method
The Economic Order Quantity (EOQ) method is one of the control control techniques inventory that is used most often and EOQ is the amount of inventory that must be ordered by the amount of inventory that must be ordered effectively with the aim of reducing inventory costs. The EOQ method has the following calculation formula:

$$Q = \sqrt{\frac{2 \times D \times S}{H}} \qquad\qquad (1)$$

Information:
Q = The most economical optimum number of orders
D = Number of requests for a period
S = Ordering fee each time an order is made
H = Warehouse storage cost per unit / month

2.4. Buffer Stock

Buffer stock is a safety stock that serves to protect against contingency the occurrence of a shortage of goods, for example due to the use of goods that are larger than expected from previous estimates or due to delays in receiving the ordered items (Alkarim et al., 2023).

As for how to calculate the safety stock (buffer stock).

$$SS = Z \times d \times l \tag{2}$$

2.5. Reorder Point (ROP)

Reorder Point (ROP) or reorder point is the time that is done for hold a reorder of products or goods, so that at the time of receipt of the goods ordered on time according to the desired capacity in the warehouse and Reorder point is a point where an item in the warehouse must be added to its inventory before run out (Wahanani et al., 2023). To determine ROP, the following formula can be used:

$$ROP = (d \times l) + SS \tag{3}$$

Information:
ROP   : Reorder point
D   : Daily demand per unit
l   : Waiting time (waiting time)
SS   : Safety stock

To help calculate the EOQ and ROP methods, you can use softwarePOM-QM Version 4.0. the use of this software can make it easier to find out the results the calculation is more accurate and knows more about how many times to place an order optimal, as well as the cost of ordering each type of goods. The primary and secondary data used in this study are the data provided the pharmacy warehouse at RSUD Dr. Pringadi is data on disposable medical devices for monthly use june-july 2023 and unit prices and a little interview about hospital inventory control. Research procedure Stages of data analysis
1. Problem identification
2. Collection of both primary and secondary data
3. Grouping the investment level of disposable medical devices
4. Calculation of EOQ
5. Buffer Stock Calculation
6. Calculation of ROP
7. Analysis of result

3.   RESULT AND ANALYSI

3.1. Inventory and Use of Disposable Medical Devices Data

Controlling the supply of disposable medical devices at RSUD Dr. Pringadi is the first. Stock taking is done to check the number of goods (physical) with computer data collection, guarantee quality, and avoid damage and expiration. Based on Based on the results of observations, stock taking is an activity carried out to match physical conditions stock of goods on the computer and with evidence of bookkeeping or source documents (receipts, demand, expenditure and inspection of goods) so that it can be known the quality, quantity and the expiration date of the item. then use the defecta book. The defect book is documentation/records regarding ordering disposable medical devices to suppliers. This book used to record items that must be ordered to meet availability requirements goods. The function of this book is to check goods and stock, avoid forgetting orders return thing. Furthermore, the use of the e-catalog application for stock information on disposable medical devices can be viewed using software that contains information systems on a computer Every incoming disposable medical devices (sent by distributors) and direct disposable medical devices input into the computer, next. Based on the research, there are 103 types of consumable medical devices used the units consisting of pcs, packs, bottles, sheets, tubes, rolls and each of them have different prices. The following lists the supply and use of single-use medical devices in June-July 2023.

Tabel 3.1 List of Supplies and Use of Disposable Medical Devices for June-July 2023 at RSUD Dr. Pringadi

No	Disposible Medical Dvices	Unit	Price e-catalogue	Usage		Amount	Great Investment Value
				Juni	Juli		
1	Usg Paper - 110 Hg	Roll	Rp 181.000	0	1870	1870	Rp.338.470.000
2	Film Dve 28 x 35	Sheet	Rp 25.200	1000	1125	2125	Rp 53.550.000
3	Tubex Tf	Box	Rp 3.000.000	6	7	13	Rp39.000.000
4	Cvc Double Lumen Hd 12 Fr 1	Pcs	Rp 1.715.000	10	10	20	Rp 34.300.000
5	Electrode Skintac Foam 30	Pcs	Rp 15.400	780	1290	2070	Rp 31.878.000
6	Hand Rub 500 Ml	Btl	Rp 70.000	180	270	450	Rp 31.500.000
7	Sarung Tangan Non Steril Ukr M	Box	Rp 37.500	400	350	750	Rp 28.125.000
8	Elvasense Strip Alat Gula Darah	Pcs	Rp 8.950	1500	1500	3000	Rp 26.850.000
9	Hand Scrub 500 Ml	Btl	Rp 48.000	240	250	490	Rp 23.520.000
10	Infuset Makro	Pcs	Rp 5.000	1900	1700	3600	Rp 18.000.000
11	Fixomul 10 Cm X 5 M	Roll	Rp 39.960	208	216	424	Rp 16.943.040
12	Syringe 3 Cc	Pcs	Rp 650	9900	12600	22500	Rp 14.625.000
13	Masker Karet	Pcs	Rp 790	0	17000	17000	Rp 13.430.000
14	Three – Way	Pcs	Rp 4.700	1210	1470	2680	Rp 12.596.000
15	Certofix Trio V720	Pcs	Rp 917.256	5	8	13	Rp 11.924.328
16	Sarung Tangan Steril No 7,5	Psg	Rp 6.000	1050	900	1950	Rp 11.700.000
17	I.V. Cath No 22	Pcs	Rp 3.700	1350	1810	3160	Rp 11.692.000
18	Humidifer Steriflo 350 Ml	Btl	Rp 50.000	100	120	220	Rp 11.000.000
19	Vacuum Tube Edta K3 3 Ml	Box	Rp 294.000	22	14	36	Rp 10.584.000
20	Vaculab Micro Tube Edta K3 0.5 Ml 100	Pack	Rp 250.000	25	15	40	Rp 10.000.000
21	Pot Sputum	Pcs	Rp 6.500	800	700	1500	Rp 9.750.000
22	Alkohol Swab	Pcs	Rp 400	8700	12000	20700	Rp 8.280.000
23	Masker Tali	Pcs	Rp 932	4000	4000	8000	Rp 7.456.000
24	Syringe 5 Cc	Pcs	Rp 650	5100	5800	10900	Rp 7.085.000
25	Sarung Tangan Non Steril Ukr S	Box	Rp 32.500	102	100	202	Rp 6.565.000
26	Ecxtention Tube 150 Cm	Pcs	Rp 24.600	120	145	265	Rp 6.519.000
27	Nasal Oxygen Adult	Pcs	Rp 7.881	300	445	745	Rp 5.871.345
28	Syringe 10 Cc	Pcs	Rp 650	3600	3800	7400	Rp 4.810.000
29	Sarung Tangan Steril No 6.5	Psg	Rp 6.000	400	400	800	Rp 4.800.000
30	Film Dve 20 X 25	Sheet	Rp 12.000	125	250	375	Rp 4.500.000
31	Pga 1 Taper 1/2 C - 48 Mm	Pcs	Rp 31.080	72	72	144	Rp 4.475.520
32	Poli Crepe 4 Inch	Roll	Rp 59.588	36	36	72	Rp 4.290.336
33	Syringe Terumo 3 Cc	Pcs	Rp 818	2500	2000	4500	Rp 3.681.000
34	Face Mask O2 Non Breath Adult	Pcs	Rp 21.800	65	93	158	Rp 3.444.400
35	I.V. Cath No 24	Pcs	Rp 3.700	450	450	900	Rp 3.330.000
36	Ett 7 Cuff	Pcs	Rp 63.500	40	10	50	Rp 3.175.000
37	Face Mask Nebulizer Adult	Pcs	Rp 10.399	145	160	305	Rp 3.171.695
38	Urine Bag	Pcs	Rp 14.500	0	215	215	Rp 3.117.500
39	Sarung Tangan Steril No 7	Psg	Rp 6.000	50	450	500	Rp 3.000.000
40	Ekg Paper 12 Chanel 200 Lembar	Pack	Rp 416.000	5	2	7	Rp 2.912.000
41	Pga 2/0 Taper 1/2 C - 26 Mm	Pcs	Rp 40.000	36	36	72	Rp 2.880.000
42	Pga 3/0 Rev. Cutting 3/8 C - 24 Mm	Pcs	Rp 47.500	60	0	60	Rp 2.850.000
43	Kapas Pembalut 500 Gr	Roll	Rp 47.300	31	22	53	Rp 2.506.900
44	My Jelly	Tube	Rp 29.550	36	47	83	Rp 2.452.650

45	Ecoplaxs Mix 16401	Pcs	Rp 6.748	250	100	350	Rp 2.361.800
46	Transfusi Set	Pcs	Rp 8.000	0	270	270	Rp 2.160.000
47	Sarung Tangan Steril No 8	Psg	Rp 6.800	300	0	300	Rp 2.040.000
48	Syringe 50 Cc Cath Tip	Pcs	Rp 5.883	145	200	345	Rp 2.029.635
49	Foley Cath No 18	Pcs	Rp 7.500	100	150	250	Rp 1.875.000
50	Poly Propilene 3/0 Rev.Cut 3/8 C -26mm	Pcs	Rp 49.019	0	36	36	Rp 1.764.684
51	Catgut Plain 0 Taper 1/2c - 37 Mm	Pcs	Rp 35.000	48	0	48	Rp 1.680.000
52	Spinocan No 25	Pcs	Rp 31.000	25	25	50	Rp 1.550.000
53	Alkohol 95% 1 L	Btl	Rp 15.000	4	99	103	Rp 1.545.000
54	Vacuum Tube No Additive 4 Ml	Box	Rp 150.000	0	10	10	Rp 1.500.000
55	Topi Suster	Box	Rp 49.500	20	10	30	Rp 1.485.000
56	Syringe 50 Cc Excentric	Pcs	Rp 5.883	120	125	245	Rp 1.441.335
57	Vacuum Gel	Box	Rp 204.600	2	5	7	Rp 1.432.200
58	Blood Bag Double 350 Ml	Pcs	Rp 2.000	400	300	700	Rp 1.400.000
59	Ngt No 8. 40 Cm	Pcs	Rp 27.000	20	30	50	Rp 1.350.000
60	I.V. Cath No 20	Pcs	Rp 3.700	200	160	360	Rp 1.332.000
61	Infuset Mikro	Pcs	Rp 7.000	100	90	190	Rp 1.330.000
62	Ngt No. 16	Pcs	Rp 23.000	0	50	50	Rp 1.150.000
63	Slik 3/0 Taper 1/2 C - 20 Mm	Pcs	Rp 8.900	72	48	120	Rp 1.068.000
64	Plesterin Bulat	Box	Rp 31.080	18	16	34	Rp 1.056.720
65	Clot Activator 4 Ml	Box	Rp 148.000	2	5	7	Rp 1.036.000
66	Gelang Pink Dewasa	Pcs	Rp 1.000	0	1000	1000	Rp 1.000.000
67	Poliban 6 Inch	Roll	Rp 40.800	24	0	24	Rp 979.200
68	Infuset Pump	Pcs	Rp 9.224	20	80	100	Rp 922.400
69	Syringe 1 Cc	Pcs	Rp 650	700	700	1400	Rp 910.000
70	Sarung Tangan Panjang Steril No 7,5	Psg	Rp 6.000	100	50	150	Rp 900.000
71	Slik 2/0 Taper 1/2 C - 30 Mm	Pcs	Rp 7.000	84	24	108	Rp 756.000
72	Foley Cath No 16	Pcs	Rp 7.500	30	70	100	Rp 750.000
73	Slik 3/0 R. Cutting 3/8c 26 Mm	Pcs	Rp 8.900	36	48	84	Rp 747.600
74	Objek Glass 72	Box	Rp 20.867	12	22	34	Rp 709.478
75	Trocar No 28	Pcs	Rp 200.100	0	3	3	Rp 600.300
76	Ngt No 5. 100 Cm	Pcs	Rp 59.500	10	0	10	Rp 595.000
77	Gypsona 6 Inch	Roll	Rp 40.000	14	0	14	Rp 560.000
78	Slik 2/0 R. Cutting 3/8c 26 Mm	Pcs	Rp 7.000	36	36	72	Rp 504.000
79	Gelang Pink Anak	Pcs	Rp 1.000	0	500	500	Rp 500.000
80	I.V. Cath No 18	Pcs	Rp 3.700	60	70	130	Rp 481.000
81	Poliban 4 Inch	Roll	Rp 37.000	12	0	12	Rp 444.000
82	Suction Chateter No. 14	Pcs	Rp 5.540	60	20	80	Rp 443.200
83	Harum Plate	Pcs	Rp 14.000	10	20	30	Rp 420.000
84	Face Mask Nebulizer Child	Pcs	Rp 10.399	18	20	38	Rp 395.162
85	Sarung Tangan Steril Powdered	Psg	Rp 7.770	0	50	50	Rp 388.500
86	Face Mask O2 Non-Breath Child	Pcs	Rp 21.800	13	3	16	Rp 348.800
87	Usg Gel	Btl	Rp 39.600	0	7	7	Rp 277.200
88	Syringe 20 Cc	Pcs	Rp 650	240	150	390	Rp 253.500
89	Kondom Chateter M	Pcs	Rp 12.000	15	5	20	Rp 240.000
90	Slik 1 Taper 1/2 C - 37 Mm	Pcs	Rp 5.000	48	0	48	Rp 240.000
91	Ngt No. 12	Pcs	Rp 23.000	0	10	10	Rp 230.000

92	Suction Pro 72 Dual Lumen 14 Fr	Pcs	Rp 220.000	0	1	1	Rp 220.000
93	Nasal Oxygen Child	Pcs	Rp 7.881	0	23	23	Rp 181.263
94	Suction Chateter No. 6	Pcs	Rp 5.540	0	30	30	Rp 166.200
95	Scavel Blades No 15	Pcs	Rp 812	100	100	200	Rp 162.400
96	Syringe 30 Cc	Pcs	Rp 650	144	100	244	Rp 158.600
97	Underpad	Pcs	Rp 6.500	0	20	20	Rp 130.000
98	Suction Chateter No. 12	Pcs	Rp 5.540	10	10	20	Rp 110.800
99	Guedel 4 Merah	Pcs	Rp 9.250	5	5	10	Rp 92.500
100	Suction Chateter No. 16	Pcs	Rp 5.540	12	0	12	Rp 66.480
101	Pds 0 Taper 1/2 C - 48 Mm	Pcs	Rp 3.916	12	0	12	Rp 46.992
102	I.V. Cath No 14	Pcs	Rp 3.700	5	5	10	Rp 37.000
103	Suction Chateter No. 8	Pcs	Rp 5.540	0	5	5	Rp 27.700
	TOTAL		Rp9.247.436	50315	78674	128989	Rp 909.193.363

3.2. Investment Value

Tabel 3.2 Grups of Inversment Level for Medical Devices in RSUD Dr. Pringadi for Month June-Juli 2023

Investment Grade Group (%)	Number of types of single-use medical devices	Number of types of single-use medical devices (%)	Investment Value (Rp)	Investment Rate (%)
0-70%	11	11%	Rp 642.136.040	70,6%
71-90%	21	20%	Rp 181.953.529	20,0%
91-100%	71	71%	Rp 85.103.749	9,4%
TOTAL	103	100%	Rp 909.193.363	100%

Based on table 3.3, the investment level for disposable medical devices is based on the number of types of medical devices disposable. The 0-70% investment group owns 11 types of disposable medical devices investment value of Rp 642,136,040.00 or 70.6% of the total investment. Groups belonging to that level 71-90% investment owns 21 types of disposable medical devices with an investment value of Rp 181,953,529.00 or 20 total investment. And those belonging to the 91-100% investment level group have 71 types of disposable medical devices with an investment value of Rp 85,103,749.00 or 9.4% of the total investment.

3.3. Inventory Control

At present the method applied by RSUP Dr. Pringadi is not in accordance with effective control. by therefore in this study using the method of inventory control. so that this can help the Pharmaceutical Warehouse in inventory control.

3.4. Calculating Disposable Medical Device Inventory Control Using the Economic Order Quantity (EOQ)

To find out the optimal and optimal number of orders for each order on disposable medical devices at RSUD Dr. Pringadi can use the Economic Order method Quantity (EOQ). In this EOQ calculation requires data regarding storage costs and booking fees.

a. Oderi Fee (Ordering Cost)

According to (Adhelita, 2019) ordering costs are costs incurred at the time of manufacture order starts. The cost of the order can be calculated from the cost of telephone, defta book, defta book and ink rates black printers. The following table calculates the cost of ordering at the Pharmacy Warehouse of RSUD Dr. Pringadi

Tabel 3.2 Total Cost Per Order of Disposable Medical Devices at RSUD Dr. Pringadi

No	Component	Ordering Cost
1	Telephone Rates	Rp 3.870

	2	Adm Fees		Rp 315,400	
		Total		**Rp 4.185,40**	

b. Storage Fee (Holding Cost)

Storage costs are storage costs for goods. Storage fee can, items that are used are stored too long. Storage fee according to heizer in (Denita et.al, 2020) which is 26% of the unit price or cost each unit. After knowing the results of the calculation of the total cost of ordering and storage costs as well as the amount of use of disposable medical devices then economic calculations are carried out order quantity or find out the optimal order quantity for each type of disposable medical device in one order. The following is an example of the results of calculations using the Economic method formula The Order Quantity on Ultrasound Paper - 110 Hg is as follows.

Where:
$D = 1870$
$S = $ Rp 4.184.40
$H = 26\% \times$ Rp 181.000.00 $=$ Rp 47.060.00
Q?

Answer:

$$Q = \sqrt{\frac{2 \times 1870 \times \text{Rp } 4.184.40}{\text{Rp } 47.060.00}} = \sqrt{\frac{\text{Rp } 15.649.656}{\text{Rp } 47.060}} = \sqrt{33255} = 182$$

So, the optimal number of orders for each order of Usg Paper – 110 Hg is 182 rolls. The following is a table for calculating disposable medical devices using the EOQ method.

Tabel 3.3 Calculation of Disposable Medical Devices Using the the high Inversment grop *Economic Order Quantity Method.*

No	Disposible Medical Dvices	Price *e-catalogue*	Amount (D)	Ordering Cost (S)	Holding Cost (H)	Optimal Number Of Order (EOQ)
1	Usg Paper - 110 Hg	Rp 181.000	1870	Rp 4.184,40	Rp 47.060	18
2	Film Dve 28 X 35	Rp 25.200	2125	Rp 4.184,40	Rp 6.552	52
3	Tubex Tf	Rp 3.000.000	13	Rp 4.184,40	Rp 780.000	0
4	Cvc Double Lumen Hd 12 Fr 1	Rp 1.715.000	20	Rp 4.184,40	Rp 445.900	0
5	Electrode Skintac Foam 30	Rp 15.400	2070	Rp 4.184,40	Rp 4.004	65
6	Hand Rub 500 Ml	Rp 70.000	450	Rp 4.184,40	Rp 18.200	14
7	Sarung Tangan Non Steril Ukr M	Rp 37.500	750	Rp 4.184,40	Rp 9.750	25
8	Elvasense Strip Alat Gula Darah	Rp 8.950	3000	Rp 4.184,40	Rp 2.327	104
9	Hand Scrub 500 Ml	Rp 48.000	490	Rp 4.184,40	Rp 12.480	18
10	Infuset Makro	Rp 5.000	3600	Rp 4.184,40	Rp 1.300	152
11	Fixomul 10 Cm X 5 M	Rp 39.960	424	Rp 4.184,40	Rp 0.389,60	18

3.5. Calculating Control of Disposable Medical Devices Using Buffer Stock

To determine the buffer stock required service level or level of success of the request for an item and also in terms of performance achievement targets. So, the service level is 95% and the lead time is cash ie 2 days. RSUD Dr. Pringadi has used the min-max system but it is not enough carry out safety stock control because it can occur if there is no starch calculation later supply shortages may occur. Buffer Stock can determine reordering at RSUD Dr. Pringadi. when the buffer stock is below the minimum supply. Here, as an example of the result. The calculation uses the formula for the buffer stock method and ROP on USG Paper - 110 Hg, which is as follows.

1. Calculating *Buffer Stock*
   Where:
   $Z = 1,65$
   $d = 31$
   $l = 2\ days$
   $SS?$
   Answer: $SS = 1,65 \times 31 \times 3 = 102$

Then, through the calculation of the buffer stock can be known the amount of safety stock for Usg Paper - 110 Hg yaitu 102 roll.

2. Calculation *Reorder Point* (ROP)
   Where:
   $d = 31$
   $l = 2\ days$
   $SS = 102$
   ROP?
   Answer: $ROP = (31 \times 2) + 102 = 164$

So, the Usg Paper Reorder Point - 110 Hg is 164 rolls from the calculation of the stock buffer and reorder point meaning in 2 days with an average usage per day of 31 and when to order again minimum stock reaches 164 rolls. The following table calculates the buffer stock and reorder point (ROP) methods.

Tabel 3.4 Calculation of Disposable Medical Devices Using The High inversment *Buffer Stock* and *Reorder Point* Methods

No	Disposable Medical Devices	Unit	*Service Level (Z)*	*Lead Time (l)*	Avarage Daily Use (d)	*Buffer Stock (SS)*	Return Order (ROP)
1	Usg Paper - 110 Hg	Roll	1,65	2	31	102	164
2	Film Dve 28 X 35	Sheet	1,65	2	35	116	186
3	Tubex Tf	Box	1,65	2	0	0	0
4	Cvc Double Lumen Hd 12 Fr 1	Pcs	1,65	2	0	1	1
5	Electrode Skintac Foam 30	Pcs	1,65	2	35	113	183
6	Hand Rub 500 Ml	Btl	1,65	2	8	24	40
7	Sarung Tangan Non Steril Ukr M	Box	1,65	2	13	41	67
8	Elvasense Strip Alat Gula Darah	Pcs	1,65	2	50	165	265
9	Hand Scrub 500 Ml	Btl	1,65	2	8	26	42

| 10 | Infuset Makro | Pcs | 1,65 | 2 | 60 | 198 | 318 |
| 11 | Fixomul 10 Cm X 5 M | Roll | 1,65 | 2 | 7 | 23 | 37 |

3.6. Calculation of EOQ, Buffer Stock and ROP Methods Using POM-QM For Windows

The following is the result of calculating disposable medical devices using the POM-QM Version 4.0 software.

1. USG Paper-110 Hg

The results of the calculation of USG Paper-110 Hg are shown in Figure 1. as follows
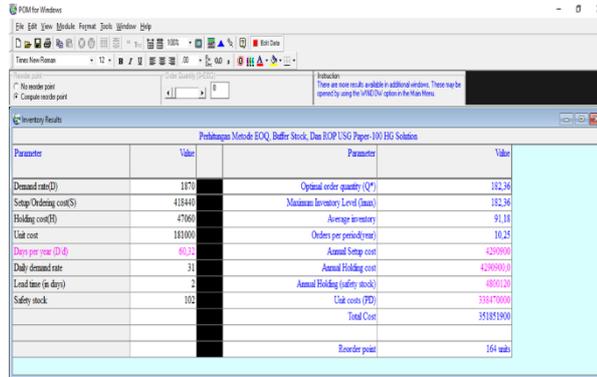
Figure 1. The Calculation Results USG Paper-110 Hg

The result of the calculation above is the optimal number of orders of 182 units with an order period of 10 times every year, with an annual ordering fee of Rp 4,290,900, 102 buffer stocks and order points again known as 164 units. The calculation above can help the pharmaceutical warehouse in carry out inventory control easily so that it is far from the impression of lack of service.

4. CONCLUSION

Based on research at RSUD Dr. Pringadi Medan, the Warehouse section already has a review system inventory control of disposable medical devices through several tools used, namely stock opnem, defta books, stock cards, and e-catalogs. Inventory control of disposable medical devices has not been used Economic Order Quantity (EOQ) method to determine the optimal and fixed number of orders lack of inventory control of safety stock or Buffer Stock (SS) so that orders can be placed point of return or reordering multiple times which can incur ordering costs and investment value as well big. The investment level group for disposable medical devices is based on the number of types of single-use medical devices. those belonging to the 0-70% investment level group have 11 types of disposable medical devices of value investment of Rp 642,136,040.00 or 70.6% of the total investment. Which absorbs financial funds large and the supply must be maintained. To determine the optimal order quantity or Eqonomiq Order Quantity (EOQ) for this group can be ordered from 14 items to 152 items. For the number of safety stock that can be accommodated is 1-198 items. And to do Reorder Point (ROP) ranged from 1-318 items. The group with an investment level of 71-90% owns 21 types of disposable medical devices with an investment value of Rp 181,953,529.00 or 20% of the total investment. To determine the order quantity the optimal Order Quantity or Eqonomiq (EOQ) for this group can be ordered from 2 items and up 21295 items. The number of safety stock that can be stocked is between 2-1237 items. And to perform Reorder Point (ROP) ranging from 4-1987 items. And those belonging to the 91-100% investment level group have 71 types of disposable medical devices with an investment value of Rp 85,103,749.00 or 9.4% of the total investment. To determine the amount The optimal order or Eqonomiq Order Quantity (EOQ) can be ordered from 1 item up to 421 items. The amount of safety stock that can be stocked ranges from 2-247 items. And to do Reorder Point (ROP) ranging from 2-397 items. The difference is in the use of POM-QM software with manual calculations and deep excel know the results of calculating EOQ, Buffer Stock and ROP which are easier with data processing, Find out more about the number of times you order per year and the cost of ordering each type of medical device known and the results are more accurate.

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