

SUMMARY

Efforts To Reduce Stagnant And Stockout Inventory Of Drugs Category A With Perpetual Purchasing Inventory Control Model (Study at Gotong Royong Hospital, Surabaya)

Gotong Royong Hospital is a type D hospital, with 69 beds. The problem raised in this study is the high stock of category A drugs which is stagnant at 9.34%, with an inventory value of Rp. 28,791,545, - and stockout drug inventory of 28.79% with an inventory value of Rp. 246,097,260, - in the first quarter to the fourth quarter of 2017 at the Gotong Royong Hospital, Surabaya. This shows that there is no proper control of drug supply, lack of accurate and precise control of the amount of stock, and lack of proper planning of needs. The purpose of this research is to compile efforts to reduce the stagnant and stockout of category A drug inventories with a perpetual purchasing inventory control model at Gotong Royong Hospital, Surabaya.

Poor drug management can lead to stagnant drug supply (excess drug supply) and stockout (lack of drug supply). A drug inventory is said to be stagnant if the remaining drug remaining at the end of the period is more than three times the average use, for three consecutive times, and the inventory value is obtained by multiplying the amount of stagnant drug at the cost of purchase. A drug inventory is called a stockout if the drug supply is empty, when the total stock is less than the safety stock, and the stockout drug value is obtained by multiplying the amount of the stockout drug by the difference in the cost of purchase, with the selling price of the drug. Perpetual Inventory System is a method of recording inventory that is suitable for fast moving goods, can be ordered at competitive prices, and comes from local sources that are easily available. Perpetual Inventory System is an inventory review process that is carried out continuously and regularly with a minimum inventory that is reviewed with the suitability of its records.

The study was conducted with an intervention based on previous period data collection, treated according to the ABC Analysis formula and method, calculating inventory costs consisting of ordering costs, purchasing costs and storage costs, then calculating lead time and safety stock, calculating Reorder Point values (ROP) and the value of Economic Order Quantity (EOQ). Then do the Perpetual Purchasing Inventory Control Model by reviewing inventory continuously (every day) and regularly, assessing the suitability of its records (SIM-RS), and making an order based on the EOQ value if the inventory position has reached the ROP value. The study was conducted on 82 types of category A drug supplies in the Gotong Royong Hospital Pharmacy Unit in September-November 2019. Evaluation of stagnant and stockout drug supplies is conducted at the end of each month.

Evaluation of the ordering of category A drug inventory with the application of the Perpetual Purchasing Inventory Control Model during

September-November 2019 was that there were 344 (92.23%) orders that were on time and in the right amount according to the ROP value and EOQ value, there were 7 (1.88%) orders that were too fast, and 22 (5.90%) orders were placed late. Evaluation of arrivals based on conformity with the order letter was 215 (57.64%) with the arrival of drugs on time and in the right amount, 5 (1.34%) arrivals of drugs that were the right amount but not on time, 131 (35.12 %) the timely but improper number of drug arrivals, there were 4 (1.07%) with the arrival of drugs that are not on time, and not the right amount, and there were 18 (4.83%) drugs that did not arrive until the intervention period ended. The accuracy of recording the SIM-RS in September included 3 (0.12%) calculations there were discrepancies in recording the SIM-RS of a total of 2,460 calculations, October there were 2 (0.08%) calculations that did not match the total of 2,542 calculations, and November there were 2 (0.08%) discrepancy with the recording of SIM-RS from a total of 2,460 calculations.

Inventories of category A drugs that were stagnant in September were 13 types of drugs (15.85%), in October there were 8 types of drugs (9.76%), and in November there were only 4 types of drugs (4.88%) that were stagnant. The value of inventory that was stagnant in September was Rp. 17,294,003, in October Rp. 16,028,375, and there was a decrease in November to Rp. 15,182,127. The value of stagnant drug stocks continues to decline during the intervention. Inventory of category A drugs that were stockouted during the Perpetual Purchasing by the ROP and EOQ method in September, 10 types of drugs with an inventory value of Rp. 2,467,902, -, in October 2019 there were 16 types of drugs with a stockout value of Rp. 4,475,204 and November 2019 there were 16 types of drugs that were stockout with an inventory value of Rp. 5,516,270. There was an increase in the value of inventory of category A drugs that were stockout, this was due to delays in the availability of drugs from suppliers and/or the occurrence of inventory vacancies, a change in the amount of demand or consumption. The total value of category A drug supplies from September-November 2019 with the same type of category A drug inventory, totaling 82 types of drugs, was obtained in September at Rp. 125,504,473,-, and decreased to Rp. 100,622,610, - in October, then Rp. 96,079,094, - in November 2019. The existence of this decline showed that the Perpetual Purchasing Inventory Control Model was a way of controlling inventory with efficient procurement planning.

The recommendation of this research is the need for coordination and collaboration with the SIM-RS Unit, both IT and programmers, so that the accuracy of the data can be updated or posted automatically, with an automatic reminder system to place orders based on ROP and EOQ values, safety stock recalculation with increasing demand, recalculating drug lead times, establishing good relations and communication with suppliers, including negotiating contracts regarding limits on the number of drugs ordered, lead time, and notification from suppliers, if there are delays in delivery or empty drug stocks, so hospitals can anticipate, and look for alternative suppliers. The implementation of the Perpetual Purchasing Inventory Control Model with logistical cycle flow and modules can be further applied in the Gotong Royong Hospital Pharmacy Unit.

RINGKASAN

Upaya Penurunan *Stagnant* Dan *Stockout* Persediaan Obat Kategori A Dengan *Perpetual Purchasing Inventory Control Model* (Studi di Rumah Sakit Gotong Royong Surabaya)

Rumah Sakit Gotong Royong merupakan rumah sakit tipe D dengan jumlah tempat tidur 69 *beds*. Masalah yang diangkat dalam penelitian ini adalah tingginya persediaan obat kategori A yang *stagnant* 9,34% dengan nilai persediaan sebesar Rp. 28.791.545,- dan persediaan obat *stockout* sebesar 28,79% dengan nilai persediaan sebesar Rp. 246.097.260,- pada periode Triwulan I-IV 2017 di Rumah Sakit Gotong Royong Surabaya. Hal ini menunjukkan belum adanya pengendalian persediaan obat yang baik, belum adanya pengontrolan jumlah stok yang akurat dan tepat, serta belum adanya perencanaan kebutuhan yang benar. Tujuan dari penelitian ini adalah untuk menyusun upaya penurunan *stagnant* dan *stockout* persediaan obat kategori A dengan *Perpetual Purchasing Inventory Control Model* di Rumah Sakit Gotong Royong Surabaya.

Manajemen obat yang kurang baik mengakibatkan persediaan obat mengalami *stagnant* (kelebihan persediaan obat) dan *stockout* (kekurangan persediaan obat). Persediaan obat *stagnant* apabila sisa obat akhir periode lebih dari tiga kali rata-rata pemakaian selama tiga kali berturut-turut, dan nilai persediaan dihitung dari perkalian jumlah obat *stagnant* dengan harga pokok pembelian. Persediaan obat *stockout* apabila persediaan obat kosong, yaitu pada saat jumlah stok yang ada kurang dari *safety stock*, dan nilai persediaan obat *stockout* dihitung dari perkalian jumlah obat *stockout* dengan selisih harga pokok pembelian dengan harga jual obat. *Perpetual Inventory System* suatu metode pencatatan persediaan yang cocok untuk barang-barang yang bergerak cepat, yang dapat dipesan dengan harga kompetitif, dan berasal dari sumber lokal yang mudah didapat. *Perpetual Inventory System* merupakan proses peninjauan persediaan secara terus menerus dan teratur minimal persediaan ditinjau kesesuaian pencatatannya.

Penelitian dilakukan dengan intervensi berdasarkan pengambilan data periode sebelumnya, diberi perlakuan sesuai dengan rumus dan metode Analisis ABC, menghitung biaya persediaan yang meliputi biaya pemesanan, pembelian dan biaya penyimpanan, kemudian menghitung *lead time* dan *safety stock*, menghitung nilai *Reorder Point* (ROP) dan nilai *Economic Order Quantity* (EOQ). Kemudian melakukan *Perpetual Purchasing Inventory Control Model* dengan meninjau persediaan secara terus menerus (setiap hari) dan teratur, kesesuaian pencatatannya (SIM-RS), dan dilakukan pemesanan berdasarkan nilai EOQ bila posisi persediaan sudah mencapai nilai ROP. Penelitian dilakukan terhadap 82 jenis persediaan obat kategori A di Unit Farmasi Rumah Sakit Gotong Royong pada bulan September-November 2019. Evaluasi persediaan obat *stagnant* dan *stockout* dilakukan setiap akhir bulan.

Evaluasi pemesanan persediaan obat kategori A dengan penerapan *Perpetual Purchasing Inventory Control Model* selama September-November

2019 adalah terdapat 344 (92,23%) pemesanan yang tepat waktu dan tepat jumlah sesuai nilai ROP dan nilai EOQ, terdapat 7 (1,88%) pemesanan yang terlalu cepat, dan 22 (5,90%) pemesanan yang terlambat dilakukan. Evaluasi kedatangan dilakukan berdasarkan kesesuaian dengan surat pesanan terdapat 215 (57,64%) kedatangan obat yang tepat waktu dan tepat jumlah, 5 (1,34%) kedatangan obat yang tepat jumlah namun tidak tepat waktu, 131 (35,12%) kedatangan obat yang tepat waktu tetapi tidak tepat jumlah, ada 4 (1,07%) kedatangan obat yang tidak tepat waktu dan tidak tepat jumlah, dan ada 18 (4,83%) obat yang tidak datang sampai masa intervensi berakhir. Keakuratan pencatatan SIM-RS pada September terdapat 3 (0,12%) perhitungan ketidaksesuaian pencatatan pada SIM-RS dari total 2.460 perhitungan, Oktober terdapat 2 (0,08%) perhitungan yang tidak sesuai dari total 2.542 perhitungan, dan November terdapat 2 (0,08%) ketidaksesuaian dengan pencatatan SIM-RS dari total 2.460 perhitungan.

Persediaan obat kategori A yang *stagnant* pada bulan September sebanyak 13 jenis obat (15,85%), Oktober menjadi 8 jenis obat (9,76%), dan November hanya ada 4 jenis obat (4,88%) yang mengalami *stagnant*. Nilai persediaan yang mengalami *stagnant* pada September sebesar Rp. 17.294.003, sebesar Rp. 16.028.375 pada Oktober, dan terjadi penurunan kembali pada November menjadi sebesar Rp. 15.182.127,-. Nilai persediaan yang *stagnant* ini mengalami penurunan terus selama dilakukan intervensi. Persediaan obat kategori A *stockout* saat dilakukan *Perpetual Purchasing* dengan metode ROP dan EOQ pada bulan September terdapat 10 jenis obat dengan nilai persediaan sebesar Rp. 2.467.902,-, Oktober 2019 sebanyak 16 jenis obat dengan nilai *stockout* sebesar Rp. 4.475.204,- dan November 2019 terdapat 16 jenis obat *stockout* dengan nilai persediaan sebesar Rp. 5.516.270,-. Terjadi peningkatan nilai persediaan obat kategori A *stockout*, hal ini dikarenakan karena keterlambatan kesediaan obat dari pemasok dan/atau terjadinya kekosongan persediaan, adanya perubahan jumlah kebutuhan atau konsumsi. Total nilai persediaan obat kategori A dari September-November 2019 dengan jumlah jenis persediaan obat kategori A yang sama, yaitu sebanyak 82 jenis obat, didapatkan pada September sebesar Rp. 125.504.473,-, menurun menjadi sebesar Rp. 100.622.610,- pada Oktober, dan menjadi sebesar Rp. 96.079.094,- pada November 2019. Adanya penurunan ini menunjukkan bahwa *Perpetual Purchasing Inventory Control Model* merupakan suatu cara pengendalian persediaan dengan perencanaan pengadaan yang efisien.

Rekomendasi dari penelitian ini adalah koordinasi dan kolaborasi dengan Unit SIM-RS, baik IT maupun programmer, agar keakuratan data dapat update atau *posting* secara otomatis tersedia sistem reminder otomatis untuk dilakukan pemesanan berdasarkan nilai ROP dan EOQ, menghitung ulang *safety stock* dengan kenaikan kebutuhan, menghitung kembali *lead time* obat, membina hubungan dan komunikasi yang baik dengan pemasok, termasuk negosiasi kontrak mengenai batas jumlah obat yang dipesan, batas waktu pengiriman (*lead time*), dan adanya pemberitahuan dari pemasok apabila ada keterlambatan pengiriman atau kekosongan obat sehingga rumah sakit dapat mengantisipasi, mencari alternatif pemasok yang lain. Penerapan *Perpetual Purchasing Inventory Control Model* dengan alur siklus logistik dan modul dapat terus diterapkan di Unit Farmasi Rumah Sakit Gotong Royong.

ABSTRACT**Efforts To Decrease Stagnant And Stockout Inventory Of Drugs Category A
With Perpetual Purchasing Inventory Control Model
(Study at Gotong Royong Hospital, Surabaya)**

According to Regulation of Minister of Health of Republic of Indonesia no. 72 in 2016, drugs absorb a budget of 33-66% in hospitals. The high stagnant category A drugs were 9.34 and the stockout of 28.79% in 2017 at the Gotong Royong Hospital showed that there is no good control of drug supply. The purpose of this study was to compile efforts to reduce the stagnant and stockout of category A drug inventories with a perpetual purchasing inventory control model at Gotong Royong Hospital, Surabaya. This process is a continuous and regular inventory review of the minimum inventory in terms of the suitability of its records.

The study was conducted with an intervention based on previous period data collection, analyzed by ABC, calculated inventory costs, including ordering costs, purchase and storage costs, lead time and safety stock, Reorder Point (ROP) value and Economic Order Quantity (EOQ) value, performed Perpetual Purchasing Inventory Control Model by reviewing inventory continuously (every day) and regularly, suitability of recording (SIM-RS), and ordering is based on the EOQ value when the inventory position has reached the ROP value. The study was conducted on 82 types of category A drug supplies in the Gotong Royong Hospital Pharmacy Unit in September-November 2019.

The results of the September-November 2019 study showed that there were 92.23% on-time orders on time, 1.88% on orders too soon, and 5.90% on late orders. Evaluation of arrivals is done based on conformity with the order letter, there are 57.64% of drug arrivals on time, 1.34% on time, 35.12% on time, incorrect number, 1.07% on time not on time exact amount, and there were 4.83% of the drugs not coming until the study period ended. Inaccuracies in recording the September RS-RS are 0.12%, October 0.08% and November 0.08%. The average inventory of category A drugs before the intervention was compared after the intervention which was stagnant decreased by 50.13%, a decrease in stockout by 68.74%, and the total inventory value of category A drugs decreased by 48.67%.

The conclusion of the study is that the Perpetual Purchasing Inventory Control Model is effective and efficient in reducing stagnant and stockout.

Keywords: Economic Order Quantity, Perpetual Purchasing Inventory Control Model, Reorder Points, Stagnant, Stockout

ABSTRAK

Upaya Penurunan *Stagnant* Dan *Stockout* Persediaan Obat Kategori A Dengan *Perpetual Purchasing Inventory Control Model* (Studi di Rumah Sakit Gotong Royong Surabaya)

Menurut Permenkes 72 tahun 2016, bahwa obat-obatan menyerap anggaran sebesar 33-66% di rumah sakit. Tingginya obat kategori A *stagnant* 9,34% dan *stockout* 28,79% pada tahun 2017 di Rumah Sakit Gotong Royong, menunjukkan belum adanya pengendalian persediaan obat yang baik. Tujuan dari penelitian ini untuk menyusun upaya penurunan *stagnant* dan *stockout* persediaan obat kategori A dengan *perpetual purchasing inventory control model* di Rumah Sakit Gotong Royong Surabaya. Yaitu proses peninjauan persediaan secara terus menerus dan teratur minimal persediaan ditinjau kesesuaian pencatatannya.

Penelitian dilakukan dengan intervensi berdasarkan pengambilan data periode sebelumnya, dianalisis ABC, dihitung biaya persediaan yaitu biaya pemesanan, pembelian dan biaya penyimpanan, *lead time* dan *safety stock*, nilai *Reorder Point* (ROP) dan nilai *Economic Order Quantity* (EOQ), dilakukan *Perpetual Purchasing Inventory Control Model* dengan meninjau persediaan secara terus menerus (setiap hari) dan teratur, kesesuaian pencatatannya (SIM-RS), dan dilakukan pemesanan berdasarkan nilai EOQ bila posisi persediaan sudah mencapai nilai ROP. Penelitian dilakukan terhadap 82 jenis persediaan obat kategori A di Unit Farmasi Rumah Sakit Gotong Royong pada September-November 2019.

Hasil penelitian September-November 2019 adalah terdapat 92,23% pemesanan tepat waktu tepat jumlah, 1,88% pemesanan terlalu cepat, dan 5,90% pemesanan terlambat. Evaluasi kedatangan dilakukan berdasarkan kesesuaian dengan surat pesanan terdapat 57,64% kedatangan obat tepat waktu tepat jumlah, 1,34% tepat jumlah tidak tepat waktu, 35,12% kedatangan tepat waktu tidak tepat jumlah, ada 1,07% tidak tepat waktu tidak tepat jumlah, dan ada 4,83% obat tidak datang sampai masa penelitian berakhir. Ketidakakuratan pencatatan SIM-RS September terdapat 0,12%, Oktober terdapat 0,08% dan November 0,08%. Persediaan rata-rata obat kategori A sebelum intervensi dibandingkan setelah dilakukan intervensi yang *stagnant* turun sebesar 50,13%, penurunan *stockout* sebesar 68,74%, dan total nilai persediaan obat kategori A menurun sebesar 48,67%.

Kesimpulan penelitian adalah *Perpetual Purchasing Inventory Control Model* efisien dalam menurunkan *stagnant* dan *stockout*.

Kata kunci: *Economic Order Quantity*, *Perpetual Purchasing Inventory Control Model*, *Reorder Point*, *Stagnant*, *Stockout*