

The Prediction of Return Quality Medical Record Documents William Booth Hospital, Semarang

Amalia Azizah¹, Ayu Permata², Jaka Prasetya¹ and Slamet Isworo^{3*}

¹Department of Medical Record, Faculty of Health, Dian Nuswantoro University, Semarang, Indonesia.

²Department of Medical Record, William Booth General Hospital, Semarang, Indonesia.

³Department of Environmental Health, Faculty of Health, Dian Nuswantoro University, Semarang, Indonesia.

Authors' contributions

This research has been carried out in collaboration among all authors. Author AA writer designed the study and the sample did statistical analysis and wrote the first draft of the manuscript. Authors SI and AA write the protocol and manage the analysis of this study. Authors AP and JP writer manages the literature search and has taken a sample. All authors have read and agreed to the final manuscript.

Article Information

Editor(s):

(1) Dr. Arun Singh, Rohilkhand Medical College and Hospital Bareilly, India.

Reviewers:

(1) Mohammed Sarwar Mir, SKIMS, India.

(2) Yenesi del Carmen Jiménez Acosta, Tec de Monterrey, México.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/58528>

Case Study

Received 25 April 2020

Accepted 01 July 2020

Published 18 July 2020

ABSTRACT

Objective: Completeness of medical records and the accuracy of returning medical records to assembling units in hospitals is one indicator of service quality. This study aims to obtain an overview of the quality and speed of return of medical records from hospital ward service units to medical record units and to be the basis for improving quality in-hospital services.

Methods: This research was conducted from 6 February to 21 March 2020 in a qualitative descriptive method with observation, in-depth interviews with medical records officers.

Results: Based on the results of the study, the predicted percentage of achieving medical record return for all wards with a target of 100% will be achieved in the 54th month with a modeling trend of $y = 0.2254x + 84.887$. While the modeling trends of each ward are as follows: a). Kasandra Ward $y = 0.034x + 0.6947$ with 100% of the target will be achieved in the 93rd month. b). Agatha ward $y = 0.047x + 0.972$ with a target of 100% will be achieved in the 6th month, c). Benetha Ward $y = 0.047x + 0.967$ with a target of 100%, to be achieved in the 8th month. d) Perinatology Ward $y = 0.0037x + 0.7776$ with a target of 100% will be achieved in the 61st month.

*Corresponding author: E-mail: slametisworo512@gmail.com;

Conclusion: Return of medical records at a bad intention booth house will meet the quality indicators according to the target of 100% between 6 months to 93 months starting from January 2019.

Suggestion: Improved socialization to medical personnel regarding deadlines for returning medical records including gifts and penalties for all workers medically responsible.

Keywords: Service quality; late returns; medical records; standard operational procedures; trend modeling; quality indicators.

1. PRELIMINARY

Indicators of hospital service quality can be assessed based on indicators of professional human resources in the health sector and indicators of adequate facilities and infrastructure. Therefore, hospitals must have indicators or benchmarks so that the quality of medical services and support services are well maintained [1]. One part of health services to determine the quality of services in hospitals is to provide complete information, including the quality of medical records documents that are good and complete and the speed of returning documents [2].

An integrated health information system is able to produce complete, accurate, relevant and timely data and is one of the most important components in decision making in the health sector within the hospital. Implementation of health information systems must be carried out thoroughly in all service units to support the achievement of quality service quality based on predetermined operational standards. [3] The speed of providing medical record documents can be an indicator in measuring satisfaction, it is often found that the supply of medical record documents is less than optimal and experiencing delays in the process of returning to the assembling unit in the medical records department so that it can cause disruption to the quality of hospital services [4].

Medical record document is a file containing patient identity data, patient social data, and patient medical data that is stored systematically so that at any time it can be used or found again in a health service. Medical record documentation is a means of communication between the treating doctor and all officers involved in the handling of these patients. Management of medical records in hospitals plays an important role in supporting health administration, therefore managing records in the return of efficient medical record documents are essential to support the quality of service.

Completeness, accuracy of filling and timeliness of taking medical record documents still receive less attention, thus becoming an obstacle to the process of speeding the quality of service to patients [5]. The average number of the incompleteness of filling medical record documents causes the percentage of return of medical record documents that do not meet the hospital operating procedure standards (around 65% of the standard / 100% target) [6]. Research by Sukiatur (2017) Medical Record document in the inpatient program of the Health Social Security Provider at RSUD dr. Iskak Tulungagung shows that most medical record documents are incomplete resumes of 52.1%, most of them have an inaccurate diagnosis code of 58.6%. The quality of medical records documents is reflected in the documents listed in the patient's medical records, so there needs to be an evaluation and evaluation of the process of organizing and managing medical record documents. The problem that often arises in filling out medical record documents is the filling process is incomplete and the writing of the doctor is less specific about the patient's diagnosis. This causes the processing of patient data disrupted and affect the quality of services provided to patients [7].

William Booth General Hospital is one of the best hospitals in the city of Semarang that is improving the quality of all aspects of medical services and medical support by preparing the optimization of hospital national accreditation quality standards. The quality of a hospital's services can not only be seen from the medical services provided but also the medical support services available at the hospital, one of which is the service that needs to be improved, namely the accuracy of returning medical records from the ward to the medical record unit <24 hours according to with the standards in the hospital. William Booth Hospital has a target of achieving 100% quality indicators. Therefore the hospital needs to predict the achievement of targets to be achieved so that in the future it can prepare things that need to be improved to improve the

quality of service to patients, it is necessary to have a follow-up to improve the achievement of quality indicators that have been set as a standard operational procedure so that targets can be achieved in accordance with the standards set by the hospital [8,9].

This study aims to determine the overview and base line of the estimated achievement of the quality indicators of returning medical record documents at the Williambooth general hospital and to know the target of achieving the quality indicators of returning medical record documents in accordance with predetermined standards, so that they can be input for managers of the William Both Hospital in improving quality of patient care.

2. METHODS

This research uses a descriptive method with a quantitative approach. Descriptive research describes the condition of the medical record documentation as it is without giving special treatment to the existing events. While the quantitative approach is a way of collecting data, processing data to analyze data using statistical calculations with the linear regression trend line approach [10] Data collection in this study was obtained from primary data sources through interviews with medical staff and secondary data using a recapitulation report on the accuracy of returning medical records in January 2019 - February 2020 at Willam Booth General Hospital,

Semarang. The data that has been obtained is processed using a linear linear regression trend model that aims to estimate the prediction of data in the specified time period [11].

The purpose of descriptive research with a quantitative approach is to explain a condition that will be examined by observation and interviews with the support of library studies so as to further strengthen the analysis in making conclusions, where research results are obtained from the calculation of indicators [12].

3. RESULTS AND DISCUSSION

Based on the analysis of the return of medical records document data from all wards at William Booth Hospital are Casandara ward, Agatha ward, Benetha ward, the prediction results obtained for each ward and medical record document parameters (total medical records, timely medical records, medical records timely category complete and medical records category incomplete) at a certain time with a target percentage of 100%

The best average percentages were the Agatha ward (101%), Benetha (100%) Perinatology (81%) and Agatha (72%) (Fig. 1).

Whereas the trend in modeling the percentage of achievement of medical record documents for each ward, as follows (Fig. 2).

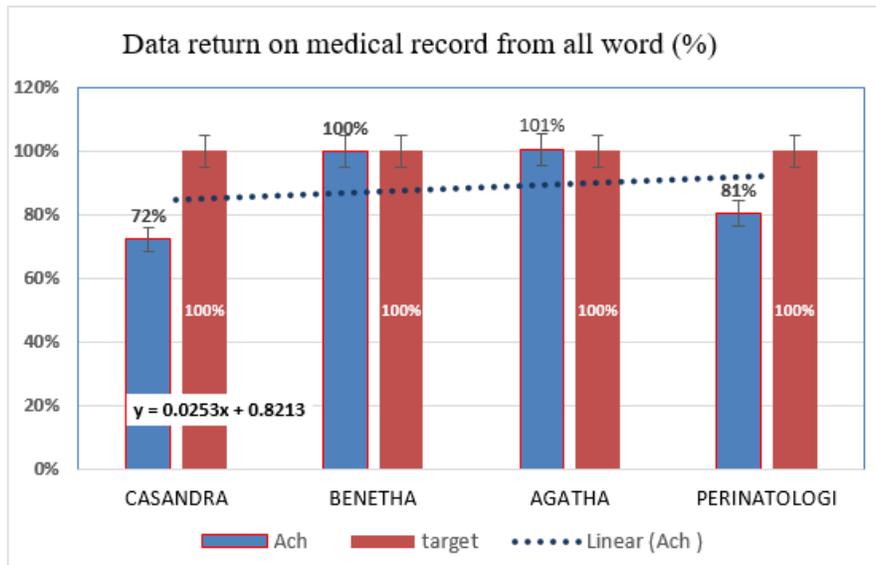


Fig. 1. Percentage of average achievements from hospital wards

Table 1. Data return of medical records from the ward to the assembly unit - medical record department's

Jan-19	cm	tw	twl	twtl	Feb-19	cm	tw	twl	twtl	Mar-19	cm	tw	twl	twtl
Casandra	193	123	118	5	Casandra	226	168	161	6	Casandra	231	174	168	7
Benetha	162	142	139	3	Benetha	189	194	190	4	Benetha	193	202	198	4
Agatha	47	41	39	2	Agatha	54	56	53	3	Agatha	56	59	55	3
Perinatology	4	3	3	1	Perinatology	5	4	3	1	Perinatology	5	4	3	1
Mar-19	cm	tw	twl	twtl	Apr-19	cm	tw	twl	twtl	May-19	cm	tw	twl	twtl
Casandra	231	174	168	7	Casandra	219	157	151	6	Casandra	228	170	164	6
Benetha	193	202	198	4	Benetha	183	182	178	4	Benetha	191	197	193	4
Agatha	56	59	55	3	Agatha	53	53	50	3	Agatha	55	57	54	3
Perinatology	5	4	3	1	Perinatology	5	4	3	1	Perinatology	5	4	3	1
Jun-19	cm	tw	twl	twtl	Jul-19	cm	tw	twl	twtl	Aug-19	cm	tw	twl	twtl
Casandra	210	144	138	5	Casandra	205	137	132	5	Casandra	220	159	153	6
Benetha	175	167	163	4	Benetha	171	159	156	3	Benetha	184	184	180	4
Agatha	50	48	46	3	Agatha	49	46	43	3	Agatha	53	53	50	3
Perinatology	5	4	3	1	Perinatology	5	3	3	1	Perinatology	5	4	3	1
Sep-19	cm	tw	twl	twtl	Oct-19	cm	tw	twl	twtl	Nov-19	cm	tw	twl	twtl
Casandra	230	173	167	7	Casandra	225	165	159	6	Casandra	226	168	161	6
Benetha	192	201	196	4	Benetha	188	192	187	4	Benetha	189	194	190	4
Agatha	55	58	55	3	Agatha	54	56	52	3	Agatha	54	56	53	3
Perinatology	5	4	3	1	Perinatology	5	4	3	1	Perinatology	5	4	3	1
Dec-19	cm	tw	twl	twtl	Jan-19	cm	tw	twl	twtl	Feb-19	cm	tw	twl	twtl
Casandra	227	169	162	6	Casandra	231	175	169	7	Casandra	220	158	152	6
Benetha	190	195	191	4	Benetha	193	203	198	4	Benetha	184	183	179	4
Agatha	55	57	53	3	Agatha	56	59	55	3	Agatha	53	53	50	3
Perinatology	5	4	3	1	Perinatology	5	4	3	1	Perinatology	5	4	3	1

Note: cm = medical record, tw= documents return on time, twl=documents return complete on time, twtl = timely return of incomplete documents

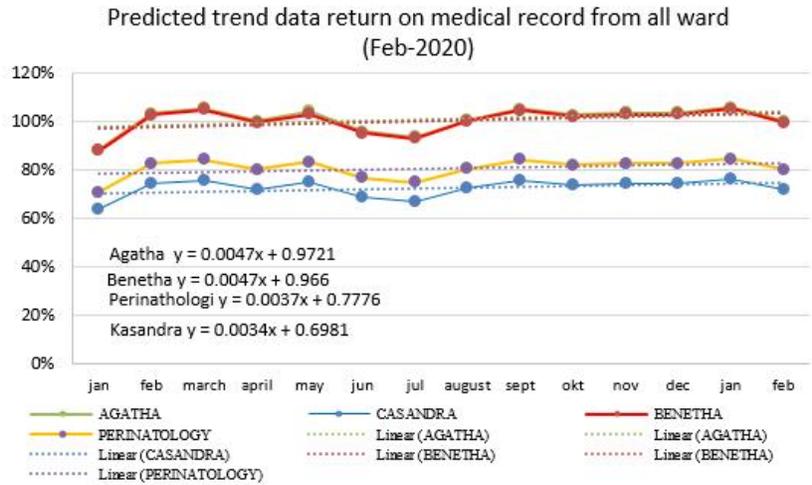


Fig. 2. Prediction of trends in the number of return of medical record documents to the assembling unit of each ward

All modeling values have a linear equation with positive value trends, as follows: Agatha ward $y = (+) 0.0047x + 0.972$, Benetha ward with linear equation $y = (+) 0.0047x + 0.966$, Perinatology ward with linear $y = (+) 0.0037x + 0.776$ and Casandra wards with linear equations $y = (+) 0.0034x + 0.6981$. Based on the trend liner percentage of achieving the medical record document return on the Agatha ward, the prediction will reach 100% target in the 6th month (July 2019), the predicted ward will be reached in the 8th month (August 2019), the predicted Perinatology ward is achieved in the 62nd month (the feb

2024) and the Kasandra ward predicted to be reached in the 88th month (March 2026). Predictions are calculated starting from January 2019.

This research also predicts that based on parameter data of medical record documents including total medical records (cm), timely medical record documents (tw), timely medical record documents complete categories and medical records documents but time categories are incomplete (twtl) [13] Fig. 3 shows the number of medicinal rakam documents from all wards.

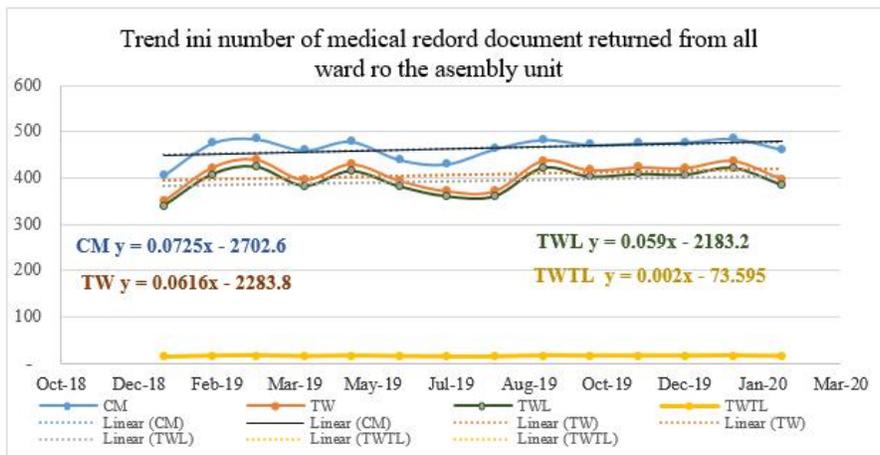


Fig. 3. Trend in the number of medical record documents returned from all wards to the assembly unit

The best trends are the total medical record parameters (cm) with a modeling value of $y = 0.0725x - 2702.6$ and the medical record parameters on time category (tw) with a modeling value of $y = 0.0616x - 2283.8$. The faster the total return of medical records, especially medical records in the timely category, the better the hospital service process [14,15]. The lowest value is on returning documents on time with incomplete categories (twtl) with a modeling value of $y = 0.002x - 73.595$. All the parameters of the medical record document showed a positive trend. this shows an increasing trend in the implementation of returning medical records to the assembly unit.

The next discussion is the trendy modeling of medical records parameters on each ward, as follows:

3.1 Analysis of the Return of Medical Record Documents from the Casandra Ward

Based on the analysis of the parameters of returning medical record documents from Kasandra ward to the assembly unit, namely total medical records (cm), timely medical records (tw), timely medical records complete (twl) and timely medical records incomplete (twtl) and Percentage rate of return of the total parameters of medical record documents (Figs. 4 and 5).

The results of linear regression analysis for total medical records (cm) show modeling results $y =$

$0.0397x - 1551.5$, timely medical records (tw) $y = 0.0561x - 2286.8$, timely complete medical records (twl) $y = 0.0539 - 2199.9$ and timely incomplete medical records (twtl) $y = 0.0021x - 86.84$. this shows that the timely return of medical records (tw) complete medical records (twl) is the best parameter compared to other parameters (biggest positive value). [16] The speed of returning medical records on time and complete medical records on time is very supportive of the quality of service at Wiliam Hospital booth.

Based on the predicted percentage of the rate of return of the medical record, the Kasandra ward trend has a positive trend even though the trend is slow compared to other wards, with a prediction of the 92th month that a target of 100% will be achieved based on modeling $y = 0.0034 + 0.6947$ (August 2026).

3.2 Analysis of the Return of Medical Record Documents from the Benetha Ward

The results of the modeling analysis of the parameters of returning medical record documents from the Benetha ward to the assembling unit are Total Medical Records (cm) $y = 0.0332x - 1264.2$, timely medical record documents (tw) $y = 0.0649x - 2648$, complete medical record documents on time $y = 0.635x - 2590.7$ and the incomplete timely medical record document (twtl) $y = 0.0014 - 57,893$, shown in Figs. 6 and 7.

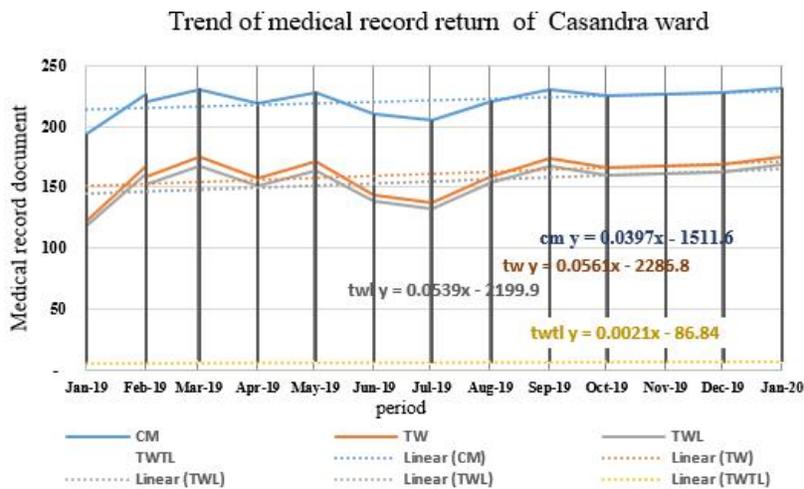


Fig. 4. Trend in the number of medical record documents returned from Casandra wards to the assembly unit

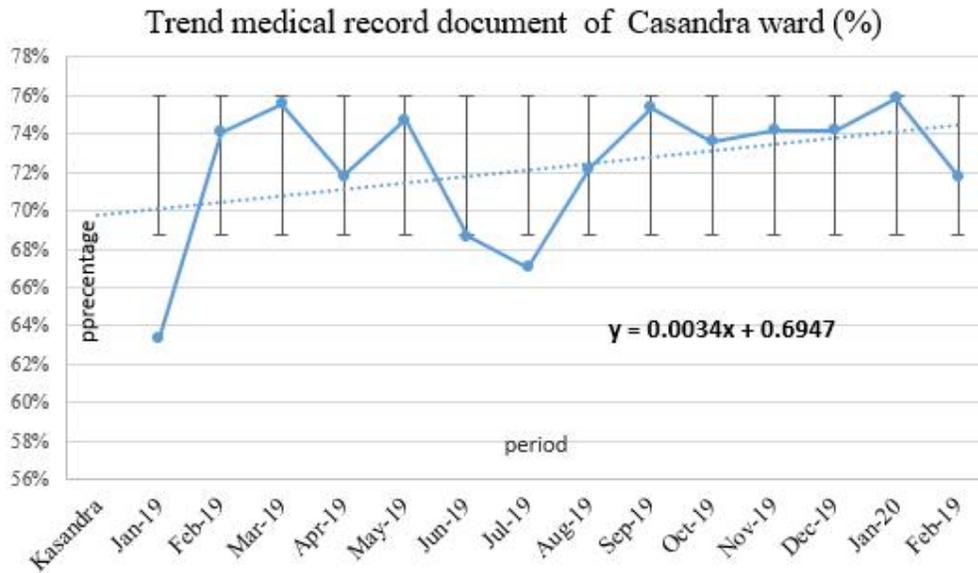


Fig. 5. Trend the percentage of medical record documents returned from Casandra wards to the assembly unit

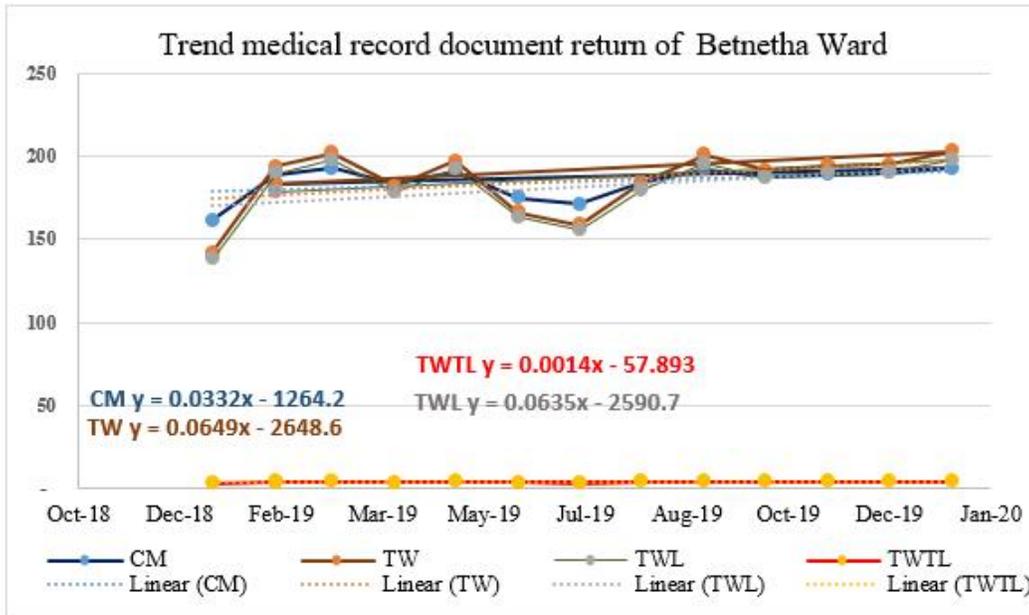


Fig. 6. Trend in the number of medical record documents returned from Bennetha wards to the assembly unit

The best modeling trend is the parameter trend of medical records on time (tw) with the value of the linear equation $y = 0.00649x - 2468.6$ with the lowest value being on the medical record on time is incomplete (twtl) with the equation $y = 0.001x - 57,893$. All parameters show a positive trend, it

shows an increase and improvement during the 2019 period.

Based on these predictions, the modeling trend of the percentage of Benetha wards has a very good positive trend with the equation model $y =$

0.0047 + 9667, so that the prediction of achieving the return of medical records to the assembling unit is reached 100% in the 8th month (August 2019), the ward manager Benetha has done a good action plan and when the study was carried out the percentage of returning the medical documents to the assembling unit was achieved.

3.3 Analysis of the Return of Medical Record Documents from the Agatha Ward

The results of the modeling of returning the number of medic record documents to the assembling unit of the Agatha ward are as follows the parameters of total medical records (cm) $y = 0.0096x - 363.15$, parameters of medical records on time (tw) $y = 0.0188x - 767.09$, parameters of records medical on time complete $y = 0.0177x - 723.6$ and medical records on time incomplete (twtl) $y = 0.001x - 43.42$ (Fig. 8). All parameters have a positive trend, this shows that the activity of returning medical record documents to the assembling unit is appropriate, the twtl parameter (complete timely medical record document) has the best value. While the analysis is based on the trend of the percentage of medical record document return with modeling $y = 0.0047x + 0.972$, the target for the medical record document recovery will be achieved 100% in the 6th month (June

2019) and the activities of returning medical records from the agatha ward to the assembling unit have been carried out with very good [17] (Fig 9).

3.4 Analysis of the Return of Medical Record Documents from the Perinatology Ward

The results of the modeling analysis of returning the number of medical record documents to the assembling unit of the Perinatology ward are as follows medical record parameters (cm) $y = 0.0238x - 4.8395$ parameters of medical records documents on time (tw) $y = 0.0362x - 3.7811$, parameters of medical record documents on time complete $y = 3$ and the timely medical record document is incomplete (twtl) $y = 1$ and all parameters show a positive trend (Fig. 10).

The best modeling trend is the medical record parameters on time (tw) with the value of equation $y = 0.00362X + 3.7811$ and the lowest value is the medical record that is not on time (twtl) with the equation $y = 1$. Analysis based on the percentage of document returns per month with model $y = 0.0037x + 0.776$, based on the equation the percentage of medical record taking to the assembly unit will meet the target of 100% in the 61st month (February 2024) (Fig. 11).

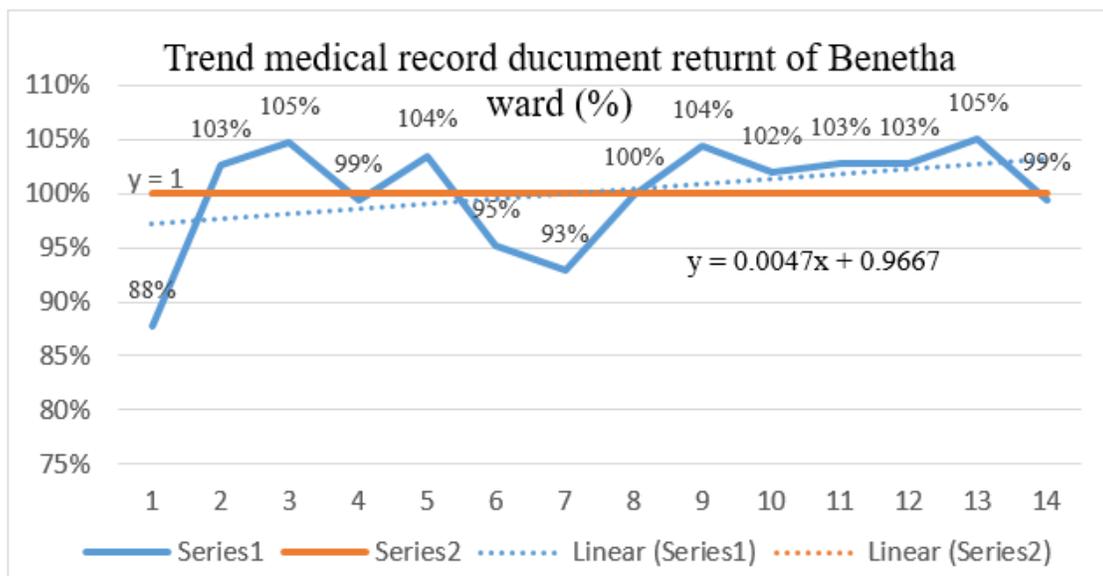


Fig. 7. Trend in the number of medical record documents returned from Benetha wards to the assembly unit

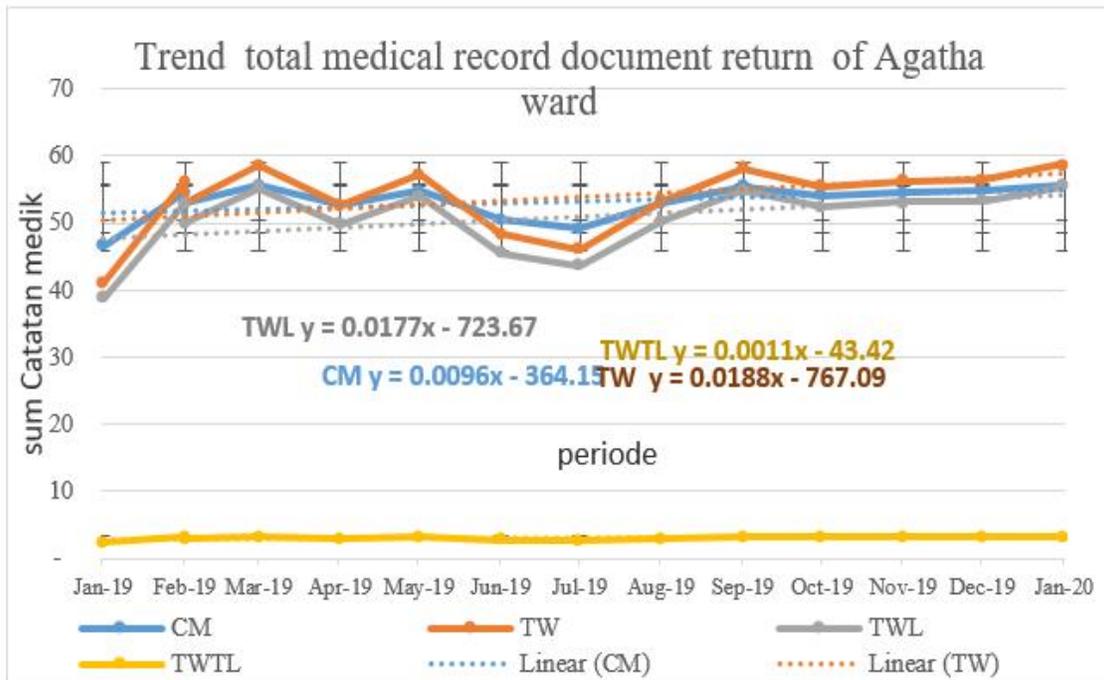


Fig. 8. Trend in the number of medical record documents returned from Agatha wards to the assembly unit

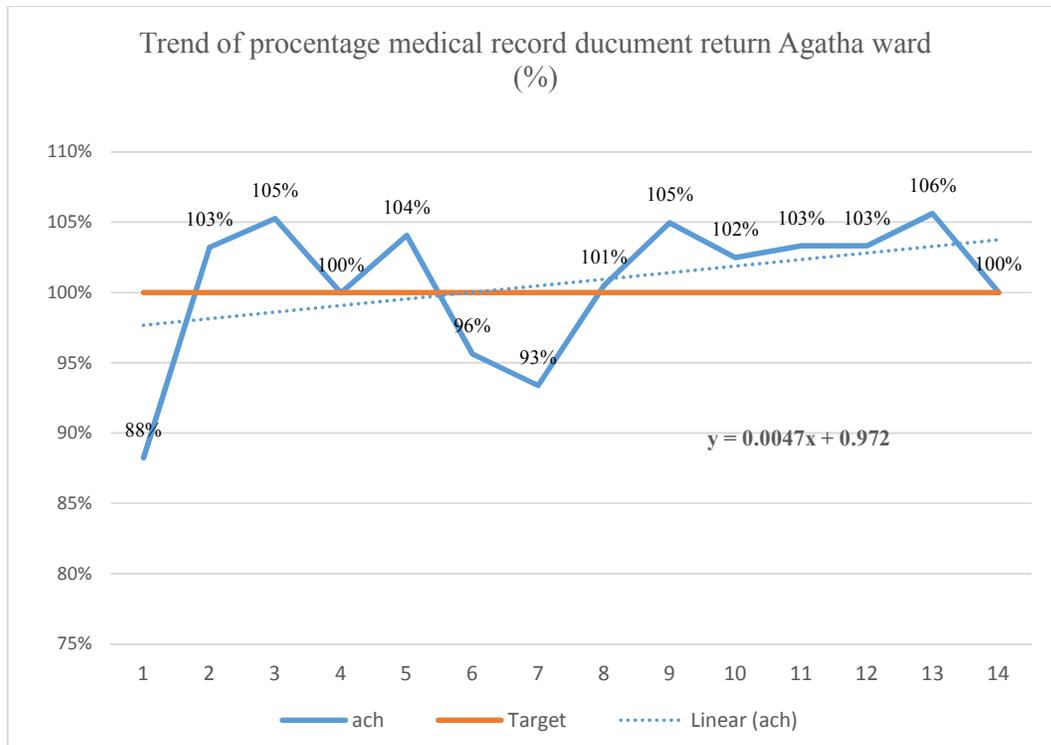


Fig. 9. Trend in the percentage of medical record documents returned from Agatha wards to the assembly unit

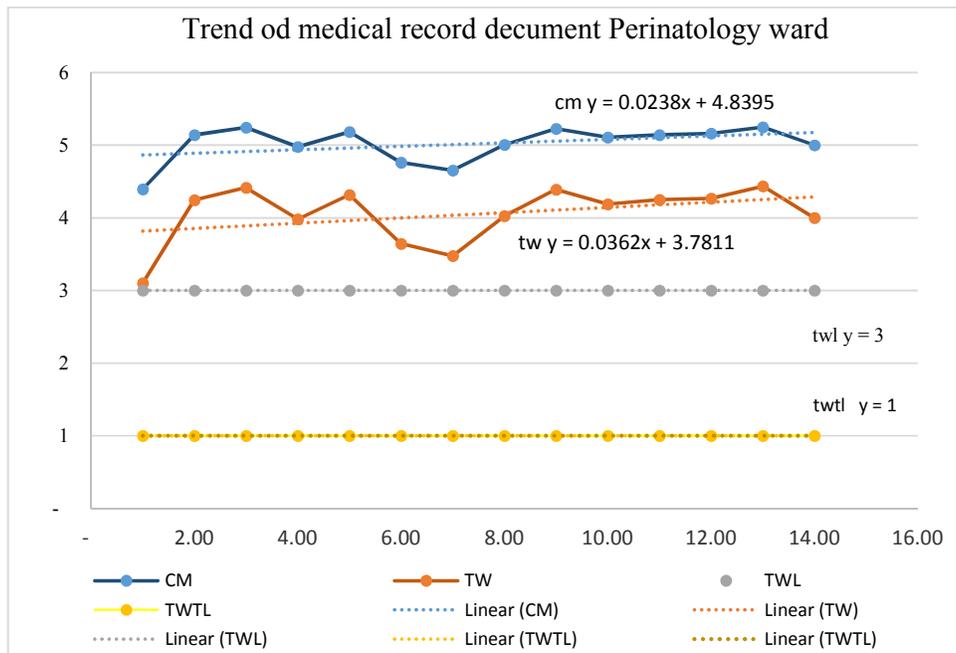


Fig. 10. Trend the total of medical record documents returned from Perinatology wards to the assembly unit

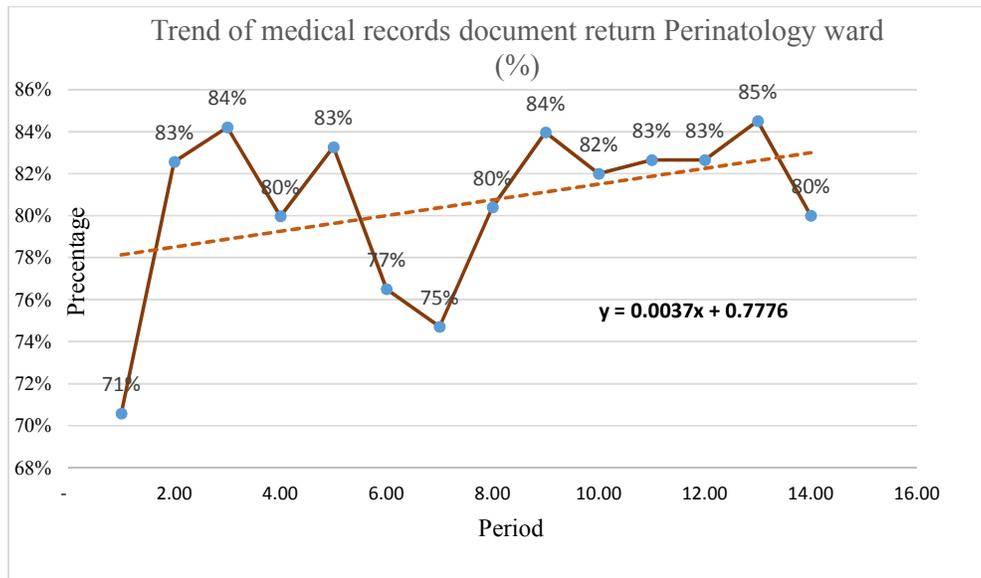


Fig. 11. Trend the percentage of medical record documents returned from Perinatology wards to the assembly unit

4. CONCLUSION

The return of medical records in all wards for ward hospitals has a positive trend. However, Kasandra and Perinatology wards are still below 100%, namely 72% -81% and therefore need to be increased through the socialization and

responsibilities of medical personnel in relation to the deadline for returning medical records. Modeling prediction of returned medical record documents can be used as an overview and baseline in improving the quality and speed of returning medical records to the assembly unit.

DISCLAIMER

The products used in this study are products that are commonly used in the republic of Indonesia. There is absolutely no conflict of interest between the author and the product manufacturer because we do not intend to use this product as a way for any litigation, but for the advancement of knowledge. Also, this research was not funded by the producing company but was funded by the author's personal effort.

DATA AVAILABILITY

All relevant data has been registered on paper along with supporting information files. This study will help researchers to uncover critical areas regarding the prediction of returning medical record documents to the assembling unit so that activity and baseline action plans can be predicted in improving the quality of patient care.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

ACKNOWLEDGEMENTS

The author is very grateful to the leadership and staff of Semarang Wiliamboot Hospital and Dian Nuswantoro University so that this research can be carried out well.

COMPETING INTERESTS

All authors have stated that this activity is research without competing interests.

REFERENCES

1. Organization WH. Medical records manual: a guide for developing countries. Manila: WHO Regional Office for the Western Pacific; 2006. [ISBN: 9290610050]
2. Gupta KS, Rokade V. Importance of quality in health care sector: A review. *Journal of Health Management*. 2016;18(1):84–94. Available:https://doi.org/10.1177/0972063415625527
3. Ekaterina G, Stavros K, Anca M, Lambrini K. Measurement of patient satisfaction as a quality Indicator of hospital health services: the case of outpatient clinics in general hospital. *Science*. 2017;5(2):128–35. DOI: 10.11648/j.sjph.20170502.10
4. Penn IA, Pennix GB. Records management handbook. Routledge; 2017. [ISBN 9781409429142] Available:https://doi.org/10.4324/9781315245140
5. Rosenfield D, Harvey G, Jessa K. Implementing electronic medical records in Canadian emergency departments. *Canadian Journal of Emergency Medicine*. 2019;21(1):15–7. DOI: 10.1017/CEM.2018.454
6. Anwar WA, El Ezz NFA, Elhossiney DM, Ch RAAAMBB. Measurement of completeness of Medical records in family health centre in El-Shorouk City. *Egyptian Journal of Community Medicine*. 2016;34(3). DOI: 10.21608/EJCM.2016.857
7. Liu C, Zowghi D, Talaei-Khoei A, Daniel J. Achieving data completeness in electronic medical records: A conceptual model and hypotheses development. In: Proceedings of the 51st Hawaii International Conference on System Sciences; 2018. DOI 10.24251/HICSS.2018.357
8. Katusa K. Enhancing the completeness of medical records at inpatient department of Karat primary hospital KonsoWoreda, SNNPR. Addis Ababa Universty; 2018. [ID: 164351324] DOI:10.33762/mjbu.2018.159461
9. Dwikusuma V, Suyono B, Dwiyanto A. Rumah Sakit Mata Kelas B Di Semarang. UNDIP; 2018.
10. Schmidt AF, Finan C. Linear regression and the normality assumption. *Journal of Clinical Epidemiology*. 2018;98:146–51. DOI: org/10.1016/j.jclinepi.2017.12.006
11. Bruce N, Pope D, Stanistreet D. Quantitative methods for health research. Wiley Online Library; 2017. DOI: 10.1002/9781118665374
12. Stone H, Sidel JL, Bloomquist J. Quantitative descriptive analysis. *Descriptive Sensory Analysis in Practice*. 2008;10:53–69. Available:https://doi.org/10.1002/9781118991657.ch8
13. Sari DP, Riyadi D. Hubungan Antara Kelengkapan Dengan Ketepatan Waktu Pengisian Formulir Asesmen Awal Pasien Rawat Inap Penyakit Malignant Neoplasm

- Of Cervix Uteri, Unspecified Di Rsud Dr. Moewardi Triwulan I Tahun 2018. SMIKNAS. 2019;84–93. [ISBN 978-602-6363-78-7]
14. Afantenos S, Karkaletsis V, Stamatopoulos P. Summarization from medical documents: a survey. *Artificial Intelligence in Medicine*. 2005;33(2):157–77. DOI: 10.1016/j.artmed.2004.07.017
15. Muchtar RD, Yulia N. Tinjauan Pengembalian Rekam Medis Rawat Jalan dan Kecepatan Pendistribusian Rekam Medis ke Poliklinik di Rumah Sakit An-Nisa Tangerang. *Indonesian of Health Information Management Journal* (INOHIM). 2017;5(2):109–13. [ISSN(print): 2354-8932] [ISSN(online): 2655-9129]
16. Hussein RA, Majeed AA, Mahmoud RA, Saihoud SA, Al-Hamadi NQ. Assessment of the documentation completeness level of the medical records in Basrah General Hospital. *The Medical Journal of Basrah University*. 2018;36(2): 50–9. DOI: 10.33762/mjbu.2018.15946
17. Wang H, Xu Z, Fujita H, Liu S. Towards felicitous decision making: An overview on challenges and trends of Big Data. *Information Sciences*. 2016;367:747–65. DOI: 10.12691/jbms-6-3-7

© 2020 Azizah et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/58528>