

A QUALITY IMPROVEMENT PROJECT: REDUCING NON-COMPLIANCE RATES TO THE WRITING AND APPROVING THE DISCHARGE SUMMARY AT KFMMC-DHAHRAN

Rehab Y. Al-Ansari^{1*}, Mohammed Ahmed Shehri², Fritzi Esguerra³, Sultan Shaher Otaibi³, Muhanad Ali Alghamdi³, Abdulelah Fawzi Alharbi⁴, Abdulaziz Saad AlShamrani⁴, Nawaf Zakary⁴, Nada Rajab Alzahrani⁴.

1. Hematology Unit, Internal Medicine Department, King Fahad Military Medical Complex, Dhahran, Kingdom of Saudi Arabia
2. Department of health informatics, KFMMC-Dhahran-Saudi Arabia, King Fahad Military Medical Complex, Dhahran, Saudi Arabia
3. Department of health informatics, King Fahad Military Medical Complex, Dhahran, Saudi Arabia
4. Internal Medicine Department, King Fahad Military Medical Complex, Dhahran, Kingdom of Saudi Arabia

Correspondence: dr_rehab10000@hotmail.com

ABSTRACT

BACKGROUND & AIM:

More than 300,000 active patients' medical records are kept at our institute. In 2021 only 19% of respondents (consultant in charge of the patient) agreed to the discharge summary (DC). Consequently, a corrective action plan was put into place to increase the compliance rate to policy to at least 90%.

METHODS & CONTEXT:

This is an observational, retrospective study undertaken at tertiary medical center. Around 1,600 health informatic (HIS) records for patients who required admission to the hospital for more than 24 hours and were for patients of any age were selected for this study. An audit team to monitor compliance with writing /approving policies for the DC summary was established. Furthermore, correction action plans were implemented and the auditing for compliance was monitored.

RESULT:

Our interventions have significantly improved the quality of discharge documentation as well as increased the rate of compliance to writing/approving the DC summary up to $\geq 90\%$ by June 2023. The rate of DC summary delinquency was also reduced to $< 10\%$. Moreover, no printing of discharge summaries also was of great value in ink and paper use with cost reductions of 13,327 SR (\$USD3,551) by Y 2023.

CONCLUSION:

The quality of DC summary documentation and the rate of delinquent DC summary reports can be improved by applying health informatics restrictive measurement and quality monitoring tools.

KEYWORDS

quality of care, discharge summary, patient safety, patient satisfaction, delinquency

INTRODUCTION

At KFMMC– Dhahran, we have more than 600,000 patient's files including for both genders and different age groups. Currently, 50% of the files are active for either outpatient care visits (including emergency area, clinic, primary health care, day case units) or admission to inpatients care (critical and non-critical areas). Since 2016, we have been using self-building electronic health informatics system (HIS) for admission, progression, consultation and discharge, as well as for laboratory, radiology, intervention records and orders. A management of information (MOI) committee is one of the Medical Services Division's (MSD) committee which ensures the implementation of an improvement action to adjust points of concern in the HIS to reach the high-quality of standards in patient care that met Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) and Joint Commission International (JCI) as well as Healthcare Information and Management System Society (HIMMS) needs. The concern of non compliance in writing or approving the discharge summary was raised to the committee by the head of medical records. For the retrospective data during 2021 that was collected, approximately 19,269 patients were discharged from the hospital. However, the compliance rate for approved discharge summaries was down to as low as 19% and did not exceed 31%. So, action was taken by implementing corrective action plans to raise the compliance rate to 90% or more.

Junior physicians have typically responsible for writing discharge statements. Their knowledge level and type of training on this subject may have varied, whether it was official or informal. Too frequently, junior staff members under pressure view discharge summaries as less important, and it's possible that they haven't received enough guidance or supervision on how to write effective summaries.

The discharge summary, which provides factual and pertinent information to support ongoing care, should enable the safe transition of patients from the hospital environment back into the community. Nonetheless, discharge summaries frequently contain errors. A 2002 audit of 149 case notes from five hospitals in England and Wales was conducted by the Royal College of Physicians. Seventy-seven of the 87 printed discharge summaries that were included in the patient notes had no diagnosis, 19% had no procedure, 2% had no follow-up plans, and 75% did not tell the general practitioner (GP) about the patient's previous conversations on their care [1]. Other studies in the literature have identified similar issues with prescribing errors and accuracy.

Only 53% of general practitioner practices stated they received discharge summaries in time to be beneficial either "all" or "most" of the time, according to a 2009 Care Quality Commission (England) report [1]. Just 27% of general practitioner offices stated that discharge summaries were "hardly ever" or "never" wrong or incomplete, whereas 81% of practices stated that information regarding prescribed medications was "all" or "most" of the time inaccurate or incomplete on discharge summaries. Although delays of three months to a year are more usual, in one case—which was reported by the NHS Alliance—a patient received a discharge statement eleven years after it was scheduled [1].

At the King Fahd Military Complex (KFMMC) Dhahran, we noticed defects in discharge summary filling then compliance to approving. So, for the importance and seriousness of this issue we created this project aiming to reach a high compliance rate that matched JCI and CBAHI requirements.

METHODS:

OVERVIEW OF INTERVENTION

During 2021, the compliance rate to approve the discharge summaries was not exceeding 3%. By January 2022, action was taken by implementing corrective action plans to raise the compliance rate to a target of 90% or more to maintain better patient care at KFMMC-Dhahran. To achieve good compliance with JCI standard of the ACC-8013 policy which mandates that the patient is to get a discharge summary upon discharge. Moreover, this was seen to improve patient experience at KFMMC-Dharan.

SPECIFIC AIMS

In this study, an audit and review task to assess, analyze and process corrective intervention was taken aiming to:

- Increase the compliance to the writing and approval of the discharge summary to reach the compliance target of 90% of discharges.
- Improve compliance rates to meet the Essential Safety Requirements JCI standard - as in the access to care and continuity care (ACC) - 8013 chapter - standard 4.2 (patients should have a discharge summary upon discharge from the hospital).

TIMELINE

- Our project was established at the King Fahd Military Medical Complex which is located at Eastern Province of the country. There were defects and non compliance to writing and approving discharge summaries prior to Y 2023.
- We are dealing with 300,000 active medical records and where more than 10,000 patients require admission each year. Retrospective closed chart auditing was applied to monitor the compliance to writing and approving the discharge summary.
- The Quality Safety Team approved this study after we discovered the vital issue in non compliance to writing and/or approving the discharge summaries that were identified before January 2023.
- We initiated this study after the implementation of the project and retrospectively collected data between January 2021 to December 2022 as well as a corrective action plan with further auditing for compliance to the implementation of high-quality discharge summaries based on CBAHI and JCI standards after January 2023 until September 2023.
- This study was conducted and facilitated/collaborated by Medical Administration through In-Patient setting, Medical Record Department, Information and Technology Department, and Continuous Quality Improvement and Policy Service (CQI-PS) Department.

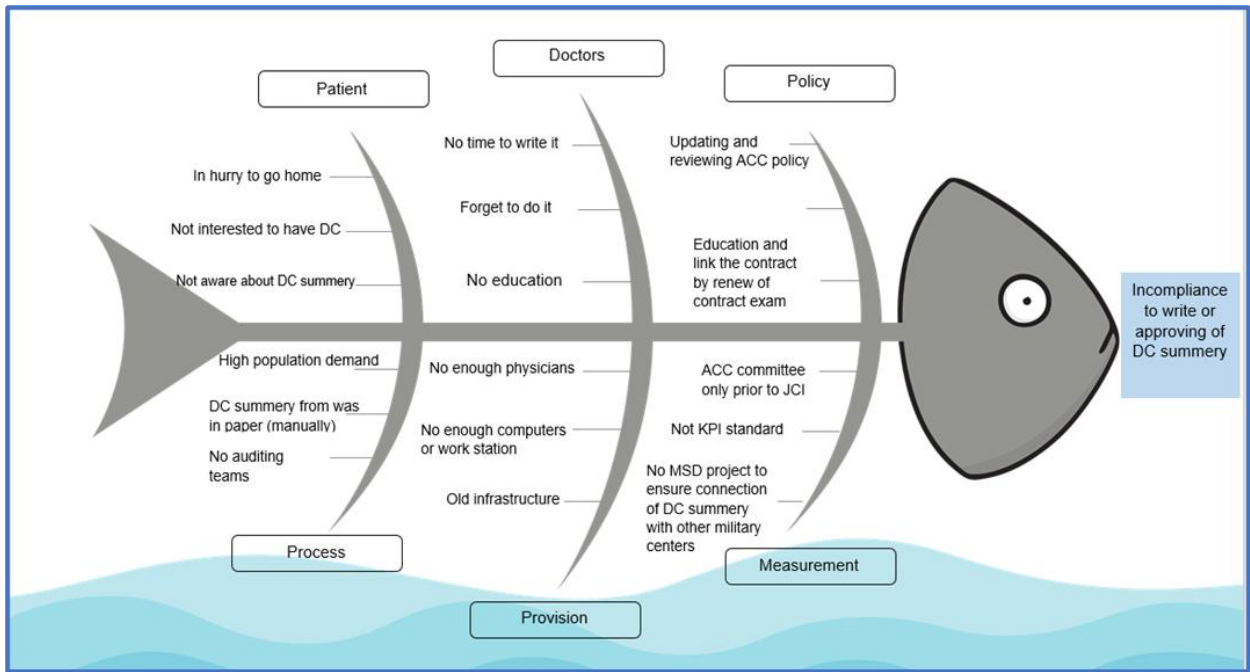
INTERVENTION

Prior to January 2017, the discharge summary used was written manually. During 2017 and 2018, there was no clear data about the compliance rate of completing discharge summaries, however, retrieval of records showed low compliance rates and a high number of deficiencies in completion the discharge summary form.

To initiate the corrective action plan, we studied the possible reasons and obstacles behind high non-compliance rates in the writing and approving the discharge summaries. A fishbone map was created for better understanding of the precipitating factors and to make the targeted corrections plan (Figure 1). A corrective action plan team was created for such a purpose.

The audit team included a physician member, in-patient care nursing member, representative from patient relations, medical record and health informatics team members. The auditing started by retrieving closed file for completion of discharge summary (all part of discharge summary from date, time, admitting and discharge diagnosis, course in the hospital, intervention and management, discharge condition and type of discharge, regular or against advice, as well as discharge medication, diet instruction, wound care, follow up plan and instruction about criteria to educate the patient about when to visit the hospital). Not only that, but also compliance of approving of discharge summary by consultant in charge on the case was also monitored.

FIGURE 1 : FISHBONE VIEW FOR NON-COMPLIANCE TO WRITING AND APPROVING DISCHARGE SUMMARY



Due to non-compliance of the writing of the discharge summary which was on paper before Y2017, and after initiation of health informatics system (HIS), we started our intervention by implementing the discharge summary in the HIS. Since then, we have created an educational session using hospital wide and/or departmental lectures. However, despite that we were still facing very low rates of compliance to approving discharge summaries and the maximum compliance rate was around 30% /month. Further action was taken and by December 2021 the adjustment of discharge summary forms and mandating of writing discharge summaries were made. Close record auditing of the inpatient care was established in Y2021 and was evaluating the compliance rate through Y2020 and Y2023.

Furthermore, by December 2022 we created an alarm mechanism to notify HIS about missing discharge summaries or no approval. Reviewing and updating discharge summary policy at KFMMC-Dhahran, ACC chapter (ACC – 8013) was reviewed and updated on January 2023 to match edition 7th of JCI references. On January 2023, we implemented the SMS remainder system for consultants to approve the final DC report. We stopped printing DC summaries and make them available at KFMMC through an application that was created in January 2023. Actions taken are highlighted in Table 1.

TABLE 1: PROJECT CORRECTIVE ACTION PLAN AND PROGRESS

Area of Concern:	Recommendations	Action Taken	Urgency	Progress/ Update
Creating discharge summary in the system	Creating discharge summary in HIS	Creating discharge summary in HIS	January 2017	Done
No education about using discharge summary	Staff education by creating hospital wide lectures.	Hospital wide lecture Followed by visiting main department to ensure further education	November 2017 Then periodically	Done

Health informatics defect, no mandating of writing discharge summary	Sending to IT via HIS/MOI committee for re adjustment of discharge summary form and mandating of writing discharge summary	Adjustment of discharge summary form and mandating of writing discharge summary	December 2021	Done
Reviewing and updating discharge summary policy at KFMMC-Dhahran.	Reviewing and updating discharge summary policy at KFMMC-Dhahran.	Reviewing and updating discharge summary policy at KFMMC-Dhahran. ACC chapter (ACC – 8013)	January 2023	Done
Monitoring of the rate of compliance to the written and approval of discharge summary.	Close record auditing of the inpatient care. A quarterly auditing for compliance	Close record auditing of the inpatient care.	January 2021-sept 2023	Done
No alarms to notify about missing discharge summary or no approval	Creating an alarm to notify about missing discharge summary or no approval	Creating an alarm to notify in HIS about missing discharge summary or no approval	December 2022	Done
No reminder for consultant to approve final DC report	Creating SMS reminder for consultant to approve final DC report	Creating SMS reminder for consultant to approve final DC report	January 2023	Done
Wastage of DC paper by unnecessary printing	Stop printing DC summary and make it visible at KFMMC application	Stop printing DC summary and make it visible at KFMMC application	January 2023	Done

DATA COLLECTION AND MEASURES

The data was collected from the health information system and hospitalization records. The cost of ink drum and paper were detected from the materials management records.

In this current project we measured the following:

- Measuring compliance with doing and approving discharge summaries per month
- Measuring delinquency rate from DC summaries per month
- Measuring cost savings from paper and ink per year

% Of approved DC summaries per month :

One measure was used that reflects the reduction of delinquency and incompliance to completion of DC summary or approval, with the key performance indicator measured by applying numerator (N)/ denominator (D) values. The numerator was Approved DC summaries written per month x 100. On the other hand, the denominator was (D) total number of discharged patients per month.

(N) Total number of Approved DC summaries written per month x 100

(D) Total number of discharged patients per month

% delinquency rate from DC summary per month

The key performance indicator measured by applying numerator (N)/ denominator (D) values. The numerator was total number of delinquency rates from DC summaries per month x 100. On the other hand, the denominator was (D) Total number of discharged patients per month.

$$\frac{(N) \text{ Total number of delinquency rates from DC summary per month} \times 100}{(D) \text{ Total number of discharged patients per month}}$$

Cost saving from paper and ink per year

The cost saving was determined by calculating the exact cost of paper and ink package and the capacity of paper can be printed per each paper and ink drum per year, then compared saving from Y2021 to Y2023.

DATA ANALYSIS

A descriptive statistic and simple quantity and quality data analysis were established. The graph was drawn from data collected and tabulated in Microsoft Excel sheets. The graphs of pre and post corrective action plan were clearly emphasizing present of the problem and dramatic improvement after establishment the improvement project which started on Jan 2021 and then monthly until September 2023. Moreover, an actual cost for both paper and ink were detected from materials management then we calculated the cost reduction per year from no printing intervention from Y2021 to September Y2023. Furthermore, problems and action plan and progression over the time were used. The collected data was analyzed by using the statistical analysis performed with SPSS (Statistical Package for Social Sciences) Package with version 27.

The study had been proposed for publication after approval from the Armed Forces Hospitals Eastern Region Institutional Review Board. Moreover, all data which was collected in this study was used only for the purpose of this study. Patients' names were not collected; instead, each file was audited for present and compliance or writing the discharge summary and was encoded with number, used further in analytical purpose.

PROCEDURES

The Armed Forces Hospitals Eastern Region Institutional Review Board (IRB), protocol # AFHER-IRB- 2024-025, approved this study. Consent is not required for retrospective data collection. No human or animal tissue was used. The Quality Safety Panel approved this study after finding the vital issue of delays in writing or/and approval of discharge summary prior to January 2022. This study was conducted in collaboration with the Medical Department through the Inpatient Department, the Information and Technology Department, the Finance and Budget Department, and the CQI-PS Department.

RESULTS

We initiated this study after the implementation of the project and retrospectively data collected between January 2021 to December 2022 and correction action plan with further auditing for compliance to implementation of high-quality discharge summary based on CBAHI and JCI standard after January 2023 until September 2023.

After creating an action form starting with using and implementing a DC in the HIS to run an education lecture periodically, creating alarming, mandating writing and creating SMS to approve DC as well as auditing in monthly base the compliance to write and approve DC summary. Moreover, reviewing and updating ACC -8013 policy to be compliant to JCI 7th editions standard.

Unfortunately, auditing of the discharge summary approval's percentage through Y2021 & 2022 to September Y2023 showed significant increase in the compliance rate to 90% or more (Figure 2 Tables 2 A, B, C).

FIGURE 2 : RUNTIME CHART FOR COMPLIANCE OF DISCHARGE SUMMERY BETWEEN Y2021 TO SEPTEMBER 2023.

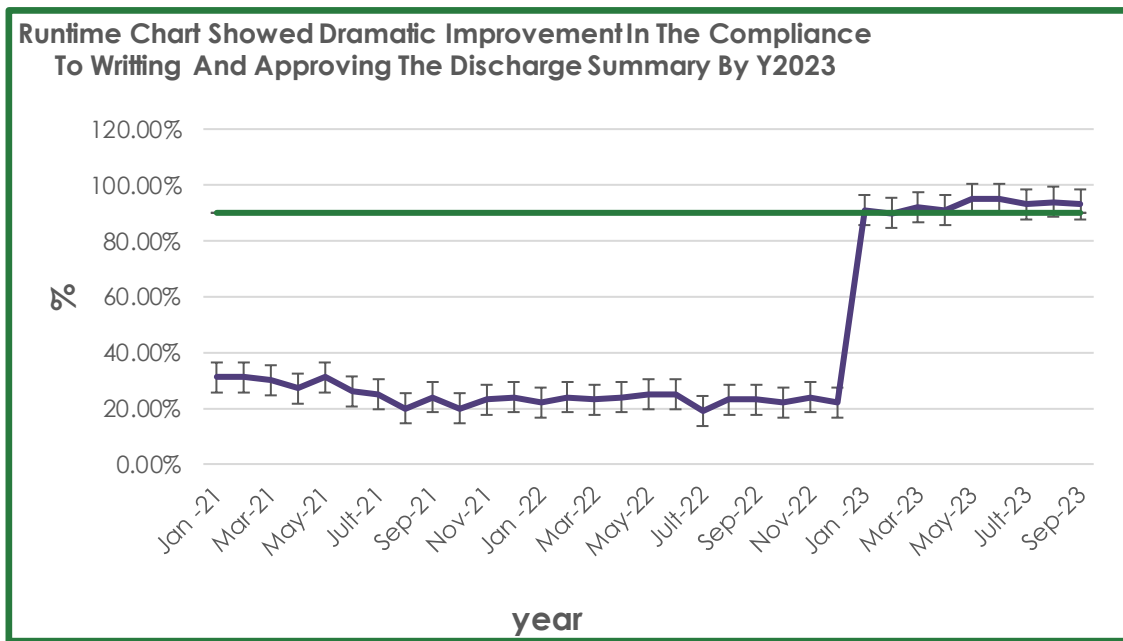


Table 2: (A) showed % of DC summary approval during 2021 (B) during 2022 (C) during 2023 .

Month	Jan -21	Feb- 21	Mar -21	Apr- 21	May- 21	Jun- 21	Jul- 21	Aug- 21	Sep- 21	Oct- 21	Nov- 21	Dec- 21	Total
Approved DC summary	478	442	495	402	416	428	337	332	415	367	435	443	4990
Total # of discharged patient	1553	1446	1627	1488	1330	1616	1374	1651	1694	1817	1860	1813	19269
% of approved DC summary	31%	31%	30%	27%	31%	26%	25%	20%	24%	20%	23%	24%	26%

(Table 2 -A)

Month	Jan -22	Feb- 22	Mar -22	Apr- 22	May- 22	Jun- 22	Jul- 22	Aug- 22	Sep- 22	Oct- 22	Nov- 22	Dec- 22	Total
Approved DC summary	347	347	440	356	406	428	337	245	376	401	414	380	4512
Total # of discharged patient	1549	1430	1876	1458	1602	1723	1374	1314	1655	1793	1758	1703	19495
% of approved DC summary	22%	24%	23%	24%	25%	25%	19%	23%	23%	22%	24%	22%	23%

(Table 2 -B)

Month	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Approved DC summary	1571	1471	1642	1336	1729	1547	1292	1248	1534	13370
Total # of discharged patient	1549	1430	1876	1458	1602	1723	1374	1314	1655	13,981
% of approved DC summary	91%	90%	92%	91%	95%	95%	93%	94%	93%	95.6%

(Table 2 -C)

As a result, delinquency rates to discharge summaries between y2021 to September 2023 were reduced to less than 10% (Figures 3&4).

FIGURE 3: RUNTIME CHART FOR THE RATE OF DELINQUENCY TO DISCHARGE SUMMARY BETWEEN Y2021 TO SEPTEMBER 2023.

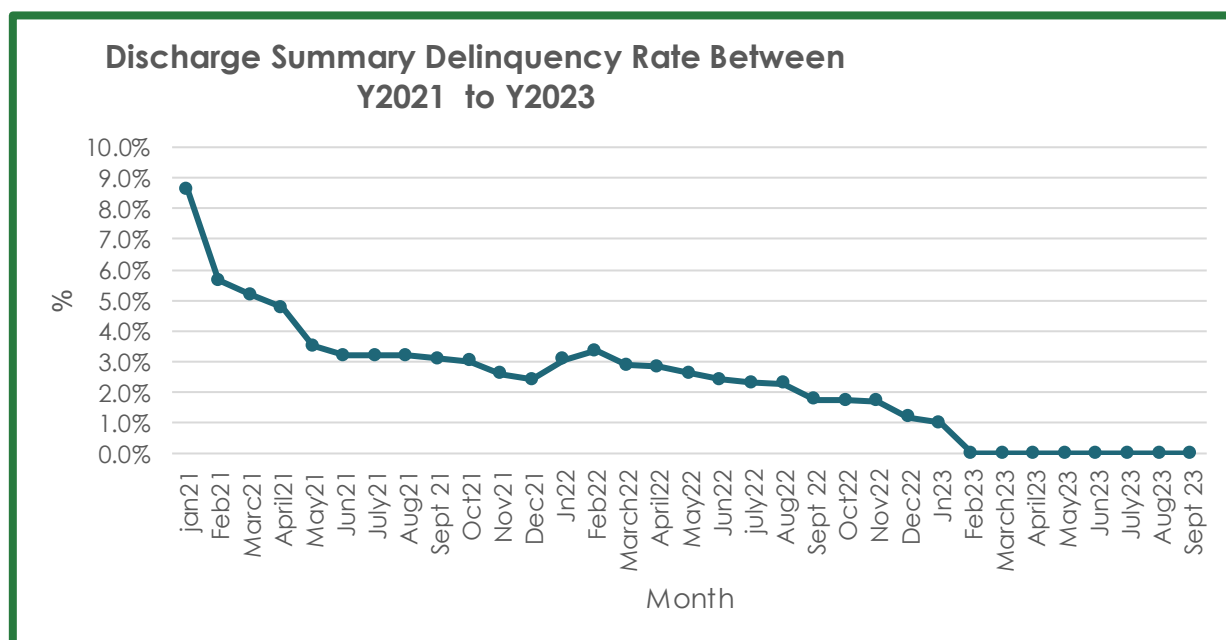
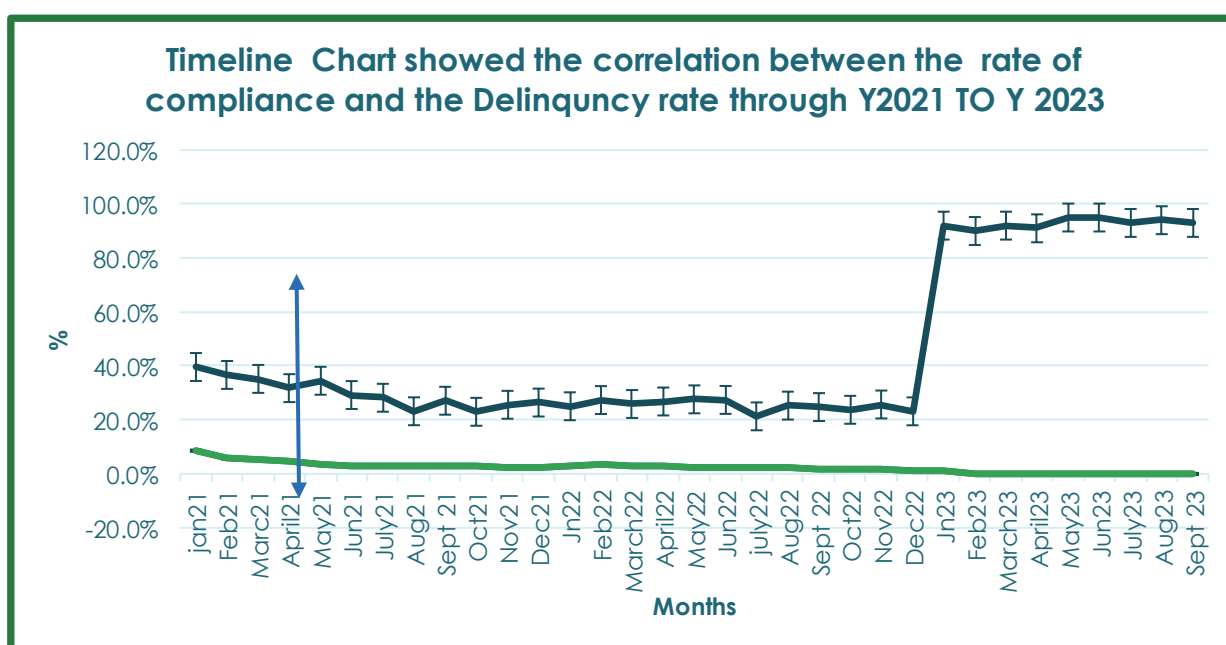
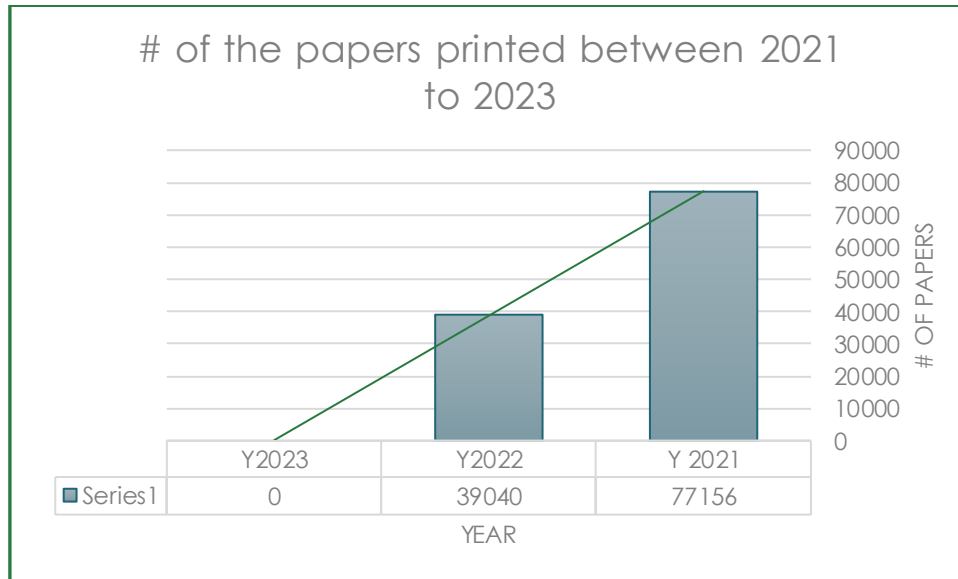


FIGURE 4: TIMELINE CHART FOR BOTH THE RATE OF DELINQUENCY TO DISCHARGE SUMMARY AND PERCENTAGE OF APPROVED DISCHARGE SUMMARY BETWEEN Y2021 TO SEPTEMBER 2023.



Regarding Stop printing DC summary and make it visible at KFMMC application, the data showed a total of 77,156 pieces of paper for DC summaries were printed during 2021, this number reduced to 39,040 pages by y 2022 and zero pages were printed during Y2023 (Figure 5).

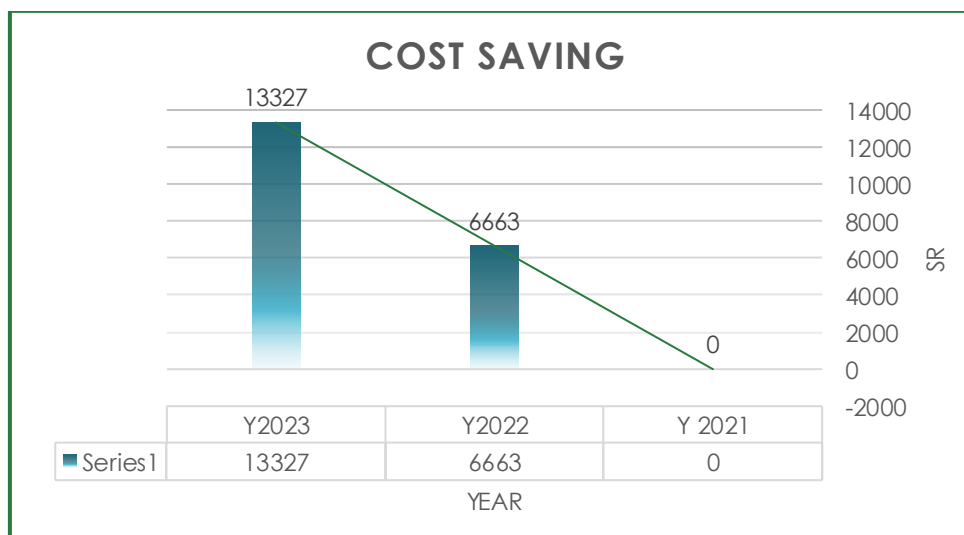
FIGURE 5: THE NUMBER OF THE PAPERS PRINTED WITH IMPLEMENTATION OF STOP PRINTING DC SUMMARY AND MAKE IT VISIBLE AT KFMMC APPLICATION BETWEEN Y2021 TO SEPTEMBER 2023.



Based on our materials management records, the cost of each paper box that contained 500 sheets of paper is 10.2 SR, and the cost of each ink drum (black, yellow and cyan) are (288, 510 and 894SR respectively). The toner magenta cost is 839SR. Each drum of ink is enough to print 11,500 pieces of paper. So, during 2021 we printed 77,156 pages which needs 7 drums of black, yellow and cyan ink, so, the total ink drums cost for 2021 will be 7x (894+288+510) which will be around 4752 SR. On the other hand, each paper box is enough for 500 pages that meant we used 155 boxes of papers with a cost of 1581 SR. Adding to that 7 magentas per year which will be 839x7 = 5,873 SR. A total cost lost from printing discharge summaries during Y2021 will be 5,873+1581+4752 = 13327SR.

During 2022 the cost reduction was almost 50% as the amount of paper printed for DC summaries was 39,040 pages from 77,156 pages in Y2021. roughly calculating a cost saving of 6663 SR. Furthermore, by the year 2023 with no more printing any paper, the cost saving is 13327SR (Figure 6).

FIGURE 6: THE COST SAVING AFTER IMPLEMENTATION OF STOP PRINTING DC SUMMARIES AND MAKE IT VISIBLE AT KFMMC APPLICATION BETWEEN Y2021 TO SEPTEMBER 2023.



DISCUSSION

The importance of the discharge summary is well evidenced, both anecdotally and in the literature. It is well acknowledged that better discharge paperwork is necessary to enable patients to receive safe and efficient after-hospital care. Individual interventions, including teaching or feedback, have been the subject of previous research. With a thorough overhaul of discharge documentation instruction and feedback, our continuous quality improvement effort seeks to raise the standard of discharge documentation at our hospital.

The smoother transition of patient care is undoubtedly a function of improved discharge summaries. According to a recent study, patients who received the recommended information in their discharge summaries had lower readmission rates after being hospitalized for heart failure exacerbations [2]. A different study discovered that when discharge summaries were improved, patients who had neck-of-femur fractures had higher prescription rates for denosumab [3]. More research revealed that when efforts were made to enhance post-tonsillectomy summaries, patients' satisfaction with their discharge summaries increased [4].

Nowadays, many patient record systems are computerized, including in our hospital. This enables the pre-population of discharge summaries with data taken straight from the patient notes, this may have benefits for the completion of discharge summaries. In a previous study, electronic discharge summaries were found to have a higher likelihood of accurately reporting medication changes than paper summaries [5]. Naturally, great care needs to be taken to make sure this is completed accurately, that the most recent documentation is included, and that no subsequently made changes are overlooked.

Superior discharge documentation directly benefits patients in addition to healthcare providers. Based on a comparison of follow-up appointment attendances and non-attendances, patients were found to be significantly more likely to attend their appointment if the appointment time was included in the discharge summary as opposed to not including it [6,7].

Approximately 3,500 patients are discharged from the Royal Devon & Exeter Hospital (RD&E), a sizable teaching facility, each month. Among these patients, the national target of two working days after discharge for discharge summaries to be sent to GPs is not met by 22.6% of the patients [8]. This result simply goes with our earlier pre-intervention findings, which showed that only 19% of respondents approved the discharge summary. Additional steps to improve quality included educating doctors, auditing compliance with writing and signing, approving DC summary forms, and reminding patients to finish DC summary forms within 48 hours of patient discharge. All of these actions have been previously studied and shown to yield positive results [9].

LIMITATIONS

This study carried some limitations; the first limitation is the shortage of staff such as IT programmers at KFMMC-Dhahran which makes further change in the HIS system is difficult and limited to the changes that have been done to date. The second limitation is the unavailability of auditing teams in each department to follow up the compliance of physicians and their quality performance.

CONCLUSION

The quality of DC summary documentation, patient safety, and the rate of delinquent DC summary reports could all be improved by lowering the non-compliance rate with writing or approving the discharge summary by implementing an electronic DC summary, mandating process, with notification and SMS remainder about the missing written or approving DC summary, along with continuous auditing and educational sessions.

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