

# Clinical Audit to Monitor Delays in the Processes Involved from Admission till Administration of Drugs at Chemotherapy Unit of Tertiary Care Hospital in Karachi, Pakistan.

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**Received Date: February 06, 2024 | Accepted Date: February 21, 2024 | Published Date: March 04, 2024**

**Citation:** Arifa Aziz, and Iffat Shehzad, (2024), Clinical Audit to Monitor Delays in the Processes Involved from Admission till Administration of Drugs at Chemotherapy Unit of Tertiary Care Hospital in Karachi, Pakistan, *International Journal of Clinical Research and Reports*. 3(2); DOI:10.31579/2835-785X/043

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## Abstract

**Introduction:** There were delays reported by patients in chemotherapy administration in daycare oncology. Therefore, we decided to audit all processes which are involved in chemotherapy administration. Aim is to conduct audit once a year to improve day care services and minimize the stay of patient in chemotherapy unit, this will increase patients' satisfaction which is monitored through feedback of patients and attendants received by marketing department of the hospital.

**Materials and Methods:** The audit tool was developed, and information documented of 100 patients receiving chemotherapy at daycare oncology, patient's data was collected from 8<sup>th</sup> September 2022 till 28<sup>th</sup> September 2022. Five processes were assessed out of which delay in initial assessment by the nurse was the only one factor identified leading to delay in chemotherapy administration process. This audit was presented once a year in quality improvement committee, where they decided to re-audit processes after nursing intervention for improving initial assessment time duration by head nurse, Review II was done as a re-audit to check improvement after interventions, patients' data collected from 14<sup>th</sup> April 2023 till 11<sup>th</sup> August 2023 after increasing the number of nurses at peak hours i.e. between 9 Am till 11 Am one extra nurse assigned, and second intervention is dividing the initial assessment process at two different areas.

**Results:** Eighty five percent of patients had their initial assessment done within 15 minutes of arrival in daycare in the first audit. In the second part of the audit this percentage increased to ninety-three percent in re-audit, significant improvement has been seen after doing interventions by head nurse of day care oncology. There is a decrease in compliance percent of drug administration time from 90% to 85% in review II.

**Conclusion:** After separating initial assessments process in two separate areas and adding one extra nurse at peak time of patient's arrival shows significant improvement in compliance percentage of initial assessment process in re-audit, on the other hand there is decline in drug administration time from 90 % to 85%.

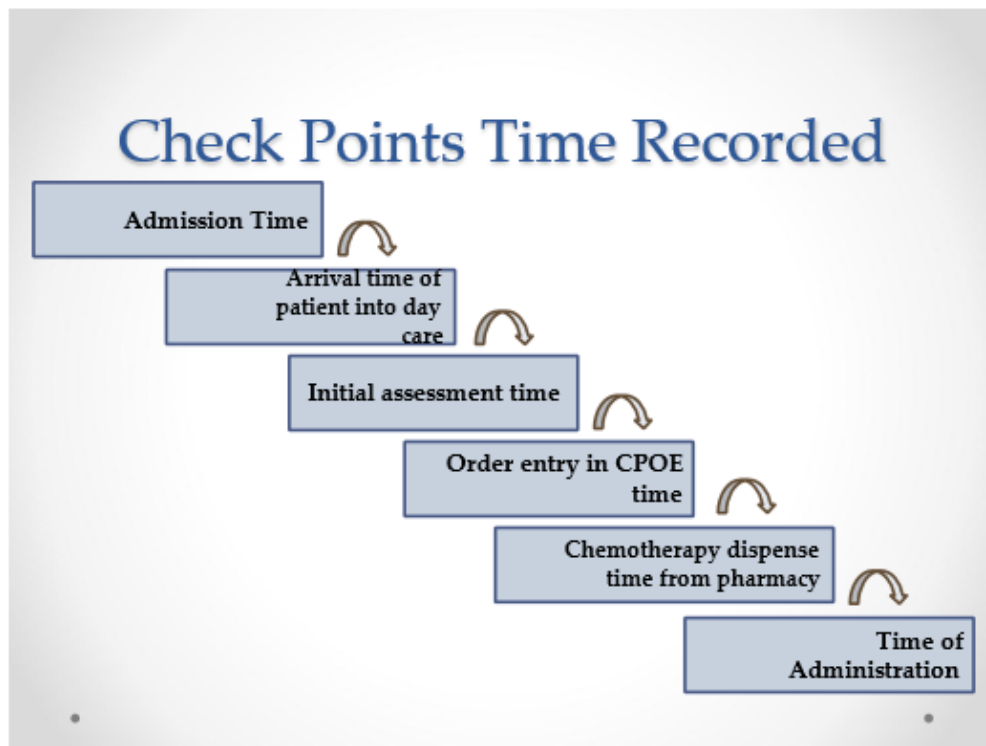
**Key words:** chemotherapy delays; initial assessment; benchmarks; re-audit; CPOE

## Introduction

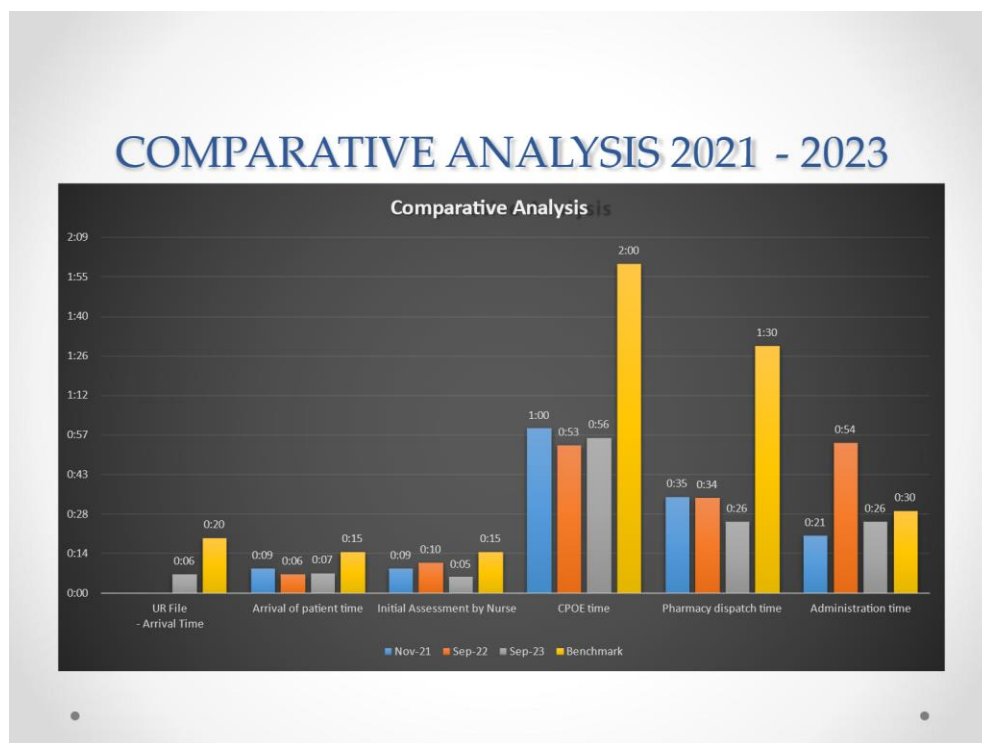
Patients when come for chemotherapy administration wants timely administration of chemotherapy with no delays, audit is plan and to find the reasons of delays in chemotherapy administration process after receiving multiple complaints of delays in chemotherapy administration process by patients, so the audit was started to improve the daycare services. Identify reasons for the delay from admission until initiation of chemotherapy. An internal audit was conducted to check the improvement and rectify the issues.

This audit was decided to conduct annually to improve day care services, from admission of patient till administration of chemotherapy, five processes are involved which include admission time till initial assessment time, from initial assessment till chemotherapy order entering time in CPOE (computer physician order entry), from chemotherapy order entry till pharmacy drug dispense time and fifth process is drug receiving from pharmacy till drug administration time as shown in Flow Chart, all five processes timings

recorded and checked against their department bench marks as shown in Figure 1.



**Flow Chart: Showing Check Points Time Recorded Process.**



**Figure 1: Comparative Analysis 2021-2023**

### Methods

The audit tool was developed, and information collected and documented of 100 patients in review -1, receiving chemotherapy at daycare oncology were recorded from 8<sup>th</sup> September 2022 till 28<sup>th</sup> September 2022., Review II sample size was 100 re-audit was done from 14<sup>th</sup> April 2023 till 11<sup>th</sup> August

2023 after increasing the number of nurses at peak hours i.e. between 9 am till 11 am one extra nurse assigned, and second intervention is dividing the initial assessment process at two different areas. Random patients selected only those admitted for chemotherapy infusion at day care oncology were included.

## Discussion

Patients when come for chemotherapy administration wants timely administration of chemotherapy with no delays. Therefore, oncology

department chair decided to audit and to find the reasons of delays in chemotherapy administration process, five processes timings are monitored, which are checked against their departmental made benchmarks as shown in Table 1.

**Table 1: Departmental Benchmark for all processes involved in chemotherapy administration**

| Departmental Benchmark for Evaluation Identified |      |            |                   |
|--|------|------------|-------------------|
| Check points                                     | TIME | Bench Mark | Delays in minutes |
| Admission time from token                        |      | 15 minutes |                   |
| Arrival of patient in day care Oncology.         |      | 15 minutes |                   |
| Ht and Wt. Check time                            |      | 15 minutes |                   |
| Chemotherapy order entry in CPOE time.           |      | 2 hrs      |                   |
| Chemotherapy dispense time from Pharmacy         |      | 1.30 hrs   |                   |
| Administration of chemotherapeutic drugs time.   |      | 30 minutes |                   |

Five processes were assessed out of which delays in initial assessment by the nurse the only one factor was identified leading to delay in chemotherapy administration process. This audit was presented in quality improvement

committee, where they decided to re-audit this one process after nursing interventions beside other processes to improve the services and bring this process up to the benchmark, interventions done by head nurse. Major delays identified in initial assessment as shown in Table 2.

**Table 2: Audit Results of September 2022.**

| Audit Result – Sep 2022            |            |                 |            |            |                    |                              |
|------------------------------------|------------|-----------------|------------|------------|--------------------|------------------------------|
| PROCESS                            | Benchmark  | Average (HH:MM) | MAX(HH:MM) | MIN(HH:MM) | Compliance Percent | Non-Compliance percent X>10% |
| Arrival - Admission                | 15 Minutes | 0:06            | 1:26       | 0:00       | 97%                | 3%                           |
| Arrival - Initial Assessment       | 15 Minutes | 0:10            | 1:30       | 0:00       | 82%                | 18%                          |
| Assessment - Order Entry           | 2 Hours    | 0:53            | 2:33       | 0:00       | 98%                | 2%                           |
| Order entry - Pharmacy Dispense    | 1:30 Hours | 0:34            | 1:33       | 0:00       | 97%                | 3%                           |
| Pharmacy Dispense - Administration | 30 Minutes | 0:54            | 1:28       | 0:00       | 90%                | 10%                          |

Head nurse of day care oncology suggested to separate patient initial assessment into two different areas and nursing staffs reinforced to do only height and weight in assessment room and perform vital signs blood pressure, temperature and heart rate and oxygen saturation of patient checked by the bed side nurse after patient shifted to the bed and also review of laboratory reports done at bed site, in review 11 sample size was 100 patients' significant improvement has been observed in the in initial assessment time and the delay seen in the process of drug administration

time, and chemotherapy administration process is just mark the target which is 90 % in review1 and now in re-audit review 11 shows compliance percent of drug administration time decline to 85% from 90% as shown in Table 3, this needs improvement. After investigations it was identified that the main reason of delay is difficult intravenous cannulation for this physician proposed to identify difficult intravenous cannulations of patients prior to admission for chemotherapy so that patient can be sent for central line

insertion. These interventions were implemented and the plan to re-audit after 6 months, the time of patient arrival remains unchanged.

**Table 3: Audit Result of September 2023.**

| Audit results of Sep 2023   |            |                 |            |            |                    |                              |
|-----------------------------|------------|-----------------|------------|------------|--------------------|------------------------------|
| Sample Size= 101            |            |                 |            |            |                    |                              |
| Year 2019                   |            |                 |            |            |                    |                              |
| PROCESS                     | Benchmark  | Average (HH:MM) | MAX(HH:MM) | MIN(HH:MM) | Compliance Percent | Non-Compliance percent X>10% |
| Arrival of patient time     | 15 Minutes | 0:07            | 0:21       | 0:01       | 96%                | 4%                           |
| UR File Making              | 15 Minutes | 0:06            | 0:27       | 0:00       | 96%                | 4%                           |
| Initial assessment by nurse | 15 Minutes | 0:05            | 0:32       | 0:00       | 93%                | 7%                           |
| CPOE time                   | 2 Hours    | 0:56            | 2:37       | 0:11       | 97%                | 3%                           |
| Pharmacy dispatch time      | 1:30 Hours | 0:26            | 1:21       | 0:06       | 100%               | 0%                           |
| Administration time         | 30 Minutes | 0:18            | 1:35       | 0:02       | 85%                | 15%                          |

There is a great stress on the chemotherapy unit to give treatment timely and safely [1]. Once patient enter the hospital, they have the right to expect that every effort is made to their care and treatment are both safe and effective with no delays [2]. The chemotherapy process involves team which include physician, nurses and pharmacists. Good communication is required between the clinical areas, pharmacy, nursing staff and physicians. There is a need for effective communication between the medical staff and the chemotherapy unit [3]. The chemotherapy unit streamlining the dispensing process can improve the timelines of cytotoxic drugs administration [4], it is observed multiple times that Patient's physical discomfort associated with long waits and emotional distress is common among patients resulting in depression [5] and patients physical discomfort and mental disturbance associated with delays in cytotoxic drugs dispensing and administration, research suggests that long waits are a major cause of dissatisfaction with chemotherapy services and patient become aggressive and mentally disturbed if they wait >60 minutes for administration of chemotherapy, extended waits for chemotherapy dispensing and administration have been shown to increase psychological distress [6]. This has been linked to severely related problems like nausea and vomiting in cancer patients. Most of the patients said that they feel nausea while thinking of coming to chemotherapy unit [3]. The chemotherapy unit head nurse has the role within the chemotherapy services to address patient's complaints to improve the chemotherapy process and also developing the role of the chemotherapy services case manager nurse whose role includes ensuring that prescriptions are organized and completed before the patient attends the day care unit and ensuring that blood results are available before treatment is administered. That person would also act as a care coordinator between the different groups involved in the process of chemotherapy administration and develop effective communication between the physician, pharmacist and chemotherapy administering nurse [4-6]. It has been observed that few patients are in clinic on same day of chemotherapy resulted in increased bulk of patients at same time causing delay in assessment.

Day care oncology is a 54-bed area which runs in 2 shifts and adjust 100 patients per day coming for administration of long and short infusion of chemotherapy and blood transfusions, making very stressful for oncology team members to give chemotherapy timely and safely to the patients, therefore audit of all processes involved in chemotherapy administration which is done annually to give quality care and services to patients.

## Results

Eighty five percent of patients had their initial assessment done within 15 minutes of arrival in daycare in the first audit. In the second part of the audit compliance percentage increased to ninety-three percent, in re-audit, significant improvement has been seen after doing nursing interventions. The process of drug administration time declines from 90 % to 85 % in review 11 which needs improvement. Arrival time after admission is still prolonged mostly because of same day clinic visit, logistic/social issues.

Will continue monitoring drug administration time after intervention like education of patients for the importance of central line insertion and will re-audit this process after 6 months.

## Conclusion

Significant improvement is seen in initial assessment time from 82% to 93 %. after doing interventions. Drug administration time compliance is 90% achieved target in review 1 and decline to 85% in review 11 which needs further improvement to achieve target. All other processes are within benchmark.

## Way forward

- 1- Patients should be admitted with laboratory test reports done 1-day before chemotherapy which decreases stay in day care oncology, waiting time for lab result is saved and in turn decreases in delay of chemotherapy administration.
- 2- Need for oncology nurse coordinator responsible to check the labs are done 1-day before chemotherapy and coordinate

between all three areas physician, oncology pharmacist and oncology nurse to streamline the process of chemotherapy administration so as to prevent delays and expedite the process of chemotherapy administrations.

- 3- Re-audit after 6 months, one process of drug administration time after interventions suggested by physician, placing central line in patients having fragile veins causing difficulty in intravenous cannulation.

**Financial support and sponsorship:** Nil.

**Conflicts of interest:** There are no conflicts of interest.

### Acknowledgment

The authors would like to thank Dr. Zehra Fadool Professor and Chair of Oncology Department, Mr. Salman Faheem associate, Amber Husain Head Nurse and Noman Hussain Siddiqui Senior Manager.

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