PP-09

REDUCING INCIDENCE OF NEAR MISS CHEMOTHERAPY ERRORS IN ONCOLOGY DEPARTMENT OF HOSPITAL KUALA LUMPUR

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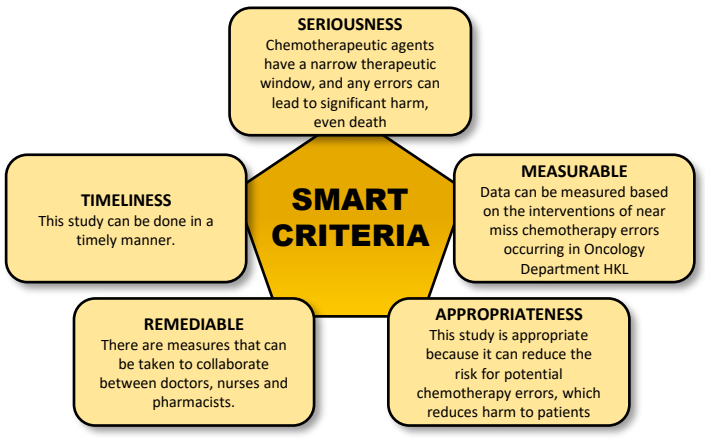
1.0 Selection of Opportunities for Improvement

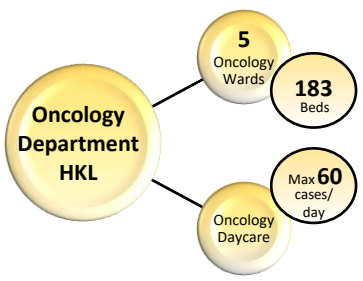
1.1 Problem Prioritisation

No	Problems	S	M	A	R	T	Total
1.	Delay in processing of UKK (Ubat Kelulusan Khas) application for cancer patients	21	19	14	10	7	71
2.	Poor stock management of direct issue items in pharmacy	19	14	10	7	9	59
3.	Delay in receiving prepared chemotherapy for patients in ward	12	14	7	8	10	51
4.	**Increasing incidence of near miss chemotherapy errors in Oncology Department**	**21**	**21**	**14**	**14**	**12**	**82**
5.	Lack of time on outpatient counseling	13	7	9	9	7	45

Rating scale: 1= Low 2= Medium 3= High **Total members: 7**



1.2 Background of Oncology Department, Hospital Kuala Lumpur (HKL)



- Stable patients who receive single day chemotherapy or chemotherapy with less complexity will receive chemotherapy in Oncology Daycare.
- Meanwhile, patients who require frequent monitoring or receiving chemotherapy regimens with longer duration, the administration of chemotherapy will takes place in Oncology wards.

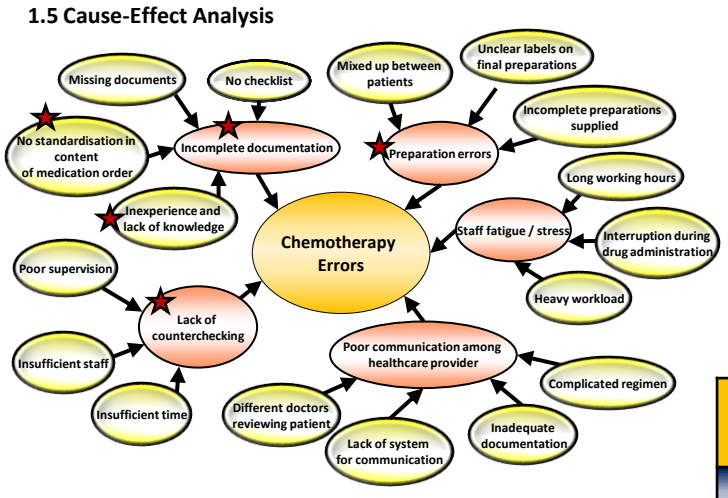
1.3 Literature Review

- Errors involving cytotoxic drugs have the potential of being fatal and should therefore be prevented. In addition, due to the complexity of these medications, the risk for error is significant. [1]
- A systematic review by Ashokkumar *et al* (2018) stated that chemotherapy medication errors ranged from 0.1% to 24.6% in prescribing, 0.40% to 0.50% in preparation, 0.03% in dispensing, and 0.02% to 0.10% in administering phases. [2]

1.4 Problem Statement

- Between 2018 to 2020, Oncology Department HKL has reported 6 cases of actual chemotherapy errors that caused adverse events to patients, including additional monitoring and prolonged hospitalization.
- Verification study revealed that the rate of near miss chemotherapy error in Oncology Department is **1.15%.**
- By reducing near miss chemotherapy errors, it can minimise the risk of actual errors that may harm patients.

1.5 Cause-Effect Analysis



2.0 Key Measures for Improvement

2.1 Study Objectives

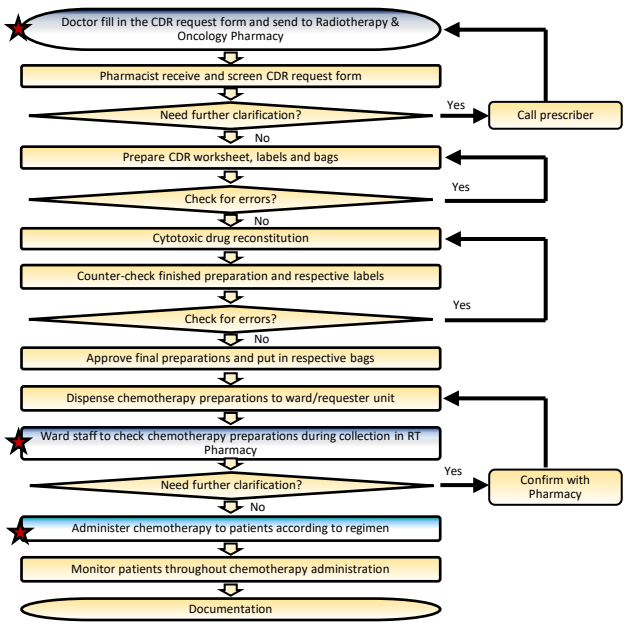
GENERAL OBJECTIVE	To reduce the near miss chemotherapy errors in Oncology Department HKL
SPECIFIC OBJECTIVES	1) To determine the frequency of near miss chemotherapy errors. 2) To identify the causes leading to the near miss errors. 3) To formulate and implement proper remedial measures. 4) To evaluate the effectiveness of the remedial measures.

2.2 Indicator and Standard

INDICATOR	% of chemotherapy preparations with near miss errors intervened in Oncology Department
FORMULA	$\frac{\text{No. of reported near miss error interventions}}{\text{Total CDR preparations by Oncology Department}} \times 100\%$
STANDARD	**0.6% ***

* A rate of 0.6% of chemotherapy near miss error has been reported in previous study by Baldwin & Rodriguez (2016) [3].

2.3 Process of Care



3.0 Process of Gathering Information

3.1 Methodology

Study Design	Cross sectional study
Study Period	Verification (Pre-Study): • Aug - Sep 2020 → Cycle 1: • Nov – Dec 2020 • Post remedial: Jan – Feb 2021 → Cycle 2: • Mar – Apr 2021 • Post remedial: May – Jun 2021
Sample	Universal sampling
Inclusion Criteria	• CDR request received from Radiotherapy & Oncology Department HKL • Chemotherapy for oncology indications only • Treatment involved parenteral chemotherapy
Exclusion Criteria	• Clinical trial cases • Administration of chemotherapy outside of Oncology wards or Oncology Daycare
Tools	Data collection form

3.2 Terms and Definition

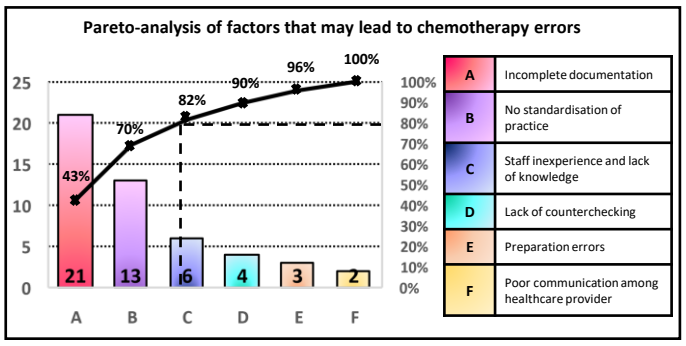
Term	Definition
Medication errors	Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare provider, patient, or consumer [4]
Near miss error	Medication error that has the potential to cause an adverse event (patient harm) but *did not reach patient* because of chance or because it is intercepted in the medication use process [4]

3.3 Data Collection Form

Time Period	Types of Near Miss Chemotherapy Errors Intervened				Total Chemotherapy Preparation
	Prescribing	Preparation	Dispensing	Administration	
	Example: - Wrong drug - Wrong dose - Wrong regimen - Incomplete request	Example: - Wrong volume - Wrong dilution - Incomplete preparation	Example: - Wrong drug - Wrong diluent used - Incomplete preparation	Example: - Wrong sequence - Wrong duration of infusion - Drug omission	

4.0 Analysis and Interpretation

4.1 Analysis of Contributing Factors



- Based on survey among staff from Oncology Department HKL, the first 3 factors contributed to more than 80% of the problems.

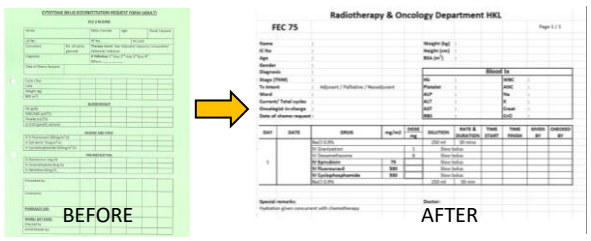
4.2 Model of Good Care

Process		Criteria		Standard (%)			
				Standard	Pre remedial	Cycle 1	Cycle 2
1	Prescribing of CDR request form	a	Doctor endorse chemotherapy regimen and doses correctly based on specialist plan.	100%	90%	95% ↑	98%
		b	Using the CDR request form specific for the regimen.	100%	70%	90% ↑	95%
2	Verification during chemotherapy collection	a	Staff nurse to check chemotherapy preparations for the correct patients, all preparations available in the correct bag, drugs and doses on the labels are correct.	100%	50%	70% ↑	95% ↑
		b	Sign the record book upon receiving the chemotherapy.	100%	50%	70% ↑	95% ↑
3	Administration of chemotherapy	a	Staff nurse to follow regimen protocol including premedication, chemo and hydration, in the correct sequence and duration.	100%	90%	95% ↑	98%
		b	Sign each process with time start and end of administration.	100%	0%	80% ↑	95% ↑

5.0 Strategy for Change

Cycle 1

- Updating Cytotoxic Drug Reconstitution (CDR) request form



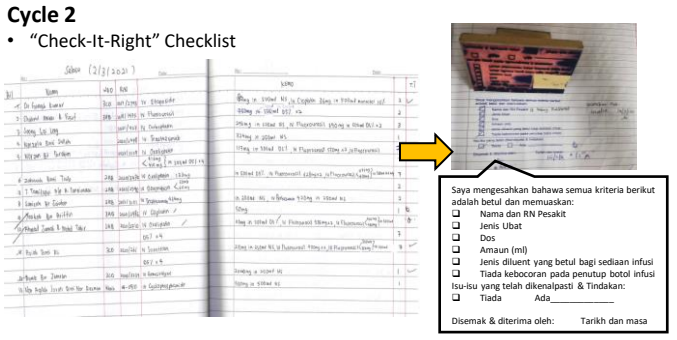
New CDR Request Form

- New regimens available in a standard format, integrated with the complete regimens (drug administration sequence and duration, route of administration, the premedication and hydration in between the chemotherapy, and the types of diluents used).
- 143 chemotherapy regimens were validated by the in-house oncologists, as compared to 31 regimens previously.

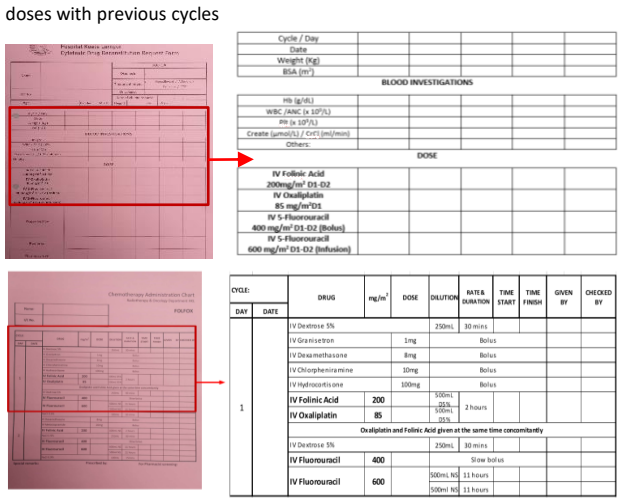
- **Continuous Education (CME, CPE and CNE)**

Cycle 2

- "Check-It-Right" Checklist

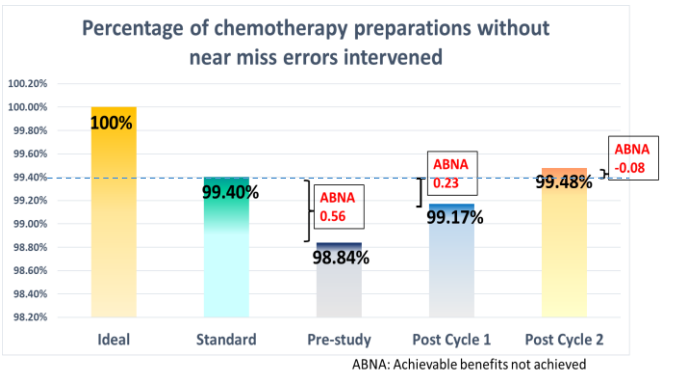


- **Further updates to forms:** Separating CDR Request Form and Chemotherapy Administration Chart (CAC)
- **CDR request form Cycle 2** : Retained the information necessary to compare doses with previous cycles



6.0 Effects of Change

Duration	No of CDR preparations by Oncology Pharmacy	No of Chemotherapy errors intervened	Percentage of chemotherapy preparations *without* near miss errors intervened
Pre-remedial	**7082**	**82**	**98.84%**
Post Cycle 1	**5393**	**45**	**99.17%**
Post Cycle 2	**5225**	**27**	**99.48%**



7.0 The Next Step

7.1 Lessons Learnt

- Reducing near miss error can reduce the risk of actual error that may harm patients, thus preventing irreversible damage due to an error of dose/drug while receiving chemotherapeutic drug treatment.
- A multidisciplinary effort is essential in ensuring 0% chemotherapy error.

7.2 The Next Step

- As a team, we will continue to monitor the work process, ensure the adherence of staffs to the revised policies, and maintain sustainability.
- These strategies can be expanded to all wards using chemotherapy in Hospital Kuala Lumpur.

References

1) Lustig A: Medication error prevention by pharmacists: An Israeli solution. Pharm World Sci 22:21-25, 2000
2) Ashokkumar R, Srinivasamurthy S, Kelly JJ, Howard SC, Parasuraman S, Uppugunduri CS. Frequency of chemotherapy medication errors: A systematic review. J Pharmacol Pharmacother 2018;9:86-91
3) Baldwin, A., & Rodriguez, E. S. (2016). Improving Patient Safety With Error Identification in Chemotherapy Orders by Verification Nurses. *Clinical journal of oncology nursing*, *20*(1), 59–65.
4) National Coordinating Council on Medication Error Reporting and Prevention. About medication errors. *www.nccmerp.org*

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