QLL87

INCREASING PERCENTAGE OF CORRECT MEDICATION ADMINISTRATION VIA NASOGASTRIC TUBE IN HOSPITAL KAJANG

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1. INTRODUCTION

Prescribing medication incompatible with nasogastric tube (NGT) and incorrect medication administration via NGT lead to lower therapeutic effect and risk of potential adverse events.[1] These subsequently cause increased morbidity, mortality[2] and hospitalization cost.[1]

1.1 PRIORITISATION OF PROBLEM

PROBLEM	S	M	A	R	T	SCORE
Low percentage of correct medication administration via NGT in Hospital Kajang	38	37	36	38	39	188
Poor timing of HAART medication administration in ward in Hospital Kajang	37	29	35	30	30	161
High percentage of discharged prescription after office hour in Hospital Kajang	29	30	32	31	38	160
High return of floor stock from ward in Hospital Kajang	24	28	26	34	36	148

8 GROUP MEMBERS	SCORE	1	2	3	4	5
	INDICATION	Very Low	Low	Fair	High	Very High

1.2 REASON FOR SELECTION

S – SERIOUSNESS
Low percentage of correct medication administration via NGT lead to reduced medication effectiveness, increased adverse effects, causing various interactions, clogging feeding tube and lead to mortality[3,4]

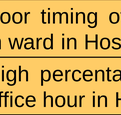
M – MEASURABLE
Percentage of correct medication administration via NGT can be measured

A – APPROPIATENESS
Increasing percentage of correct medication administration via NGT can prevent compromising medication physicochemical and pharmacological. Thus, it ensures the treatment safety and efficacy[1]

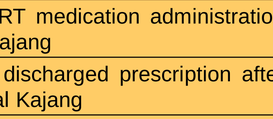
R – REMEDIABLE
Integrated program with active involvement of a multidisciplinary team approach can contribute to substantial improvement[5]

T – TIMELINESS
This study can be completed within a short period of time

1.3 PROBLEM STATEMENT



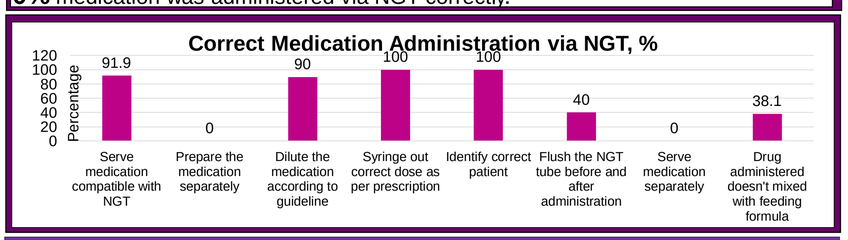
A patient admitted due to breakthrough seizure



Crushed Tab Sodium Valproate → TDM level Sodium Valproate **20mcg/mL** (sub-therapeutic)

Changing to Syr Sodium Valproate → TDM level Sodium Valproate **74mcg/mL** (within therapeutic)

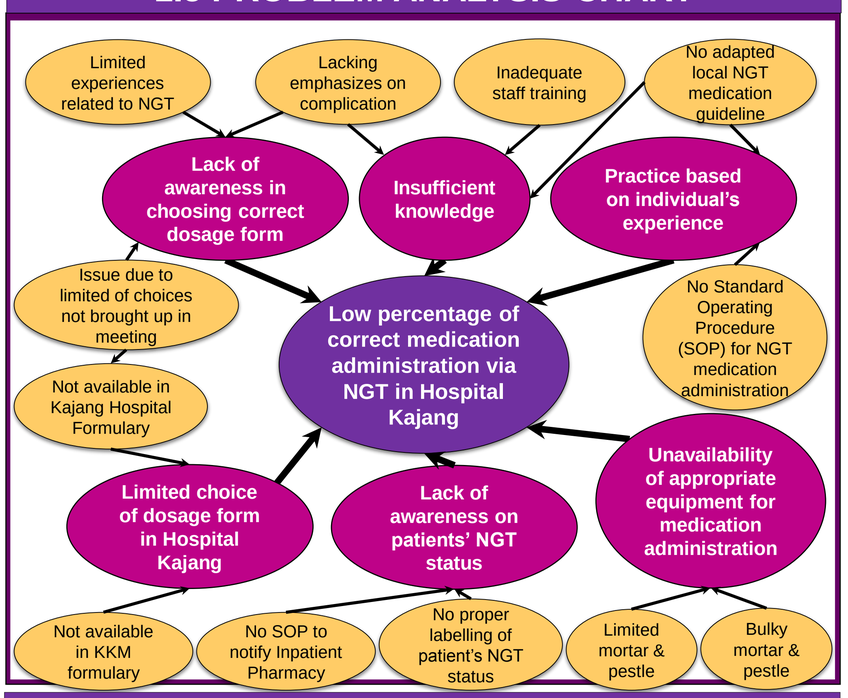
2 weeks verification study (1/7/2019-12/7/2019) was conducted in Hospital Kajang. **0%** medication was administered via NGT correctly.



1.4 LITERATURE REVIEW

(Schier JG et al. 2003)	(Bemt 2006)	(Wright et al. 2006)	(Maslak 2016)
A case reported that crushing extended released nifedipine and serving thru NGT leading to mortality as a result of severe hypotension.[4]	The integrated program result in significant improvement in the number of administration error per nurse (from **24%** to **93%**).[5]	Crushing oral medication of narrow therapeutic window drugs alters pharmacokinetics and bioavailability, resulting in under dosing or adverse effects.[6]	**64%** stated that they had not received enteral feeding training and **81%** stated that there was no written guideline at their clinic.[7]

1.5 PROBLEM ANALYSIS CHART



1.6 TERM & DEFINITION

TERMS	DEFINITION
NASOGASTRIC TUBE (NGT)	Tube that are passed proximally from the nose or mouth distally into the stomach or small bowel for medication administration.[8]
CORRECT MEDICATION ADMINISTRATION	Administering the right medication to the right patient with the right technique in accordance with Handbook of Drug Administration via Enteral Feeding Tubes.[8,9]

2. KEY MEASURES FOR IMPROVEMENT

2.1 OBJECTIVES

GENERAL OBJECTIVE

To increase percentage of correct medication administration via NGT in Hospital Kajang

SPECIFIC OBJECTIVE

1. To determine percentage of correct medication administration via NGT in Hospital Kajang
2. To identify factors contributing to low percentage of correct medication administration via NGT in Hospital Kajang
3. To formulate strategies and to implement possible remedial actions
4. To evaluate effectiveness of remedial measures implemented

2.2 INDICATOR & STANDARD

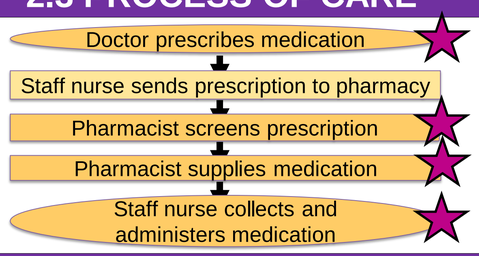
INDICATOR

Percentage of correct medication administration via NGT in Hospital Kajang

Number of correct medication administration via NGT / Total number of medications administered via NGT	X 100%

STANDARD	100%	Based on Malaysian Patient Safety Goals No.7: Guidelines on Implementation and Surveillance 2013

2.3 PROCESS OF CARE



2.4 MODEL OF GOOD CARE

NO	PROCESS	CRITERIA	STANDARD	PRE-REMEDIAL	CYCLE 1	CYCLE 2
1.	Doctor prescribes medications	Prescribe medication based on NGT compatibility	100%	93.3%	94.8%	98.6%
2.	Pharmacist screens prescription	Screen prescription based on NGT compatibility	100%	0%	0%	100%
3.	Pharmacist supplies medication	Supply correct medication based on NGT compatibility	100%	93.3%	94.8%	98.6%
4.	Staff nurse collects and administers medication	4.1 Collect medication for the correct patient	100%	100%	100%	100%
		4.2 Serve medication compatible with NGT	100%	93.3%	94.8%	98.6%
		4.3 Prepare the medication separately	100%	0%	80%	100%
		4.4 Dilute the medication according to guideline	100%	91.9%	94.8%	98.6%
		4.5 Syringe out correct dose as per prescription	100%	100%	100%	100%
		4.6 Identify correct patient	100%	100%	100%	100%
		4.7 Flush the NGT tube before and after administration	100%	47.6%	69%	94.8%
		4.8 Serve medication separately	100%	0%	80%	100%
		4.9 Drug administered doesn't mix with feeding formula	100%	40%	72.9%	100%

3. PROCESS OF GATHERING INFORMATION

3.1 METHODOLOGY

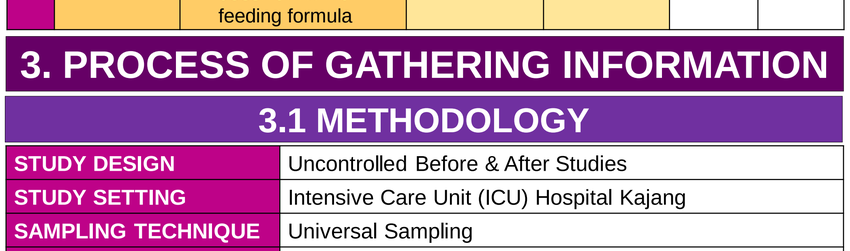
STUDY DESIGN	Uncontrolled Before & After Studies
STUDY SETTING	Intensive Care Unit (ICU) Hospital Kajang
SAMPLING TECHNIQUE	Universal Sampling
STUDY PERIOD	Pre-Remedial: July 2019 – September 2019 Cycle 1: October 2019 – March 2020 Cycle 2: March 2020 – August 2020
INCLUSION CRITERIA	Medication administered via NGT
EXCLUSION CRITERIA	Incompatible NGT medication which the alternative is not available in Ministry of Health (MOH)

3.2 DATA COLLECTION TOOL

NO	TOOL	AIM	SUBJECT
1	Observational Audit Form	To determine percentage of correct medication administration via NGT	210 NGT medications administration in ICU
2	Self-Administered Validated Questionnaire	To assess the • knowledge on NGT medication compatibility and administration steps • contributing factors of the problems • awareness on compatibility of medication for NGT patient	132 doctors, 20 staff nurses and 6 pharmacists in ICU

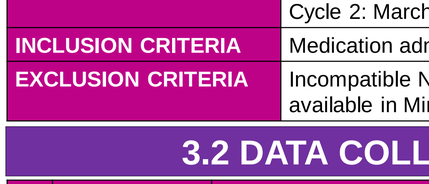
4. ANALYSIS AND INTERPRETATION

4.1 PRE-REMEDIAL STUDY (AUDIT FORM)

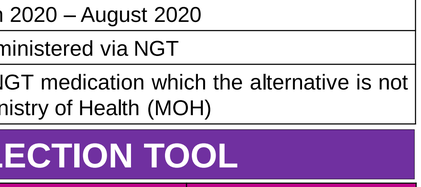


NONE medication administration via NGT fulfill the 8 steps correctly

4.2 PRE-REMEDIAL STUDY (QUESTIONNAIRE)

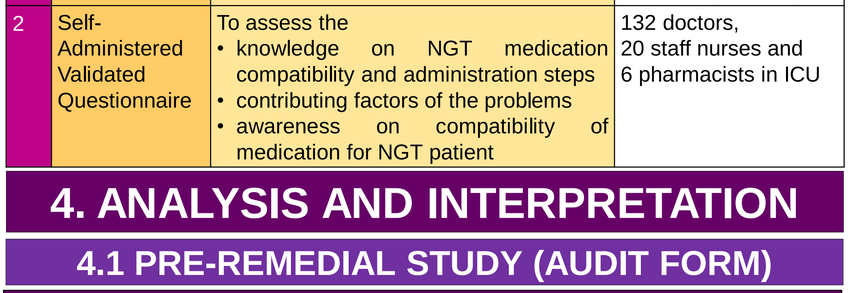


Mean score = **46.9%**



Only **41.1%** respondents alert about NGT status

4.3 PARETO CHART



5. STRATEGY FOR CHANGE (NASOCARE INTEGRATED PROGRAM)

Cycle 1

5.1 M&M (MINI & MULTIPLE) KIT

PROBLEM: NONE of NGT medication were prepared correctly because all were crushed together.

PRE-REMEDIAL

1. Bulky
2. Limited quantity

POST-REMEDIAL

1. Mini size (Diameter from 14cm reduced to 6.5cm)
2. Multiple quantity with cheaper cost (RM80 vs RM5 /piece)

Reducing drug residual and fasten the administration process

Cycle 1

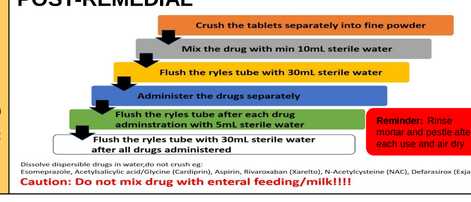
5.2 ESTABLISHMENT OF SOP

PROBLEM: Administration practice of NGT medication based on individual's experience

PRE-REMEDIAL

1. Inappropriate dilution = **8.1%**
2. Inappropriate flushing = **52.4%**
3. Mixed with milk = **60%**

POST-REMEDIAL



SOP with NGT medication administration steps was developed

Cycle 1

5.3 NASOMED GUIDELINE WITH QR CODE

PROBLEM: No adapted local NGT medication guideline

PRE-REMEDIAL

6.7% medications prescribed were not compatible with NGT

POST-REMEDIAL

- Quick guide
- Administration SOP
- Local brand name
- Crushability
- Alternative

Cycle 2

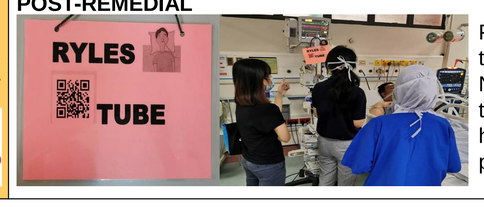
5.4 NGT PINK CARD

PROBLEM: Low awareness on compatibility of medication for NGT patients

PRE-REMEDIAL

58.9% respondents were not aware of NGT medication compatibility

POST-REMEDIAL



Patients were tagged with NGT pink card to alert healthcare professionals

Cycle 2

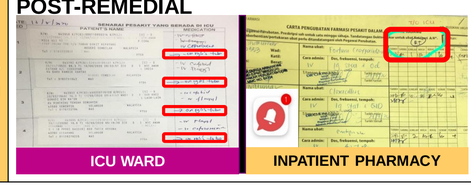
5.5 DAILY NGT PATIENT LIST

PROBLEM: No SOP to notify Inpatient Pharmacy

PRE-REMEDIAL

NONE prescription was screened based on NGT compatibility

POST-REMEDIAL



Daily NGT patient list was sent to inpatient pharmacy

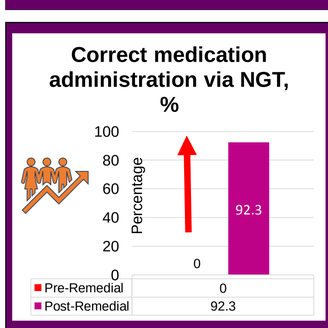
5.6 CUSTOMIZED COURSES

Staff Nurse Briefing	Dept.'s Weekly Assembly	Pharmacy Level Briefing
08/10/19 05/11/20	19/11/19 02/06/20	03/12/19 06/08/20

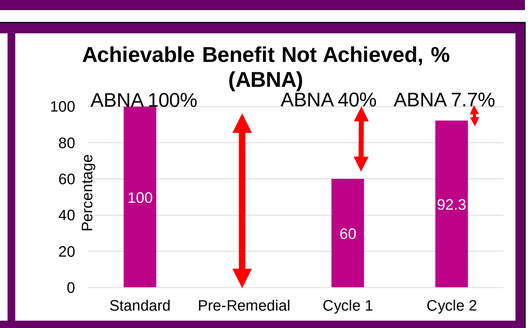
- To introduce NASOCARE INTEGRATED PROGRAM
- Hands on training
- Pre-Post Test
- Questions and prizes

6. EFFECT OF CHANGE

Correct medication administration via NGT, %



Achievable Benefit Not Achieved, % (ABNA)



Correct medication administration via NGT improved from **0%** to **92.3%**, with ABNA improved from **100%** to **7.7%**. The mean score of knowledge improved from **46.9%** to **82.3%**.

7. NEXT STEP

- To expand in all wards in Hospital Kajang and other MOH facilities
- To develop reference guide and educate caretaker on medication administration via NGT at home

8. LESSON LEARNT

- Integrated Program successfully increases the percentage of correct NASOCARE medication administration via NGT.
- These substantial improvements which warrant the treatment safety and efficacy, requires the active involvement of multidisciplinary team.

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SPECIAL THANKS TO
Pengarah Hospital Kajang
Dr Abdul Ghani bin Abdul Jalil

Head of Department, Pharmacy, Hospital Kajang
Pn Norlida bt Ibrahim

Head of Department, Anesthesiology, Hospital Kajang
Dr Siti Zuraidah binti Abdul Karim

Staff Nurses, Pharmacists & Doctors

e-poster ini dibentangkan di Konvensyen QA Kebangsaan kali ke-12, 8-10 Okt 2024, Negeri Sembilan.