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1. SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

1.1 INTRODUCTION

Dietitians prescribe Enteral Nutrition Product (ENP) to ensure patients with malnutrition receive sufficient nutrients to improve their clinical status during the hospital stay.

Nutrition support therapy should be initiated within 24-48 hours following hospitalization in patients who are unable to maintain oral nutritional intake (Eugene R et al. 2017).

1.2 REASON FOR SELECTION

SERIOUSNESS

- Based on survey conducted, only 56% of patient received ENP within 24 hours of dietitian prescription in Hospital Serdang.
- 40% of hospitalized patients are having malnutrition (Heyland DK et al., 2003).
- There is significant relationship between mortality (29.1%) with the average total calorie received in hospitalized patient (Alberda C et al., 2009).

MEASURABLE

ENP given could easily be monitored during dietitian review and audited by the dietitian through IT system and manual form.

APPROPRIATENESS

ENP help in achieving calorie and nutrition requirement, prevent malnutrition, reduce complications and length of hospital stay.

REMEDIAL

Remedial action could be implemented to improve the work process with multidisciplinary approach.

TIMELINESS

This study can be completed within short period of time.

1.3 LITERATURE REVIEW

Malnutrition is associated with negative outcomes for patients, including higher infection and complication rates, increased muscle loss, impaired wound healing, longer of hospital stay and increased morbidity and mortality (Lisa A. Barker et al., 2011).

The evidence showed that if nutritional needs are ignored, health outcomes are worse and meta-analyses of trials suggested that provision of nutritional supplements to malnourished patients reduces complications such as infections and wound breakdown by 70% and mortality by 40% (Stratton RJ, Green C and Elia 2007).

1.4 TERMS AND DEFINITION

ENTERAL NUTRITION

Any method of feeding that uses the GI tract to deliver part or all of a person's caloric requirements, either oral or tube feeding (American College of Gastroenterology, 2011).

ENTERAL NUTRITION PRODUCT (ENP)

Product intended for ingestion that contains a dietary ingredient intended to add further nutritional value to the diet (FDA, US Food and Drug Administration).

DIETITIAN

A professional trained in translating the science of food, nutrition and medical nutrition therapy to meet the needs of individual or target groups whether in disease or health (Malaysian Dietitian Association, 2004).

1.5 PROBLEM ANALYSIS (5W+1H)

| | |
|--------------|---|
| What | Low percentage of patient received ENP within 24 hours of dietitian prescription at 56%. |
| Why | Weakness of system and work process with lacking of awareness and inappropriate practice among staff. |
| Where | Obviously in surgical ward (6C), medical ward (7C) & orthopedic ward (7E) in Hospital Serdang. |
| Who | Doctors, dietitians, nurses, hospital attendant (PPK), Pembantu Operasi (PO) and patients involved. |
| When | Since 2006 (in-patient service started) until now. |
| How | ENP did not served to patients due to multiple factor such as system weakness, attitude and miscommunication among staff. |

1.6 PROBLEM STATEMENT

| | | | |
|---|---|---|---|
| PROBLEM | EFFECT | POSSIBLE CAUSE | AIM |
| A survey was conducted for 2 weeks in early of February 2016 (n=30) in those 3 selected wards and the results shown that only 56% of the patients received ENP within 24 hours of dietitians' prescription. | The delay will affect patient's nutrition status and slow clinical improvement as well as total patient care. | Multiple factors including manpower, TH1 system limitation, attitude and current working culture contributed to this problem. | This study will improve the percentage of patients receive ENP as main nutrition support within 24 hours of dietitian's prescription. |

1.7 PROBLEM ANALYSIS CHART



1.8 STUDY OBJECTIVES

GENERAL OBJECTIVE

Improving percentage of patients receiving ENP within 24 hours of dietitians' prescription.

SPECIFIC OBJECTIVES

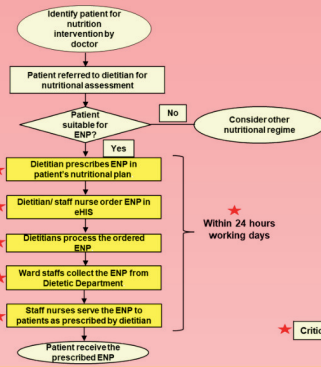
- To verify the prevalence of patients who receive ENP within 24 hours of dietitians' prescription.
- To identify the contributing factors to low percentage of patients receiving ENP within 24 hours of dietitians' prescription.
- To formulate and implement proper remedial action.
- To evaluate the effectiveness of remedial action.

2. KEY MEASURES FOR IMPROVEMENT

2.1 INDICATOR AND STANDARD

| | |
|------------------|---|
| INDICATOR | Percentage of patients receiving ENP within 24 hours of dietitians' prescription |
| FORMULA | $\frac{\text{Total number of patients receive ENP within 24 hours}}{\text{Total number of patients prescribed for ENP by the dietitians}} \times 100$ |
| STANDARD | ≥ 90% (based on Mesyuarat Pengurusan Dietetik Klinik Bilangan 1/ 2016 dated 25 th March 2016) |

2.2 PROCESS OF CARE



3. PROCESS OF GATHERING INFORMATION

3.1 METHODOLOGY

| | |
|----------------------------------|--|
| Study Design | Quality Improvement Study |
| Sampling Technique | Purposive sampling |
| Sample Size | $N = 1.96 \times \frac{0.91 \times (1-0.9)}{0.05^2} = 139$ |
| Data Collection Technique | Questionnaire, review record and eHIS system |
| Tools | <ul style="list-style-type: none"> Related monitoring form (Audit form, Borang Pesanan Produk) Daily Store Log book Questionnaire (KAP) Time-motion database |
| Study Analysis | IBM SPSS version 16 |
| Study Period | Verification: Mac-June 2016 Cycle 1: July-Dec 2016 Cycle 2: Jan-Aug 2017 Cycle 3: Sept 2017-Apr 2018 |

Inclusion Criteria

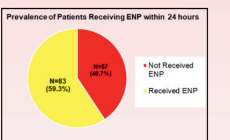
All patients with ENP prescription by dietitian initially in ward 7C (Medical), 6C (Surgical), 7E (Orthopedic) and expanded to all wards at cycle 3.

Exclusion Criteria

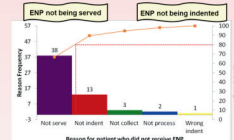
- Patients who are not referred to the dietitian.
- Patients who are nil by mouth (NBM).
- Patients who refuse to take the ENP.
- Patients who are having the ENP by their own.
- Patients who are discharged before getting the ENP within 24 hours of dietitians' prescription.

4. ANALYSIS AND INTERPRETATION

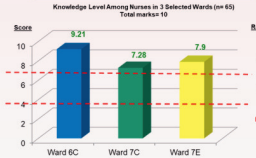
VERIFICATION RESULTS



PARETO CHART



KNOWLEDGE SURVEY ANALYSIS



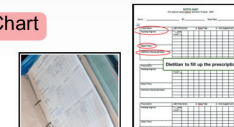
KNOWLEDGE SURVEY FORM

5. STRATEGIES FOR CHANGE

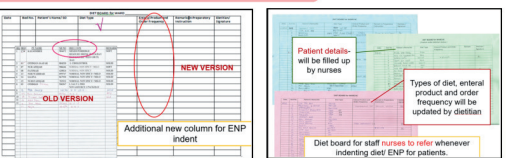
CYCLE 1

Strategy 1 : Introducing ENP Chart

Nurses need to update the date, time and sign each time when feeding is given to patient.

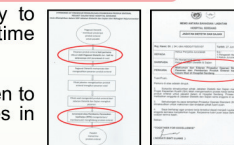


Strategy 2 : Improve Dietetic Board



Strategy 3 : Update Standard of Procedure (SOP)

- Dietitian takes responsibility to indent ENP for the first time ordering in eHIS.
- Assign PPK to serve ENP.
- Memo on updated SOP given to Hospital Director and nurses in wards.



Strategy 4 : Continuing Nursing Education

Explanation regarding updated SOP to all nurses involved in few sessions (26th June, 29th July and 10th Aug 2016).



CYCLE 2

Strategy 5 : Improve Nursing Report

Better nursing pass over report from free text to formatted with nutrition component in eHIS.



Strategy 6 : Bedside Teaching

Individual teaching on the remedial measures to 43 nurses within two months.



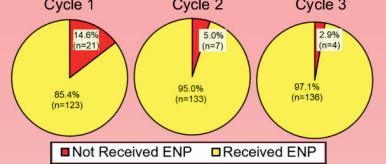
Strategy 7 : ENP Reminder Through Bed Tagging

Easy reminder for healthcare provider and patient including family members on ENP prescription.



6. EFFECT OF CHANGES

Prevalence of Patients Receiving ENP within 24 Hours

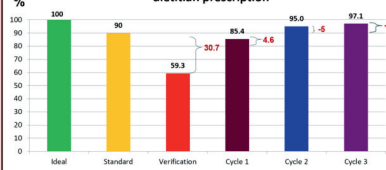


6.1 MODEL OF GOOD CARE

| No. | Process | Criteria | Standard | | Verification | | Cycle 1 | | Cycle 2 | | Cycle 3 | |
|--------------------|---|--|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|---------|--------------|
| | | | Percentage (%) | Time (Hour) | Percentage (%) | Time (Hour) | Percentage (%) | Time (Hour) | Percentage (%) | Time (Hour) | | |
| 1. | Dietitian prescribe the nutritional plan | Dietitian must inform nurses either through verbal, notes or eHIS | 100 | ≤ 1 | 100 | 1 | 100 | 1 | 100 | 1 | 100 | 34 |
| 2. | Dietitian/ Staff nurses order enteral diet in eHIS | Ensure DR: - Right patient - Right ENP | 100 | ≤ 8 | 100 | 10 | 100 | 4 | 100 | 4 | 100 | 3 |
| 3. | Dietitian process the ordered ENP | Dietitian must process order through system or Countercheck DR and correct errors detected. | 100 | ≤ 8 | 98.6 | 8 | 99.3 | 8 | 100 | 8 | 100 | 1 |
| 4. | Ward staff collect the ENP from Dietetic Department | Ward staff should collect the ENP from Dietetic Department - Receiver Card (Whisper/ Telegram/ SMS) - Receipt slip | 100 | ≤ 4 | 90 | 7 | 96.9 | 9 | 100 | 5 | 100 | 4 |
| 5. | Staff nurses/PPK serve the ENP to patients | Staff nurses/PPK serve the ENP to patients Input - Output charting | 90 | ≤ 3 | 99.3 | 8 | 95.4 | 3 | 95 | 2 | 97.1 | 2 |
| All entire process | | | 90% | ≤ 24 hours | 99.3% | 34 hours | 95.4% | 21 hours | 95.0% | 20 hours | 97.1% | 12 1/2 hours |

6.2 ACHIEVABLE BENEFIT NOT ACHIEVED (ABNA)

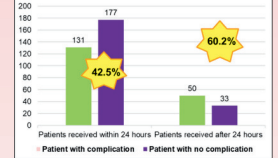
Percentage of patient receive ENP within 24 hours of dietitian prescription



6.3 IMPACT OF STUDY

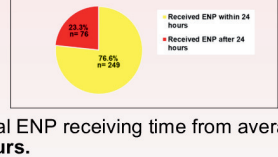
- Study shows lower rate proportion of **medical complications** among patient who received ENP within 24 hours dietitians' prescription (p=0.004).

Descriptive comparison for complications among patients, p=0.004



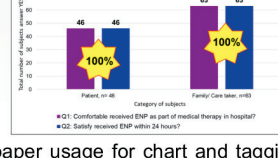
- Significant association between **mortality** and patient who received ENP within 24 hours of dietitian prescription (p=0.021).

Percentage of patients discharged/survived



- Improve total ENP receiving time from average of **34 hours to 12 3/4 hours**.
- High satisfaction** among patient and family member of providing ENP within 24 hours prescription.

Results of Survey on Satisfaction of Receiving ENP among Patients and Family Caretaker



- Additional paper usage for chart and tagging (RM2.50) but still **cost effective** if compare to the management of medical complications and length of hospital stay (estimated RM2500 per day).

6.4 LESSON LEARNT

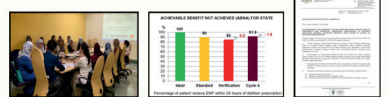
Support and approval from top management in hospital and state level is the key to the success of this study.

Limitation on IT system and human resources may provide challenges to achieve ideal standard of 100%.

Cooperation and spirit of teamwork among multidisciplinary staff nurturing good working culture to improve healthcare service.

7. THE NEXT STEP

- This study was **replicated to Selangor** government hospitals in 2018 to 2019.



- Regular audit** has been conducted to ensure sustainable achievement in hospital.



- Sharing sessions** through the QA study, measures and experience through national dietetic conference and various webinar.



- This study has been **published in Q Bulletin** edition 2021.



ACKNOWLEDGEMENT

Special thanks to individu, group, QA committee and secretariat, leaders and facilitators who were involved in this study including in hospital, state and national level.

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Eugene R et al. Schiff's Diseases of the Liver 2017, Stratton RJ, Elia M. Who benefits from nutritional support: what is the evidence? Eur J Gastroenterol and Hepatol 2007; 19:353-358, Heyland DK, Khalilw R, Drover JW, Gramlich L, Didek P. Canadian critical care practice guidelines for nutrition support in mechanically ventilated, critically ill adults patients. JPEN 2003;27:355-373.