



PUSAT PERUBATAN
**UNIVERSITI
MALAYA**

IMPROVED CARE THROUGH BETTER NUTRITION: VALUE AND EFFECTS OF MEDICAL NUTRITION

Prepared by :

Premium Nutritional Care Team



PROJECT GROUP MEMBERS



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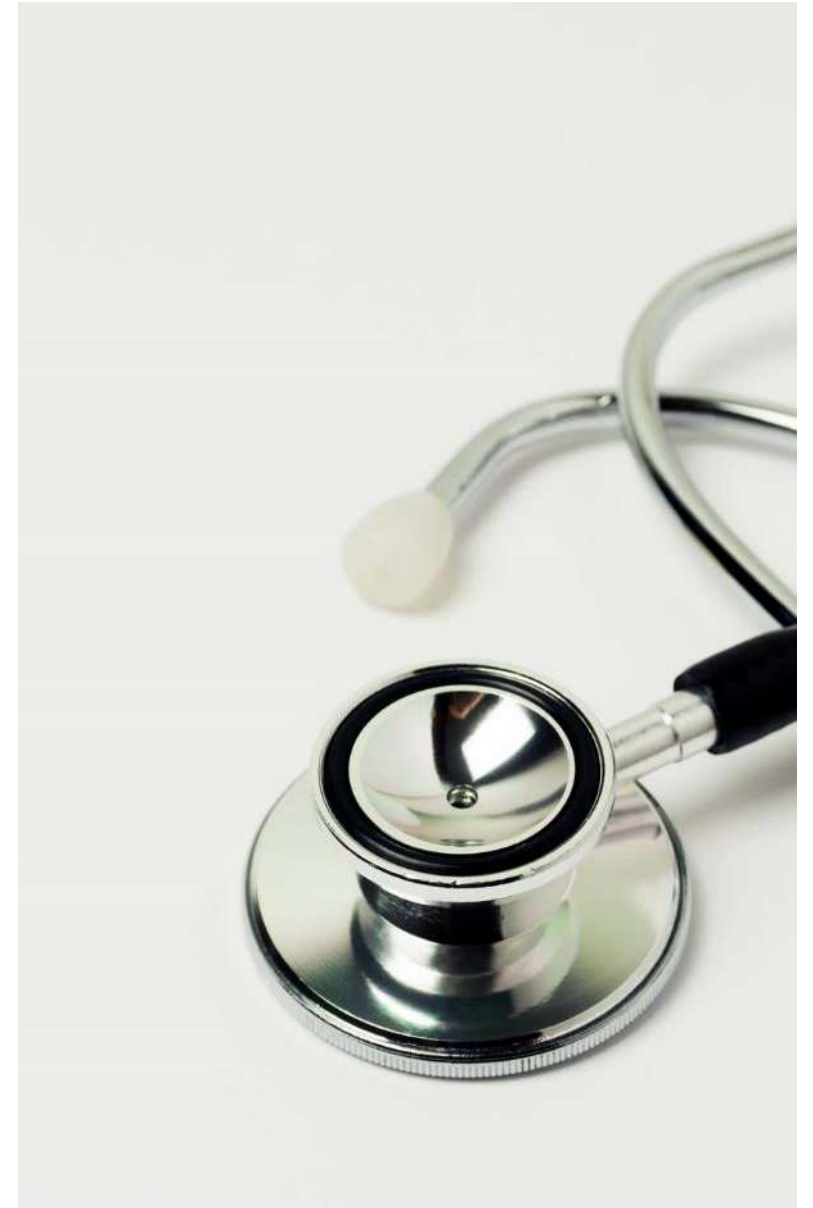
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OUTLINE

- 1 Introduction
- 2 Selection of Opportunities for Improvement (Outline of Problem)
- 3 Key Measures for Improvement
- 4 Process of Gathering Information
- 5 Analysis and Interpretation
- 6 Strategy for Change
- 7 Effects of Change
- 8 The Next Step



INTRODUCTION

- Nutrition is a process of food intake for growth, metabolism and repair.
- Types:
 - Oral Nutrition (**ON**): method of providing nutrition via **mouth**
 - Enteral Nutrition (**EN**): method of providing nutrition via **feeding tubes**
 - Parenteral Nutrition (**PN**) : method of providing nutrition via **intravenous**

INTRODUCTION

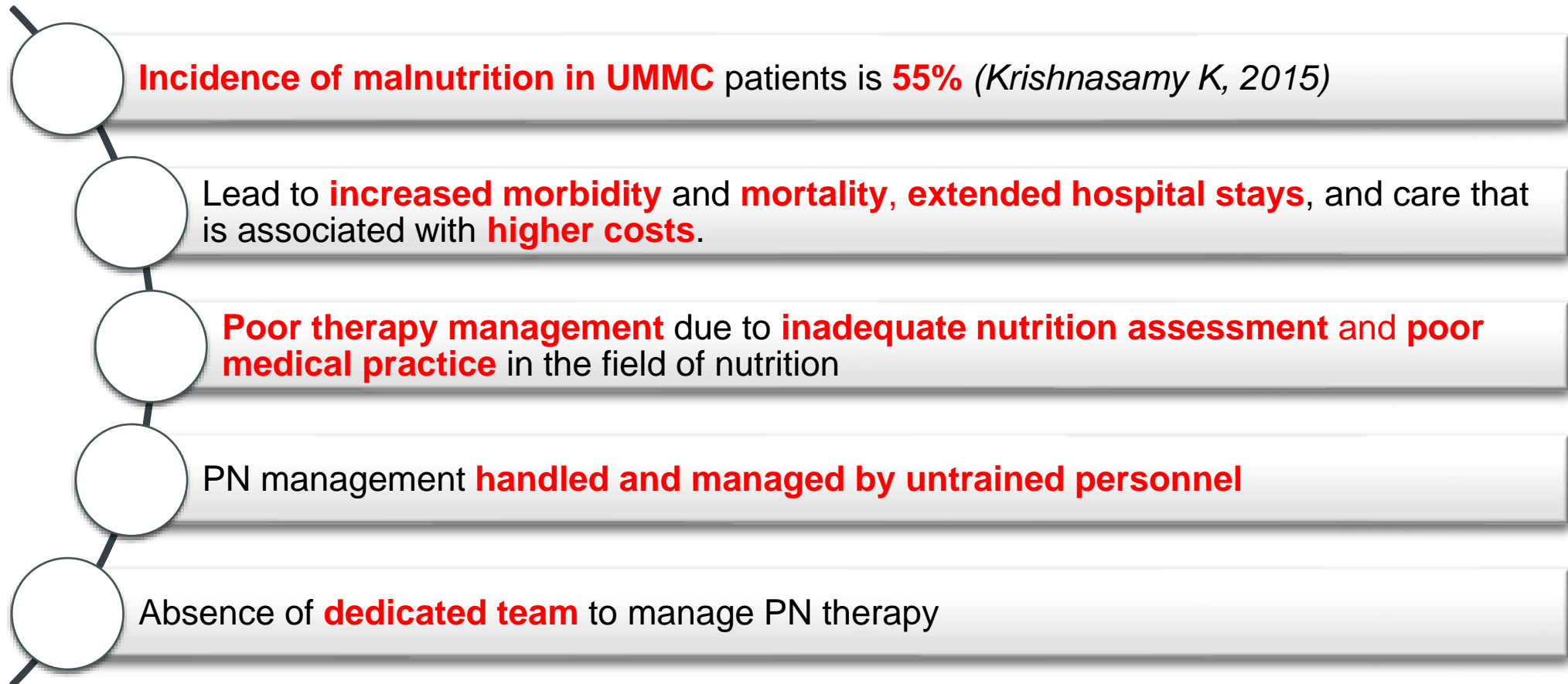
- Parenteral Nutrition (PN)
 - Given to patients who cannot be fed through oral and gut.
 - consist of protein, carbohydrates, fats, electrolytes, vitamins and minerals.
- Provides energy in the form of calories – post surgical healing and preventing malnutrition





SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

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IDENTIFICATION OF PROBLEMS

No	Problem	Justification	Proposer
1.	No proper prescribing pathway	PN prescribed and managed by many subspecialties	Physician
2.	Increased patient's PN related complications.	Longer hospitalization for nutrition stabilization	
3.	Lack of planned PN duration	PN therapy initiated and continued till patient discharged	Dietitians
4.	Infusion errors	Administration and infusion duration errors	Nurses
5.	Lack of training among prescribers.	Student medical officers (MO) unaware of PN therapy	Physician Nurses Dietitians Pharmacist

IDENTIFICATION OF PROBLEMS

No	Problem	Justification	Proposer
6.	Unnecessary PN request	Therapy requested without indication	Pharmacist
7.	PN prescription is not tailored to patient's needs	Calories provided through PN too much or too little	
8.	Wastage of TPN bags	High return rates and discarding on PN bags	
9.	Unnecessary preparations of compounded bags.	Increased material purchasing cost	
10.	Incomplete prescriptions	Orders received by pharmacist not in order	

PROBLEM SELECTION

Scale	0-3	4-6	7-10
	Not critical	Critical	Very critical

No	Problem	Critical Point	Ability	Total
1.	No proper prescribing pathway	10	8	18
2.	Increased patient's PN related complications.	10	8	18
3.	Lack of planned therapy duration	8	8	16
4.	Infusion errors	9	7	16
5.	Lack of training among prescribers.	8	8	16
6.	Unnecessary PN request	8	9	17
7.	PN prescription is not tailored to patient's needs	9	8	17
8.	Wastage of TPN bags	7	7	14
9.	Unnecessary preparations of compounded bags.	8	7	15
10.	Incomplete prescription request	6	7	13

AIM & OBJECTIVES

- 1. To ensure
 - **high-quality care**– reduce prescribing errors
 - **safe nutritional support** – reduce complications
 - **cost-effective** – reduce wastage & hospitalization cost
- 2. To establish a standard nutrition care pathway for UMMC patients
- 3. To evaluate effectiveness of interventions made by group members

UMMC Vision	To establish UMMC as a leading teaching hospital with international repute
UMMC Mission	To empower human capital with high competency To drive excellence in clinical research . To sustain a strong financial standing. To uplift the institution standard with education and healthcare related recognitions and accreditations.



KEY MEASURES FOR IMPROVEMENT

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- The indicator of this study is **the percentage of prescribing and administration errors of Parenteral Nutrition** in surgical wards and Intensive Care Unit (ICU), with the standard set as 0%.

0% of PN prescribing
and administration errors in
surgical wards and ICU

ABNA 40%



PROCESS OF GATHERING INFORMATION

METHODOLOGY

Project Design

- Retrospective pre- & post-interventional study
- Pre-intervention: January 2012 – June 2015
- Post intervention: July 2015 – December 2021

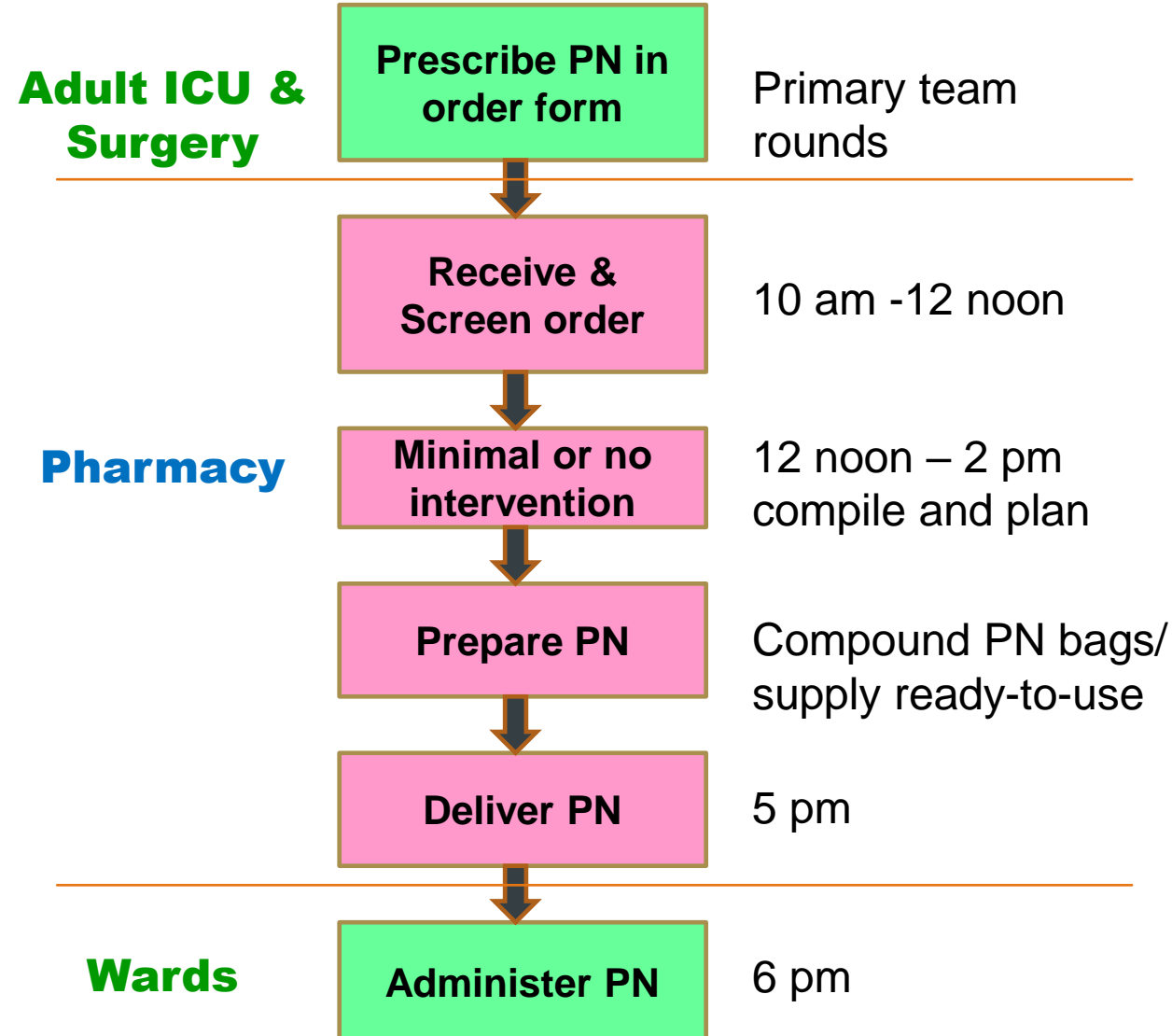
Inclusion Criteria

- All patients on PN in Surgical ward and ICU

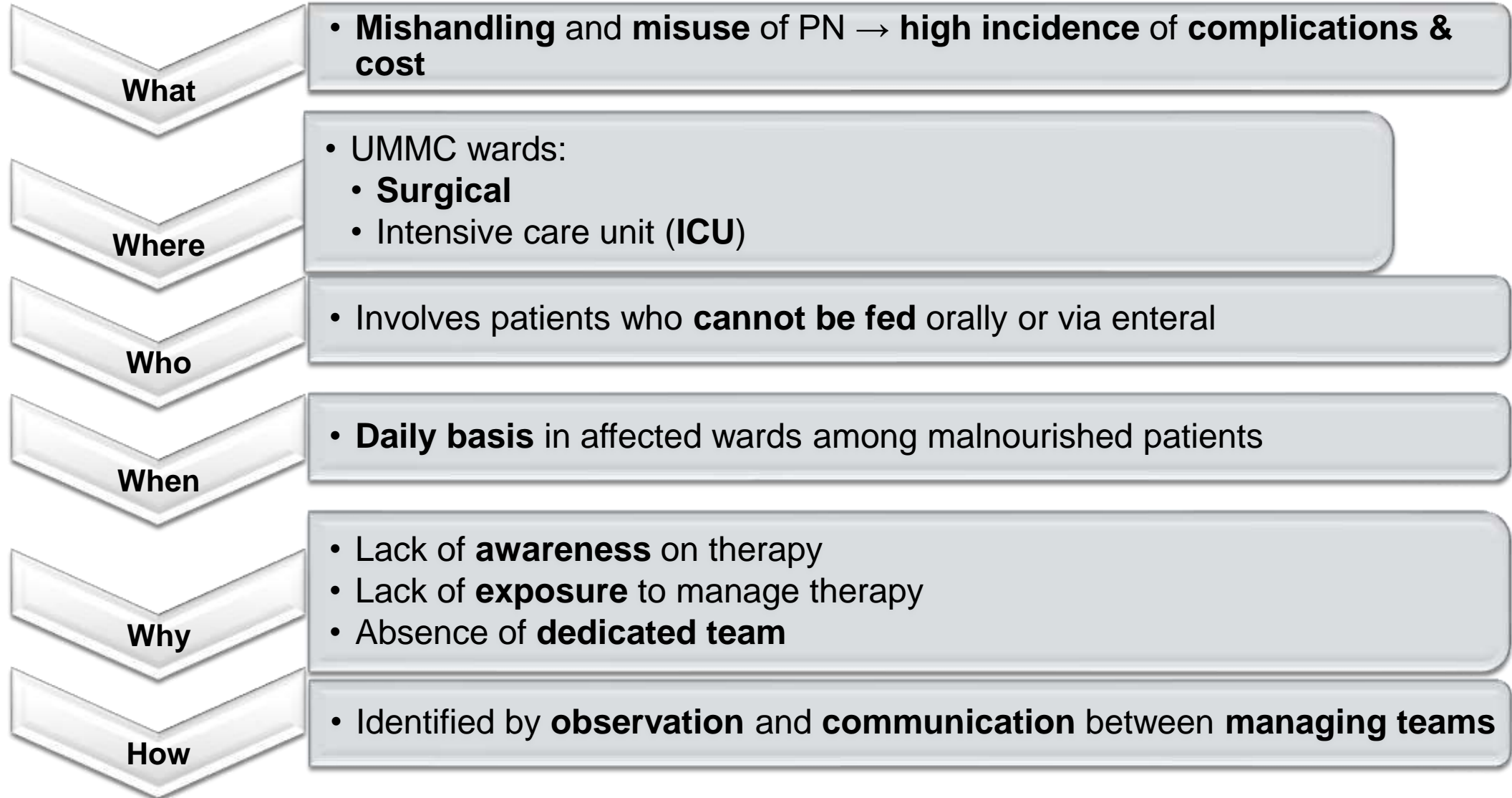
DATA COLLECTION

Data to collect	Pre- & Post-Intervention	
	Where	How
Incidence of complications	Pharmacy & Wards	Medical notes
Data on improvement of malnutrition status	Wards	Medical notes
Number of bags supplied	Pharmacy	PN order forms
Cost	Pharmacy & Wards	Costing calculation

REQUEST & SUPPLY PROCESS



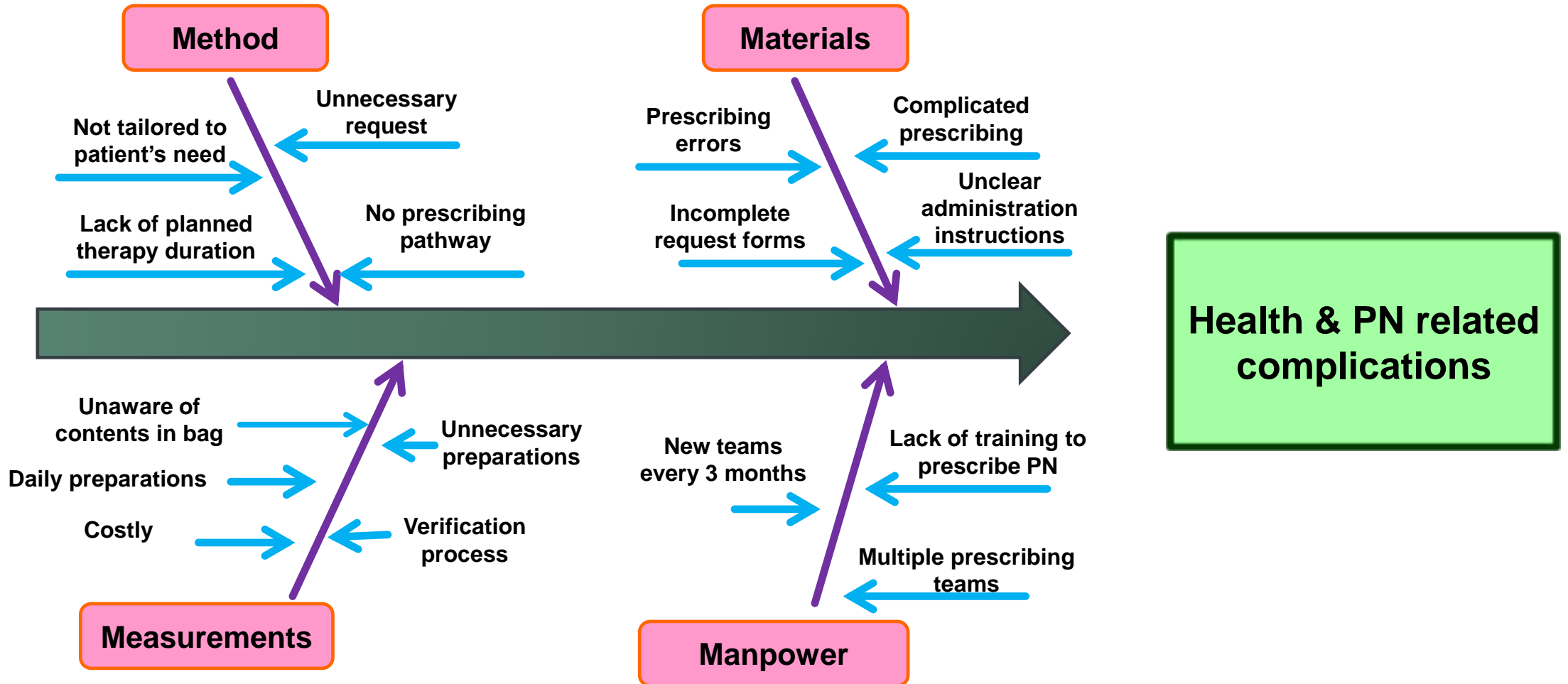
- **Standard prescribing** of calories regardless of diagnosis
- Regimens available as **compounded bags** and **ready-to-use (RTU)**
- **Duration** of PN : **until patient discharge**
- **Infuse** PN on **available infusion line**





ANALYSIS AND INTERPRETATION

PROBLEM ANALYSIS

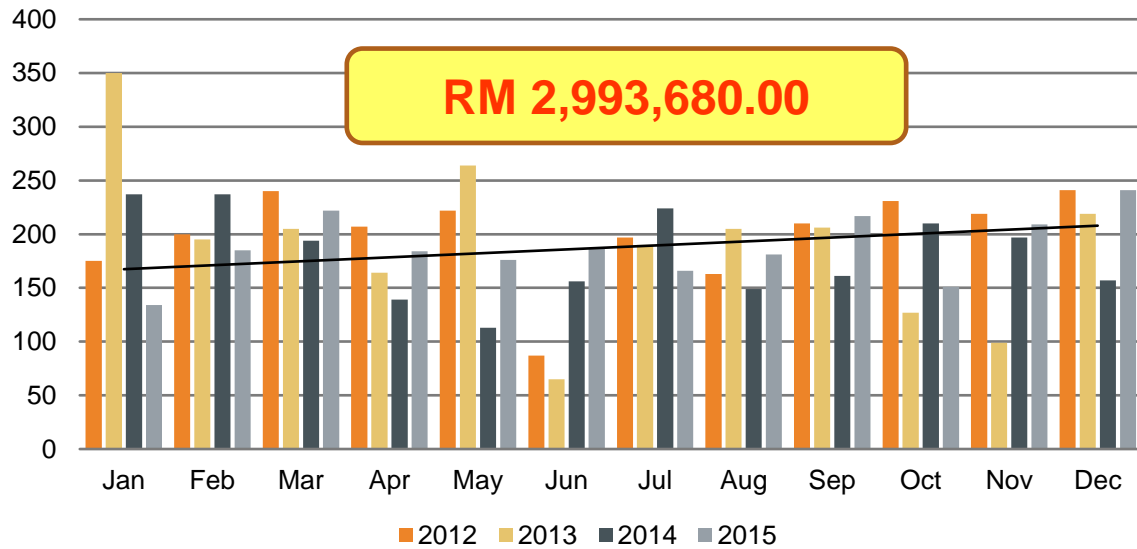


ANALYSIS OF KEY MEASURES

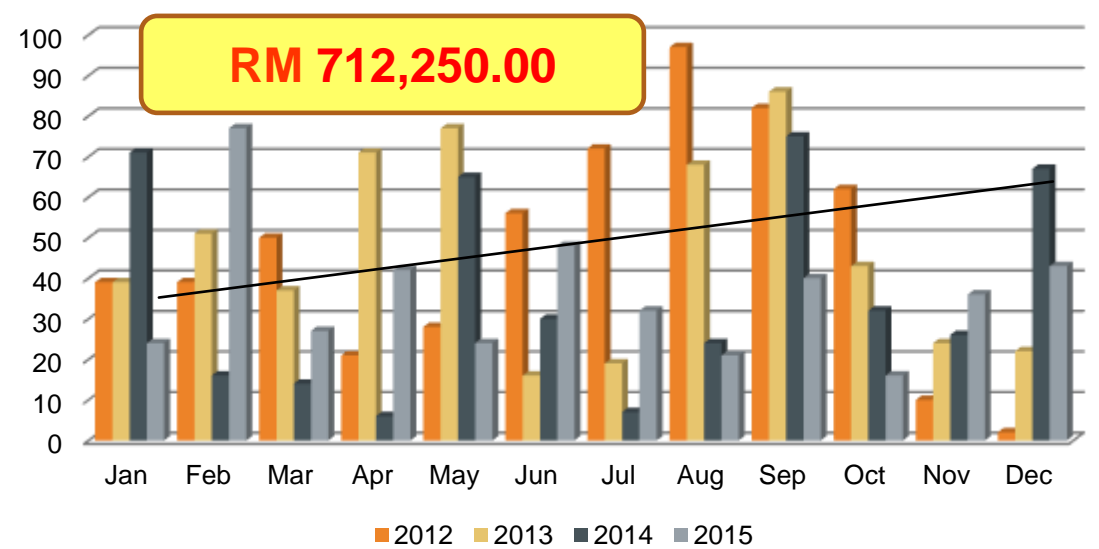
Problem	Source	Findings
<p>Method:</p> <ol style="list-style-type: none"> 1. No prescribing pathway 2. Unnecessary request/ orders 	<ul style="list-style-type: none"> • Clinical notes • Pharmacy notes • Survey among masters medical officers 	<ul style="list-style-type: none"> ❖ Therapy not tailored to patients needs ❖ Lack of planned therapy ❖ Therapy not indicated for patient
<p>Measurements:</p> <ol style="list-style-type: none"> 1. Type of therapy 2. Preparations 		<ul style="list-style-type: none"> ❖ Physicians unaware of components of PN therapy ❖ Pharmacy prepare bags as per order received – no intervention ❖ Wastage of bags – unused
<p>Materials:</p> <ol style="list-style-type: none"> 1. Prescribing errors 2. Incomplete orders 		<ul style="list-style-type: none"> ❖ Complicated prescribing ❖ Unclear administration instructions
<p>Manpower:</p> <ol style="list-style-type: none"> 1. 3 monthly prescriber rotation 2. Multiple prescribers 	<ul style="list-style-type: none"> • Wards 	<ul style="list-style-type: none"> ❖ Lack of trained personnel for therapy prescribing

ANALYSIS AND INTERPRETATION

PN Usage



PN Return/ Wastage



High PN cost and high PN wastage

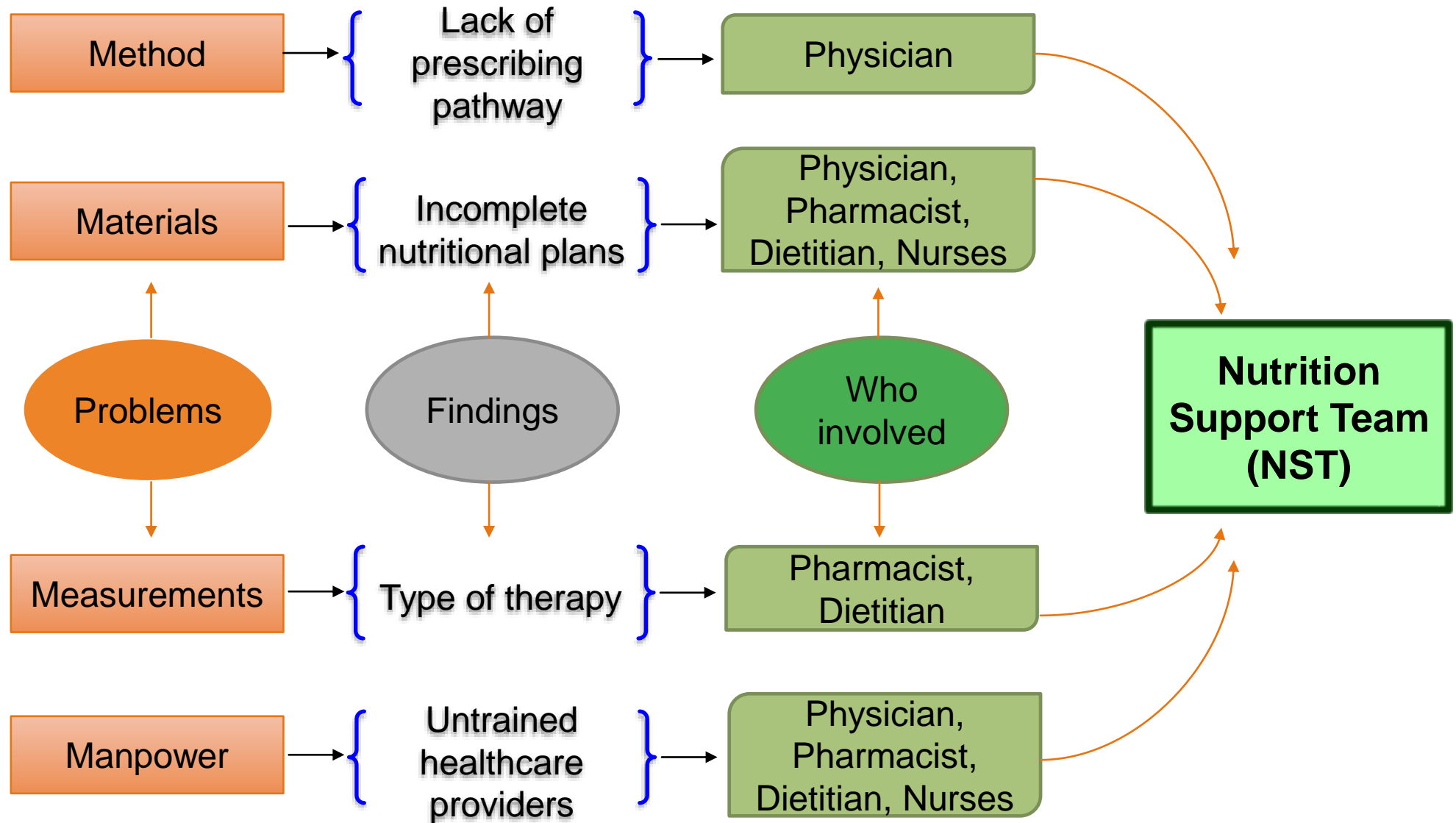
ANALYSIS AND INTERPRETATION

Complication	Pre NST
Prescribing errors	80%
Administration errors	58%
Nutrients deficiency	61%
Line infection	69%
Organs function impairment	54%
Appropriateness of caloric supply	13%
Appropriateness of amino acid supply	45%
Length of ICU stay	15 days



STRATEGY FOR CHANGE

STRATEGY FOR CHANGE



NUTRITION SUPPORT TEAM (NST)

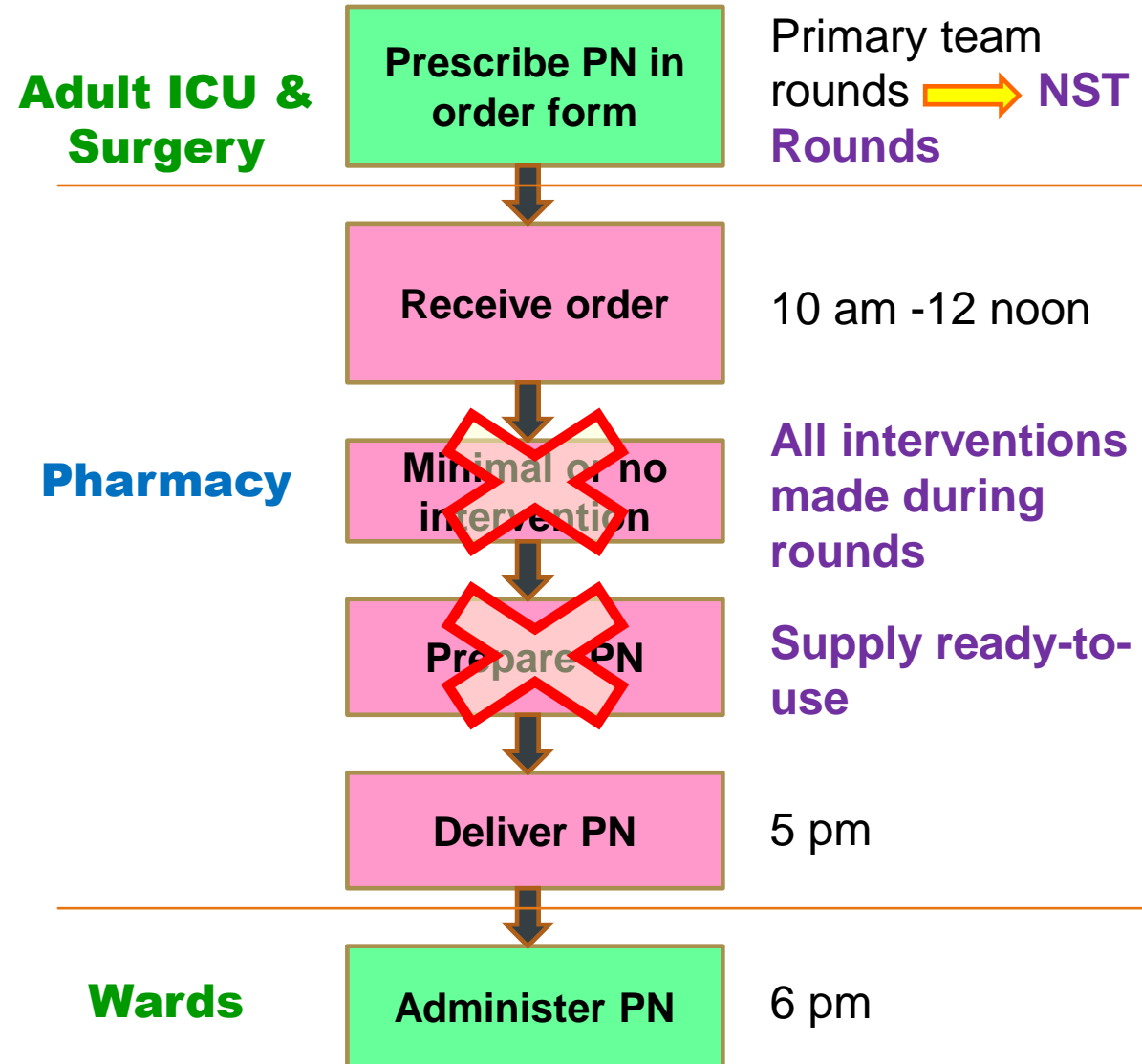
- Introduced in July 2015
- Multidisciplinary (MDT) team: physicians, nurses, pharmacist and dietitians
- Performs weekly rounds on Tuesday
- Discussion on patient's progress on Thursday



ROLES OF NST

- 1. Early recognition and treatment of malnutrition**
- 2. Reduction of mechanical and metabolic complications of PN & EN**
3. Reduction morbidity & mortality
- 4. Provision of more cost-effective selection of products**
5. Selection of appropriate nutrition support equipment and devices.
6. Reduction in length of stay and costs to the hospital
- 7. Selection and monitoring of appropriate laboratory tests**
- 8. Selection and monitoring of appropriate intravenous catheter**
- 9. Reduce central venous catheter related sepsis**

REQUEST & SUPPLY PROCESS



- Standard prescribing → **by patient's caloric need**
- Regimens: **ready-to-use** with **different volume & calories**
- **Duration** of PN : **until patient ready for EN or ON**
- **Infuse PN through suggested infusion line**

🔍 **How does it work?**

**NST
receives
referrals**



**NST
reviews
patients in
ward**



**Monitoring
of patient's
progress**



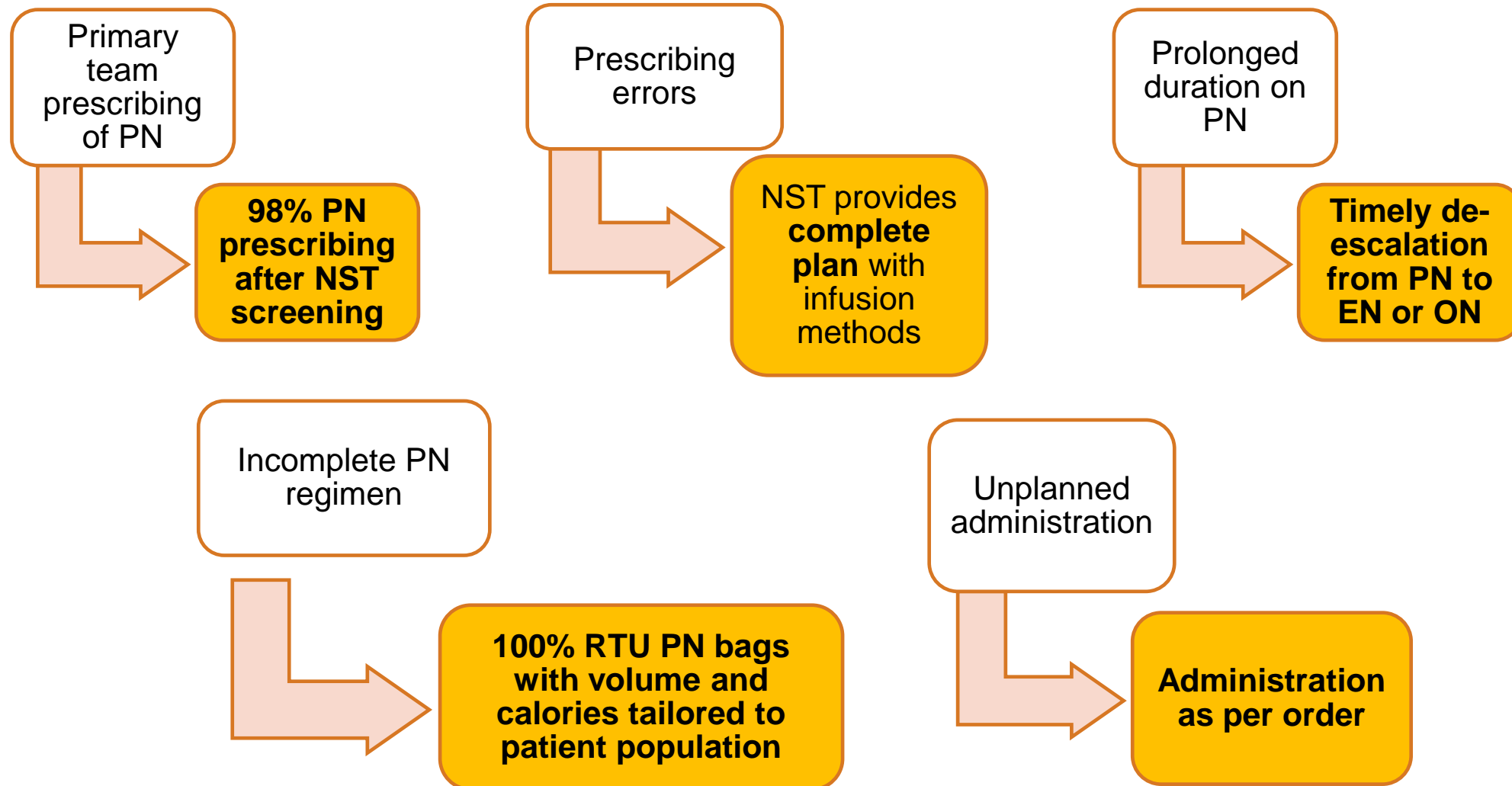
**Provision of
Parenteral
Nutrition &
Enteral
Nutrition**





EFFECTS OF CHANGE

EFFECTS OF CHANGE



INCIDENCE OF COMPLICATIONS

	Pre NST	Post NST	
Complication	Incidence		
Prescribing errors	80%	35%	↓ 45%
Administration errors	58%	10%	↓ 48%
Nutrients deficiency	61%	20%	↓
Line infection	69%	45%	↓
Organs function impairment	54%	40%	↓
Appropriateness of caloric supply	13%	57%	↑
Appropriateness of amino acid supply	45%	59%	↑
Length of ICU stay	15 days	8 days	↓

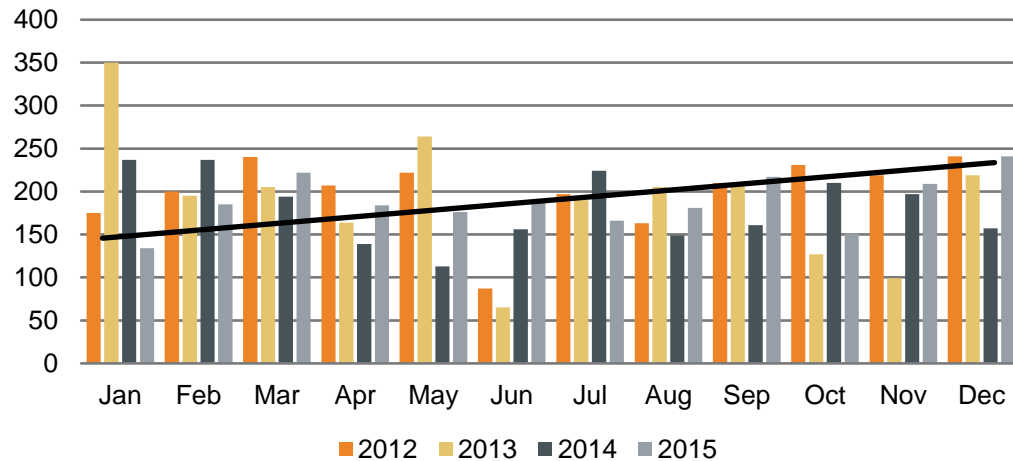
ABNA 40%

Chi Square test $p < 0.05$

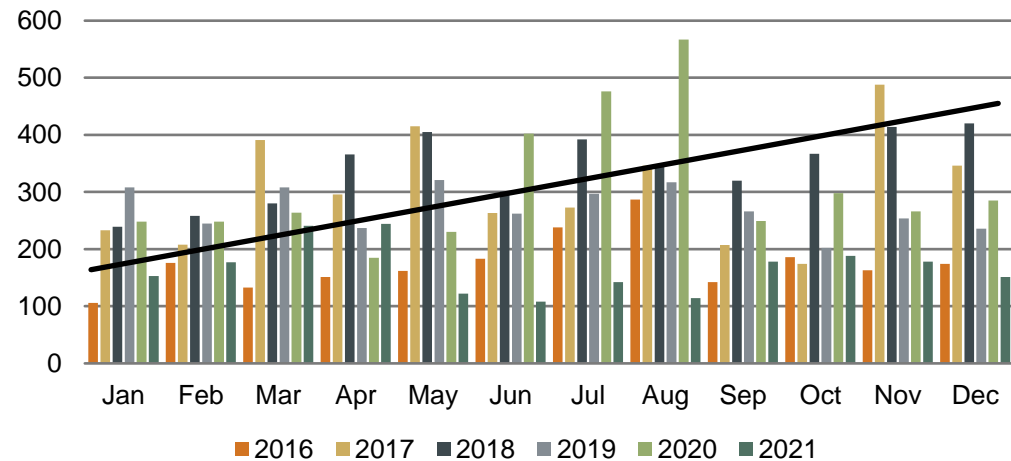
(JK Gill, ND Jamil; 2020)

NUMBER OF BAGS SUPPLIED

Pre Intervention (Before NST)

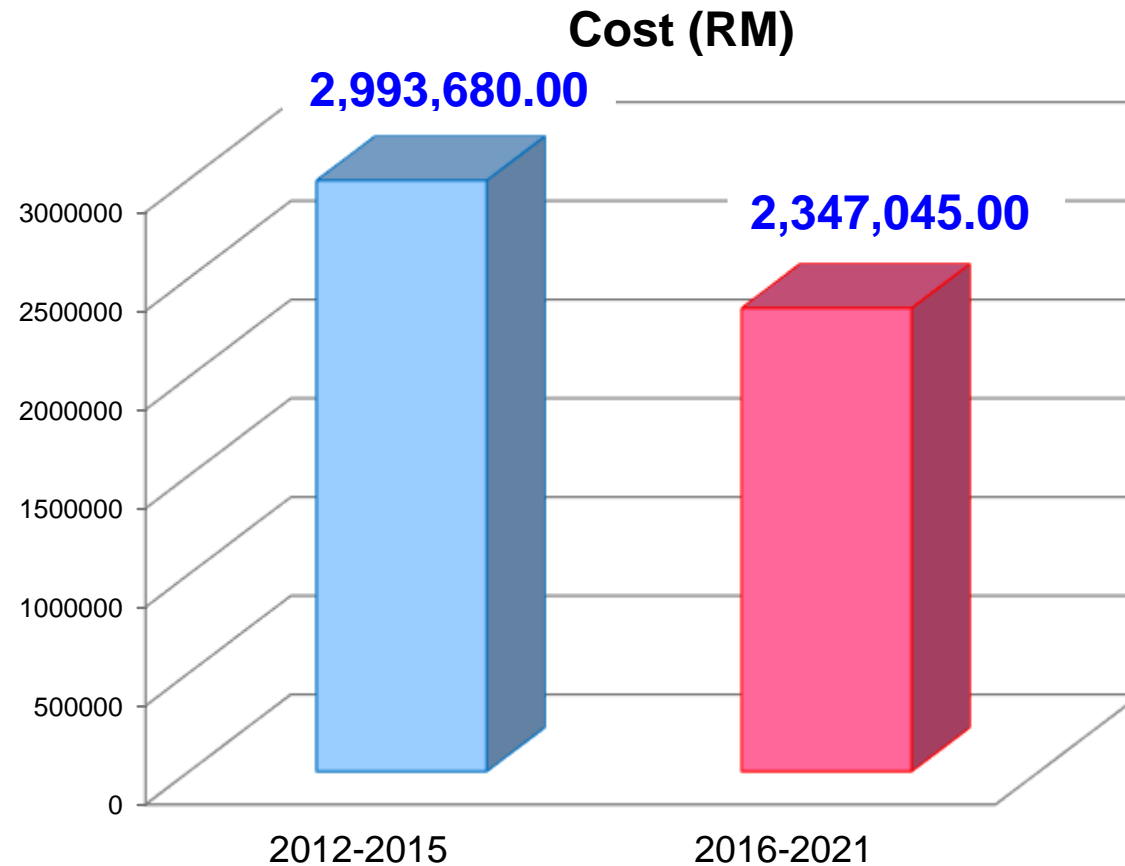


Post intervention (After NST)



Higher number of PN bags dispensed post NST due to increased number of patients and interventions performed by NST.

COST COMPARISON FOR PN BAGS



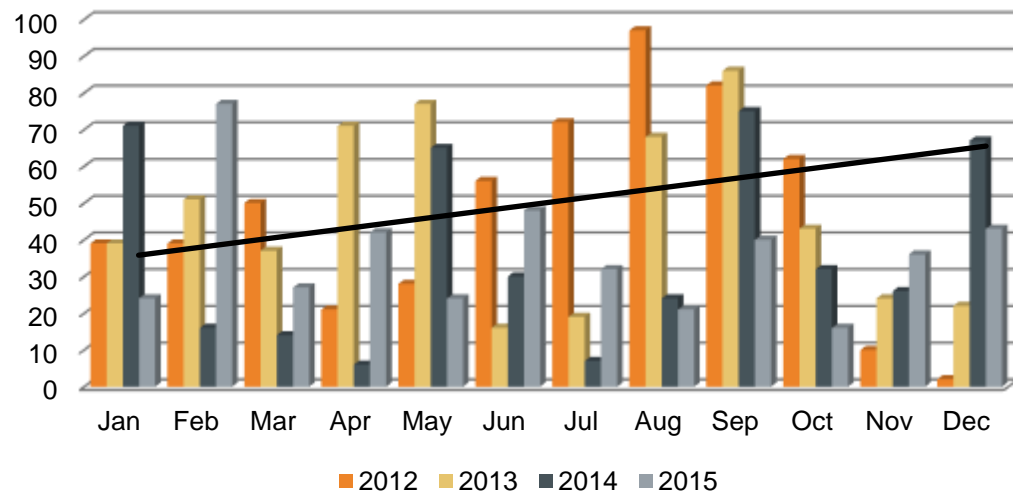
ADDITIONAL COST SAVINGS

- When team was initiated, the existing physicians, nurses, pharmacist and dietitians were included, no new employment
- Cost saved from 2016 till date: RM1,728,000
- Cost savings per year: ~ RM288,000

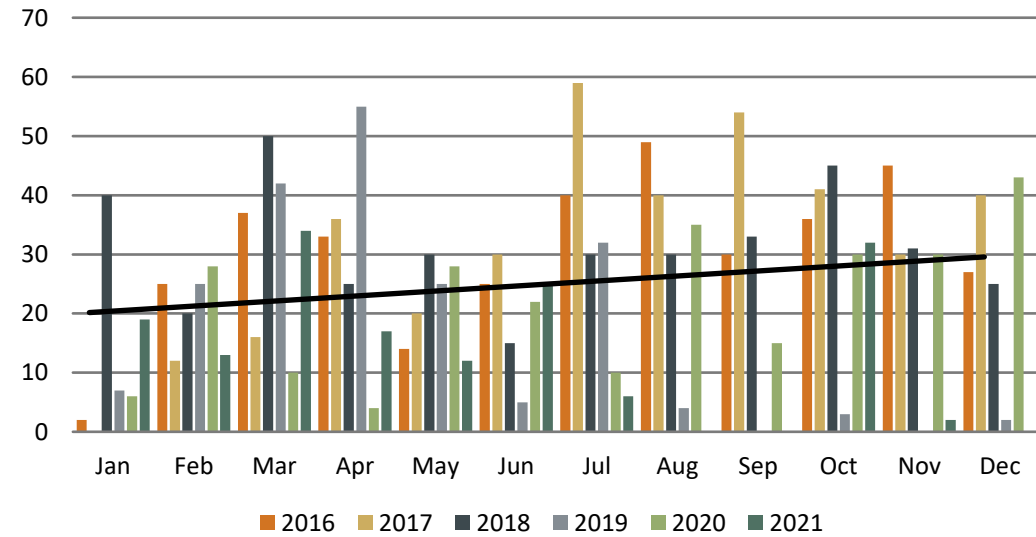


WASTAGE OF PN BAGS

PN Return/ Wastage (Pre NST)

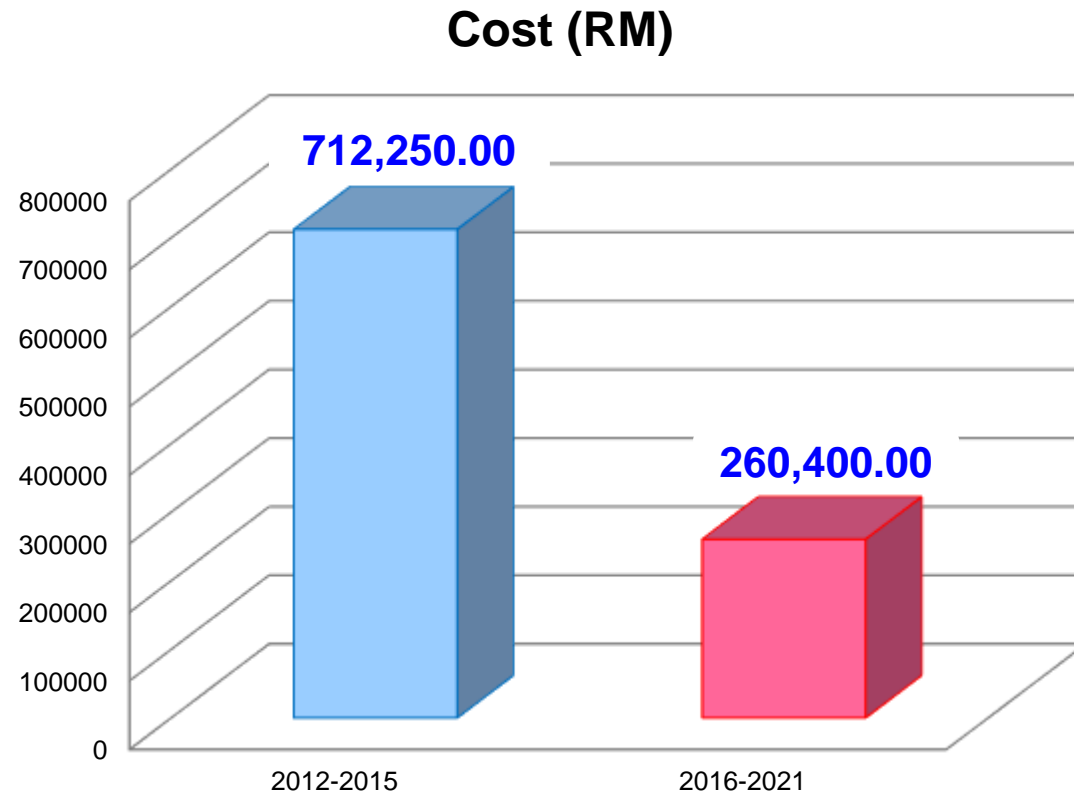


PN Return/Wastage (Post NST)



Number of wastage reduced post NST.

WASTAGE OF PN BAGS



↓ **63%**
> RM450,000



THE NEXT STEP



THE NEXT STEP

- Inclusion of physiotherapist and psychiatrist on board
- Increase number of ward rounds weekly
- Provide 5-day traineeship program for institutions to set-up nutrition support teams
- Develop education programs to support new nutrition support teams within MOH and private hospitals

GOVERNANCE : NST → NTT

(3597.) CADANGAN PENUBUHAN PERKHIDMATAN BAHARU

9.1 (3597.1) Nutritional Therapy Team

Dr. Wong Wei Jin membentangkan berkenaan *Nutritional Therapy Team*.

Latar belakang:

Peningkatan masalah malnutrisi semakin meningkat dikalangan pesakit sehingga 50% disebabkan pelbagai faktor. Nutritional Support Team (NST) telah dibentuk untuk membantu pesakit sejak 2015 di PPUM tetapi staf terlibat adalah tidak tetap. Keterlibatan NST dalam perawatan pesakit telah memberi impak positif kepada pesakit dan pengurangan kos kepada hospital.

Pihak NST memohon untuk membentuk satu unit pasukan yang formal dan tetap supaya perawatan diberi lebih efektif dan mengelak pertukaran staf sentiasa yang akan memberi kesan kepada perkhidmatan pesakit. Berikut adalah senarai perkhidmatan dan jumlah staf yang diperlukan.

BIL	STAF	JUMLAH
1	Farmasi	
2	Perkhidmatan Dietetik	
3	Jurawat	1
4	Psikiatrist	1
5	Fisioterapi	1

Keputusan:

Mesyuarat bersetuju dengan cadangan dibentangkan tetapi perlu dibentangkan di mesyuarat pengurusan untuk perbincangan secara formal dengan Jabatan Sumber Manusia mengenai perantaraan staf tetap dari setiap jabatan.

9.1.1 Nutritional Therapy

Tindakan: Wong Wei Jin
Pakar Klinikal
Makluman: Ketua Jabatan Perubatan

Nutrition Support
Team (NST)



Nutritional
Therapy Team
(NTT)

GOVERNANCE : HOME PN SERVICE

Manual Home Parenteral Nutrition

Kumpulan Sokongan Nutrisi / Nutritional Support Team
Pusat Perubatan Universiti Malaya

BK-GOV-004-E02

PUSAT PERUBATAN UNIVERSITI MALAYA

NAMA DOKUMEN:	POLICY ON HOME PARENTERAL NUTRITION		
NOMBOR DOKUMEN:	PL-143-E01	MUKA:	2 / 6

1. PURPOSE

To provide guidelines for patients who are eligible for Home Parenteral Nutrition therapy in UMMC.

2. SCOPE

This policy is applicable to Nutrition Support Therapy team who is involved in the management of patients with HPN. The team members consist of Consultant/Lecturer(s), Medical Officer(s), Pharmacist(s), Nurse(s) and Dietician(s).

jumlah:

5. Pengiraan Rasmi:

Tajuk	Tahun 1998	Tahun 2000	Pengiraan			
			Tahun 2002	Tahun 2004	Tahun 2006	Tahun 2008
Pencapaian target						
Pengiraan perubatan sebelum pemasangan HPN						
Pendaftaran HPN						
Peningkatan						
Pemeriksaan bag HPN						
Pemeriksaan pada CVL						
Pengiraan rasmi						
Persekitaran kompleks						
Cara penggunaan glukometer						
Cara penggunaan meter HPN						
Lain-lain						
1.						
2.						

Saya telah menyetujui pengiraan dan laporan berkaitan HPN



In-house & Home PN policy

TRAINING & COMPETENCY



NST

Nutrition **Webinar** and courses to **train** healthcare providers



Physicians

Nutrition support included in **MO masters curriculum**



Nursing

Line care training with catheter care workshops



Dietitians

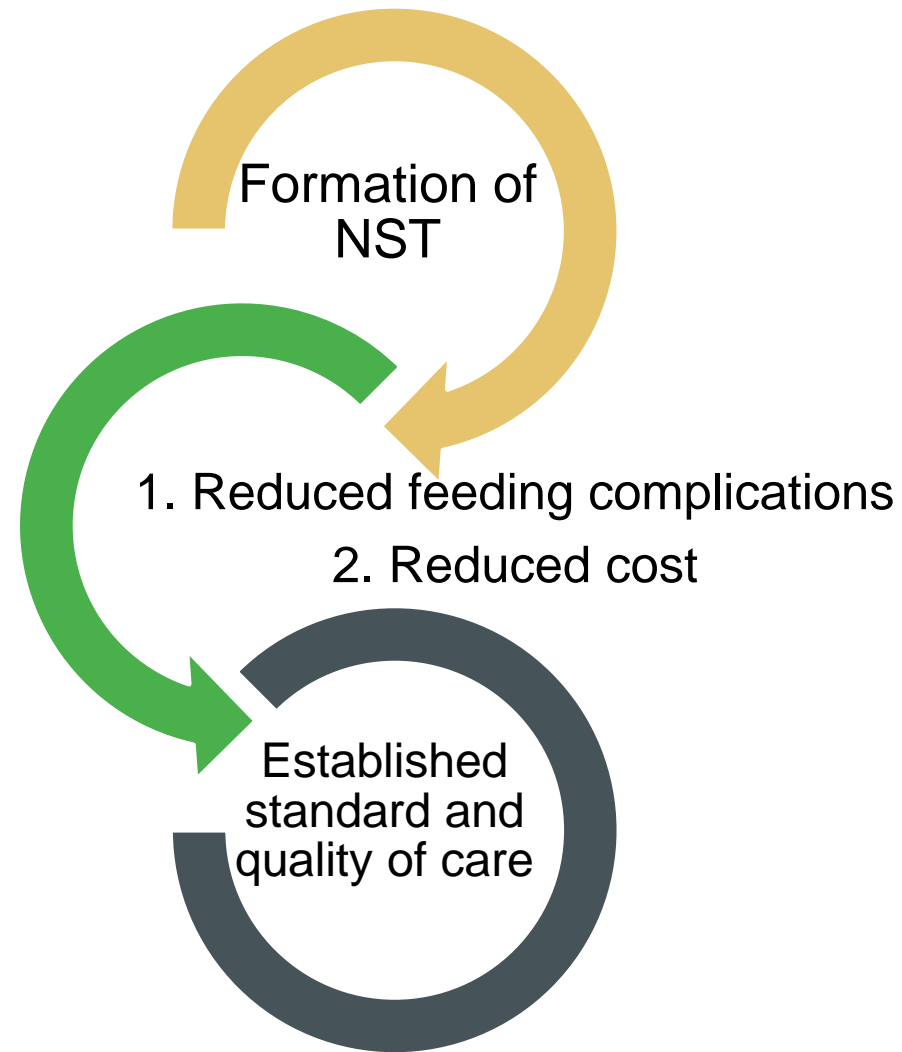
Standardized **enteral feeding protocol**



Pharmacy

PN clinical and compounding training

SUMMARY



THANK YOU

