



Low SY¹, Parimala VI¹, P'ng XW¹, Tan HS¹, Muna AR², Navamani N²
¹ Pharmacy Department, Hospital Tengku Ampuan Rahimah, Klang
² Obstetrics and Gynaecology Department, Hospital Tengku Ampuan Rahimah, Klang

1. SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

1.1 Problem Prioritization

Problems	S	M	A	R	T	Total	Rank
High number of inpatient medication indents after office hours	24	17	20	16	20	97	2
High percentage of prescribing errors for Iron Dextran in Obstetric & Gynaecology (O&G) Department	27	25	23	20	18	113	1
Delayed time to supply cytotoxic preparations due to outsourcing to other facility	23	19	10	15	20	87	4
High incidence of medication counselling requests not sent to pharmacy during weekends	15	21	18	17	21	92	3
Increase in number of non-compliance to psychotropic/ dangerous drugs indenting day leading to interruption of scheduled work process	10	20	15	16	15	76	5

Rating Scale: 1-5; 0 = lowest, 5 = highest

Number of members: 6

1.2 Justification

S

- Study done from Jan- April 2019 showed **45.7%** prescribing errors in iron dextran prescriptions
- Administration of **wrong dose** may cause acute iron toxicity, metabolic acidosis, and hemosiderosis^{1,2}
- This caused:
 - Prolonged patients' hospital stay
 - Increased hospitalization **cost** and drug **wastage**
 - Increased **morbidity** and **mortality**

M

- Data is gathered from **iron dextran prescriptions** prescribed in ward

A

- It is the prescriber and pharmacist's **responsibility** and **professional obligation** to ensure the safe use of medicine
- It has direct **impact** on patients & will improve **quality of care**

R

- It can be improved by using **available resources**

T

- Remedial actions can be carried out within the **allocated time**

1.3 Introduction

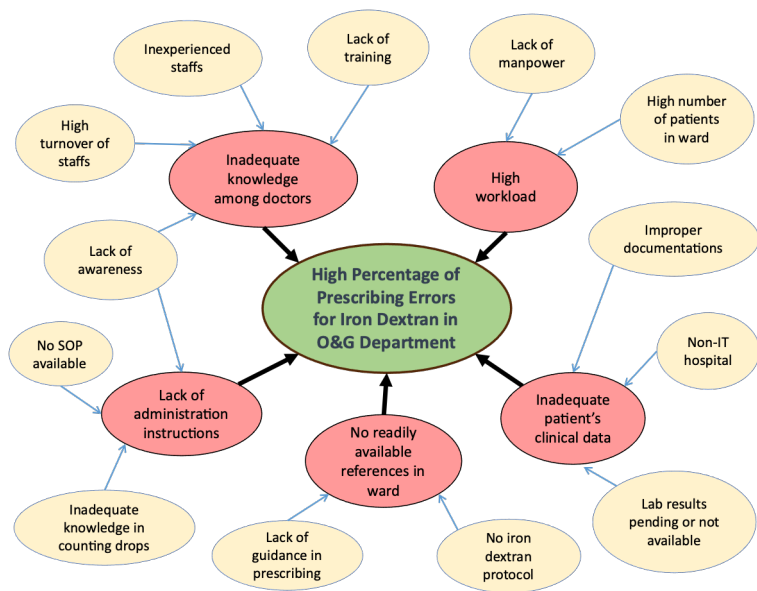
- Iron dextran is the drug of choice for **treatment of IDA** in women or pregnancy who are **not responding** to oral iron therapy
- Formula** for calculation of iron dextran dose:

$$\text{Total dose (mg Fe)} = (\text{Target Hb} - \text{Actual Hb}) \times \text{Body weight (kg)} \times 0.24 + \text{mg iron for iron stores}$$

* Haemoglobin (Hb) in g/l

- Correct information such as **body weight** and **actual haemoglobin** are **essential** for calculation of total iron dextran dose required by patient.
- Unwarranted therapy with iron dextran will cause **excess storage of iron** with consequent exogenous hemosiderosis.
- Test dose** of iron dextran should be given to patient before administering the remaining dose to patient due to anaphylactoid reactions to iron dextran are usually evident within a few minutes, and close observation is necessary to ensure recognition.

1.4 Cause-Effect Diagram



1.5 Objectives

GENERAL OBJECTIVE

- To **reduce** the **percentage** of **prescribing errors** for iron dextran in O&G Department, HTAR Klang

SPECIFIC OBJECTIVES

To determine the percentage of prescribing errors of iron dextran

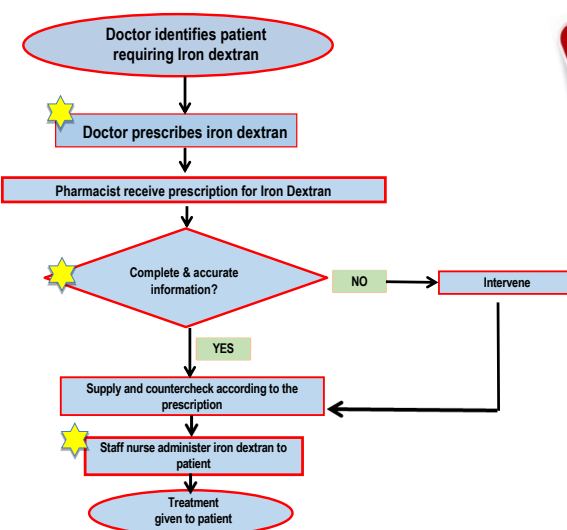
To identify the factors contributing to high percentage of prescribing errors of iron dextran

To formulate strategies and to implement possible remedial action in order to reduce the percentage of prescribing errors of iron dextran

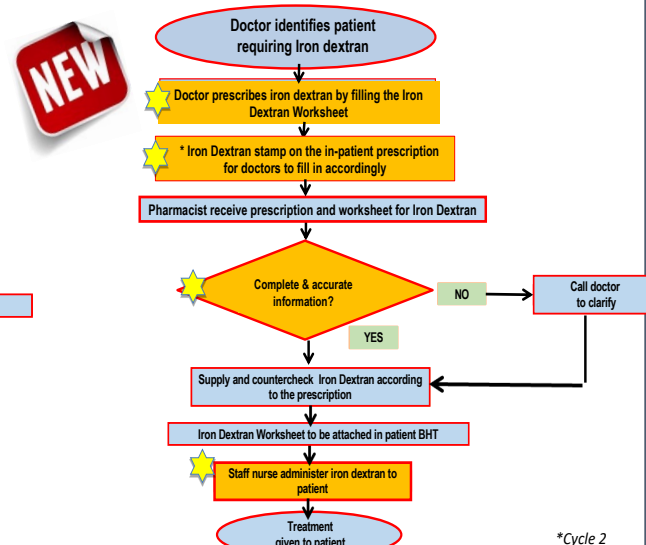
To evaluate the effectiveness of remedial actions implemented

1.6 Process of Care

Current Process of Care



Ideal Process of Care



2. KEY MEASURES FOR IMPROVEMENT

2.1 Indicator

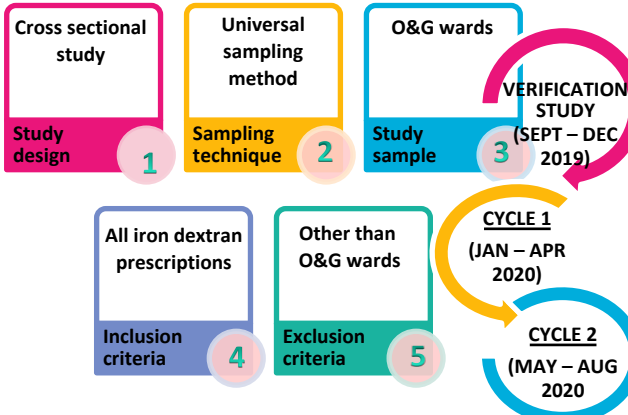
Percentage of prescribing errors for Iron Dextran

$$= \frac{\text{Total number of iron dextran prescriptions with prescribing errors}}{\text{Total number of Iron dextran prescriptions}} \times 100\%$$

2.2 Standard

0% of prescribing errors for Iron Dextran
(KPI 11 Requirement under Malaysian Patient Safety Goals)

3. PROCESS OF GATHERING INFORMATION

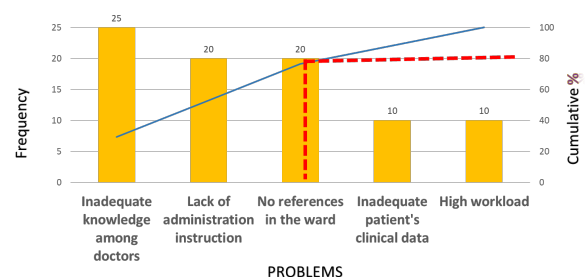


4. ANALYSIS & INTERPRETATION

Verification study done in September to December 2019 found that, out of 230 prescriptions for iron dextran received, prescribing errors were found in **46.7%** of the prescriptions:



The contributing factors were studied using **PARETO ANALYSIS** and shown in graph below:



The IMPACT of this problem:

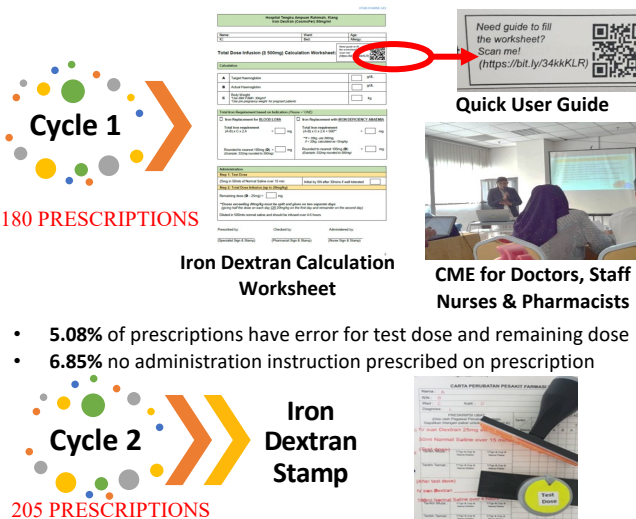
Threaten **PATIENT'S SAFETY** & increase **COST** due inappropriate indication



5. STRATEGY FOR CHANGE

5.1 Remedial Action & Tools

- Prescribing errors for test dose and remaining dose = 60.74%
- Administration instruction prescribed correctly = 52.93%
- Patient's ADEQUATE clinical data = 37.31%



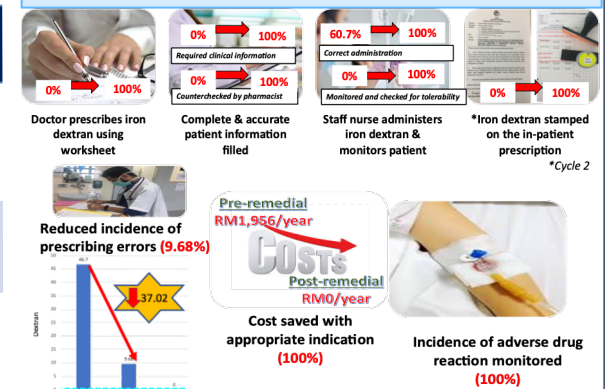
- 5.08% of prescriptions have error for test dose and remaining dose
- 6.85% no administration instruction prescribed on prescription

6. EFFECT OF CHANGE

6.1 Conformity of the Standards of Model of Good Care (MOGC)

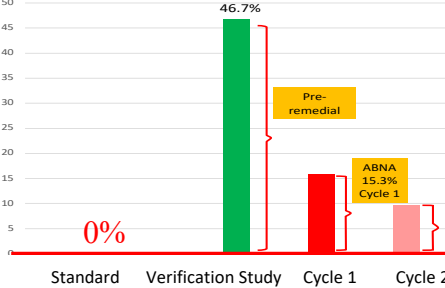
Process	Criteria	Standard	Achievement	
			Verification study	% Increased
Doctor prescribes iron dextran by filling the iron dextran worksheet	1) Adequate patient's clinical data available a. Body weight b. Target Hb c. Actual Hb d. Indication	100%	37.31%	100%
	2) Dose regimen prescribed for test dose	100%	60.74%	94.92%
	3) Dose regimen prescribed for remaining dose	100%	60.74%	94.92%
	4) Administration instruction prescribed	100%	52.93%	93.15%
Iron dextran stamp on inpatient prescription for doctors to fill in accordingly	Test dose and remaining dose prescribed with iron dextran stamp	100%	0%	94.8%
Complete & accurate information	1) Required information in the worksheet is completely filled: a. Name, IC, Ward, Bed, Age and Allergy b. Correct Body Weight c. Target Haemoglobin d. Actual Haemoglobin e. Indication	100%	0%	100%
	2) Total iron requirement calculated	100%	100%	91.1%
	3) Total iron requirement rounded to nearest 100mg	100%	20.3%	91.1%
	4) Total iron requirement calculation is counter checked by pharmacist	100%	0%	100%
Staff nurse administer iron dextran	1) Test dose of iron dextran is administered	100%	60.74%	99.3%
	2) Monitored and signed for patient's tolerability	100%	0%	100%
	3) Remaining dose administered accordingly	100%	60.74%	99.3%

6.2 Results



6.3 ABNA

Percentage of Prescribing Errors for Iron Dextran

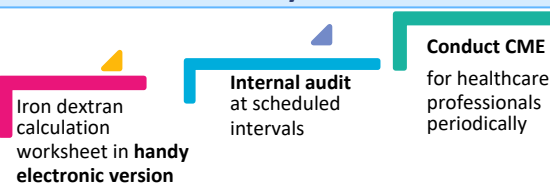


7. THE NEXT STEP

7.1 Summary of Lessons Learnt

- Collaboration between **health care personnel** is greatly needed to achieve better patient care.
- Ward pharmacists** play an important role in ensuring **optimum dose** and **calculation of patient's iron requirement**.
- The importance of **continuous awareness** and **education** activities.

7.2 The Way Forward



8. REFERENCES

- European Medicines Agency. New recommendations to manage risk of allergic reactions with intravenous iron-containing medicines. European Medicines Agency 2013. EMA/579491/2013:1-3
- Faillo S, Parmar M. Iron Dextran. [Updated 2020 May 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2020 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557747/>
- Acknowledgement to Program Perkhidmatan Farmasi