

# Reducing the High Incidence of Phlebitis Among Children in General Pediatric Ward Hospital Pulau Pinang

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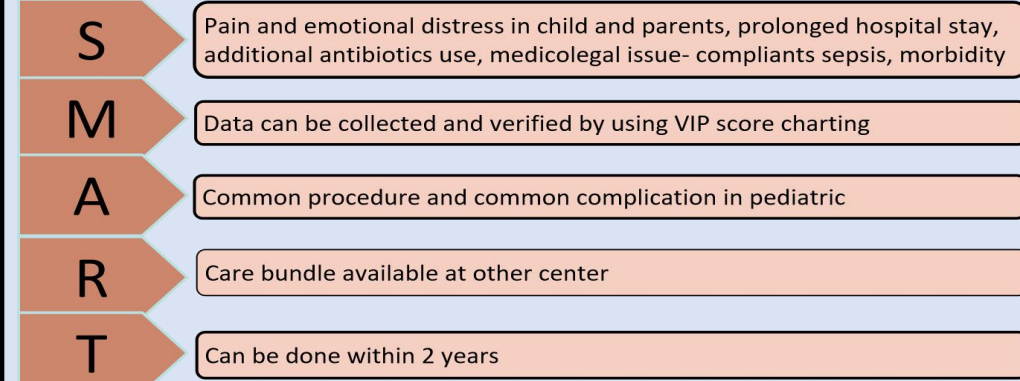


## 1. SELECTION OF OPPORTUNITIES FOR IMPROVEMENT

### 1.1 INTRODUCTION

Cannula insertion is the commonest procedure in general pediatric ward. At least 8% of children that have cannula inserted developed phlebitis that was detected late. Phlebitis is common yet often neglected.

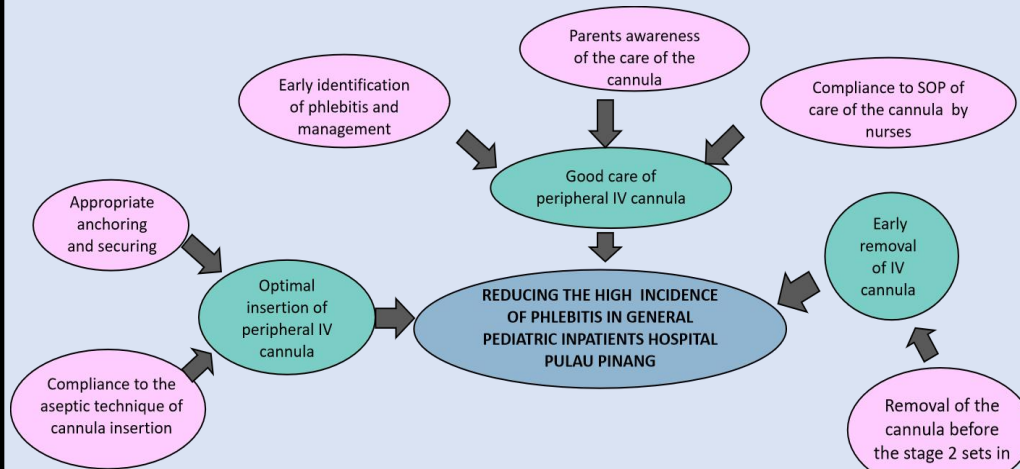
### 1.2 SMART CRITERIA



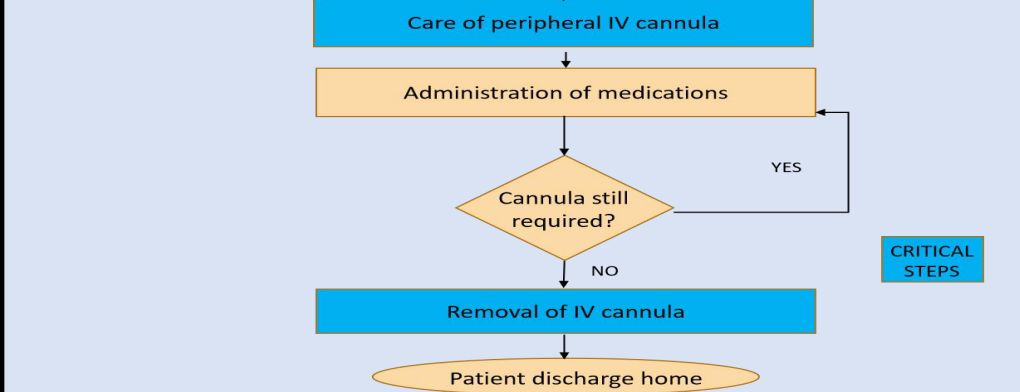
### 1.3 OPPORTUNITY STATEMENT

8 out of 100 children that was admitted in Penang General Hospital Paediatric ward will have phlebitis as a complication of peripheral line insertion. Reducing the high incidence of phlebitis in children will minimise pain and discomfort, shortened hospital stay and reduce the need of additional antibiotics usage, reduced cost and rate of infection and sepsis. There are various ways to reduce the incidence of phlebitis in ward including promoting care bundle for IV cannulation and increased awareness among medical staffs and caretaker in general pediatric ward. Our aim of this study is to reduce the high incidence of phlebitis in pediatrics in-patient.

### 1.4 CAUSE EFFECT ANALYSIS



### 1.5 PROCESS OF CARE



## 2. KEY MEASURES FOR IMPROVEMENT

### 2.1 OBJECTIVE

This project aims to reduce the incidence of phlebitis as determined by Visual Infusion Phlebitis (VIP) scoring of  $\geq 2$  to  $\leq 2.5\%$

### 2.2 INDICATIONS AND STANDARDS

Incidence of phlebitis :  $\frac{\text{Total Number of Phlebitis Incidence} \times 100\%}{\text{Total Number of inserted peripheral venous cannulas}}$

**STANDARD : 2.5%**

International standard: 2.7% (Portugal) to 11.6% (Malaysia)

### 2.3 TERMS AND DEFINITIONS

#### Phlebitis

- inflammation of vein, which can be categorized as chemical, mechanical or bacterial.
- characterized by reddened warm area around the insertion site or along the cannula site

#### Peripheral venous cannulation:

- cannula that is placed into a peripheral vein for venous access.

#### VIP scoring:

- scoring standard used by our MOH for staging of severity of phlebitis

## 3. PROCESS OF GATHERING INFORMATION

### Study Design:

Cross sectional study

### Population:

General Paediatric inpatient

### Duration:

Dec 2019- Feb 2021

### Sampling:

Purposive sampling

### Inclusion Criteria:

All general pediatric patients admitted to ward C1 and requiring at least one peripheral IV cannula

### Exclusion Criteria:

- Patients who are transferred in from other unit
- Patients with extensive skin infection
- Patients that are warded for > 1 weeks

Factor	Variable	Source of Data	Method of Collection	Sample Unit	Std
Optimal insertion of peripheral cannula	Compliance to the aseptic technique	Observational checklist	Performance appraisal	20% of House Officers	85%
	Appropriate anchoring of cannula	Observational checklist	Performance appraisal	20% of House officers	100%
Good care of peripheral cannula	Parents awareness of the care of cannula	Questionnaire	Self done	All parents	80%
	Compliance to SOP of the care of the cannula	Observation checklist	Performance appraisal	All staff nurses	85%
	Early identification of phlebitis via VIPS scoring	Case notes	Review BHT (VIPS scoring)	General pediatric patients	100%
Appropriate removal of cannula	Early removal of cannula before VIP stage 2	Case notes (VIPS score)	Review BHT	General paediatric patients	100%

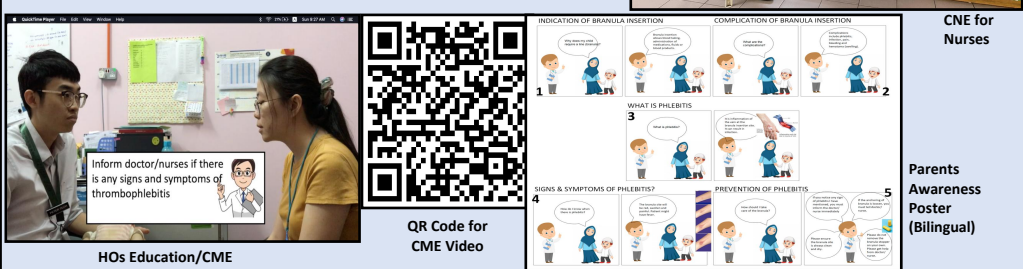
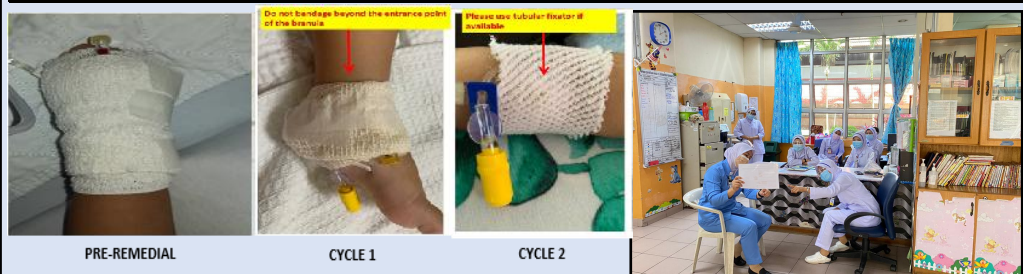
## 4. ANALYSIS AND INTERPRETATION

During pre-remedial phase, the incidence of phlebitis was **8.8%**. Shortfalls include inappropriate anchoring of cannula, non-compliance to aseptic techniques, poor care of cannula by parents and nurses and delayed removal of cannula.

PROCESS	CRITERIA	STD	Preremedial
Insertion of peripheral IV cannula	1) Compliance to the aseptic technique of insertion by doctors	85%	50%
	2) Appropriate anchoring and securing the cannula	100%	40%
Care of peripheral IV cannula	1) Parents awareness of the care of cannula	80%	16.7%
	2) Compliance to SOP of the care of the cannula by nurses	85%	27.3%
	3) Early identification of phlebitis via VIPS scoring on the BHT and the management	100%	30%
Appropriate removal of cannula	1) Early removal of cannula as indicated - removal of cannula before the Stage 2 phlebitis set in	100%	91.2%

## 5. STRATEGY FOR CHANGES

PROCESS	Shortfalls	Strategies/ Intervention	Time frame	By Who
Insertion of peripheral IV cannula	1. Non compliance to aseptic technique	1. CME on staging of phlebitis & video on how to set a cannula 2. Practical stations for the HOs	1st Mar- Aug 2020 1st Nov 2020-Jan 2021	Doctors in charge of the ward
	2. Non standardised anchoring and securing of cannula	1. Video and poster on how to anchor & secure the cannula 2. Obtain new securing material for easy visualisation (tubular fixator)	1st Mar - Aug 2020 1st Nov 2020-Jan 2021	Doctors in charge of the ward
Care of peripheral IV cannula	1. Lack of parents awareness on cannula care	1. Pamphlets to parents during ward orientation on admission 2. Posters made available at strategic location ( treatment room)	1st Mar -Aug 2020 1st Nov 2020-Jan 2021	Staff Nurses During Ward Orientation
	2. Non compliance to the SOP of cannula care	1. CNE for the nurses for SOP for care of care of cannula	1st Mar-Aug 2020 1st Nov 2020-Jan 2021	Ward Manager
	3. Poor compliance to the use of phlebitis chart ( VIPS scoring)	1. CME on thrombophlebitis scoring and reminder to document on the BHT 2. Spot check by ward sister on the nurses documentation	1st Mar-Aug 2020 1st Nov 2020-Jan 2021	Ward Manager
Appropriate removal of IV cannula	1. Delay removal of cannula (after Stage 2 phlebitis sets in)	1. CME on the phlebitis staging and management 2. Constant reminder during round to check for phlebitis	1st Mar-Aug 2020 1st Nov 2020-Jan 2021	Doctors and Ward Manager

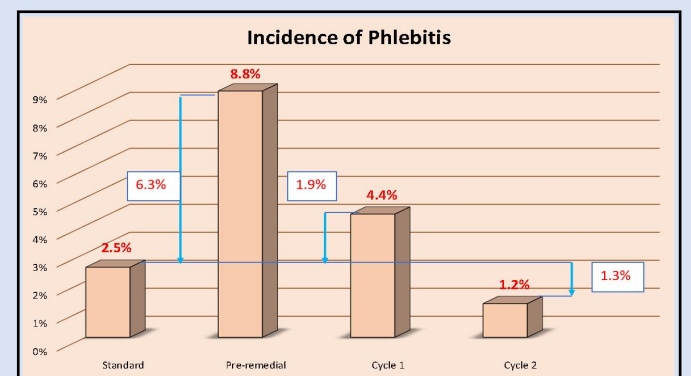


## 6. EFFECT OF CHANGES

Post-remedial, **the incidence rate of phlebitis reduced from 8.8% to 1.2%**. Contributory factors include parents' empowerment (6.7% to 70%), early detection (30% to 100%) and new anchoring material with compliance to the aseptic technique (50% to 75%).

PROCESS	CRITERIA	STD	Pre remedial	Post remedial (cycle 1)	Post remedial (cycle 2)
Insertion of peripheral IV cannula	1. Compliance to the aseptic technique of insertion by doctors	85%	50%	60%	75%
	2. Appropriate anchoring and securing the cannula	100%	40%	75%	75%
Care of peripheral IV cannula	1. Parents awareness of the care of cannula	80%	16.7%	60%	70%
	2. Compliance to SOP of the Care of the cannula by nurses	85%	27.3%	86%	56%
	3. Early identification of phlebitis via VIPS scoring on the BHT and the management	100%	30%	100%	100%
Appropriate removal of IV cannula	1. Early removal of cannula before the Stage 2 phlebitis set in	100%	91.2%	95.5%	98.8%

### 6.2 GRAPH FOR ABNA



### 6.3 IMPACT!

MEASURABLE	NON -MEASURABLE
<b>Cost saving-</b> Each phlebitis Stage $\geq 3$ , costs RM520 (2 days stay) Each phlebitis avoided, <b>saved RM520</b> In one year, pre remedial = 36 phlebitis per year Post remedial = 0 phlebitis per year Thus, we saved, <b>36 x 520 = RM 18720 per year</b>	- Reduce pain and anxiety - (KKM pain free policy) - Reduce hospital length stay

### 6.4 CONCLUSION

Incidence rate of phlebitis (VIPs score  $\geq 2$ ) was **reduced from 8.8% to 1.2%** (standard  $\leq 2.5\%$ ). The reduction of phlebitis incidence has lessen emotional distress on both parents and child and significantly reduced the ministry's financial burden. Contributory factors to the phlebitis reduction include parents empowerment (**improved by 53.3%**), early detection via VIPS charting (**improved by 70%**) and management and compliance to the aseptic technique of care of the cannula (**improved by 28.7%**).

## 7. THE NEXT STEP

- We aim to share these strategies with other hospitals
- Continuous education to the new House Officer, nurses and parents
- To perform regular audit cycle to ensure sustainability

