

# Reducing Paracetamol Medication Errors in Children

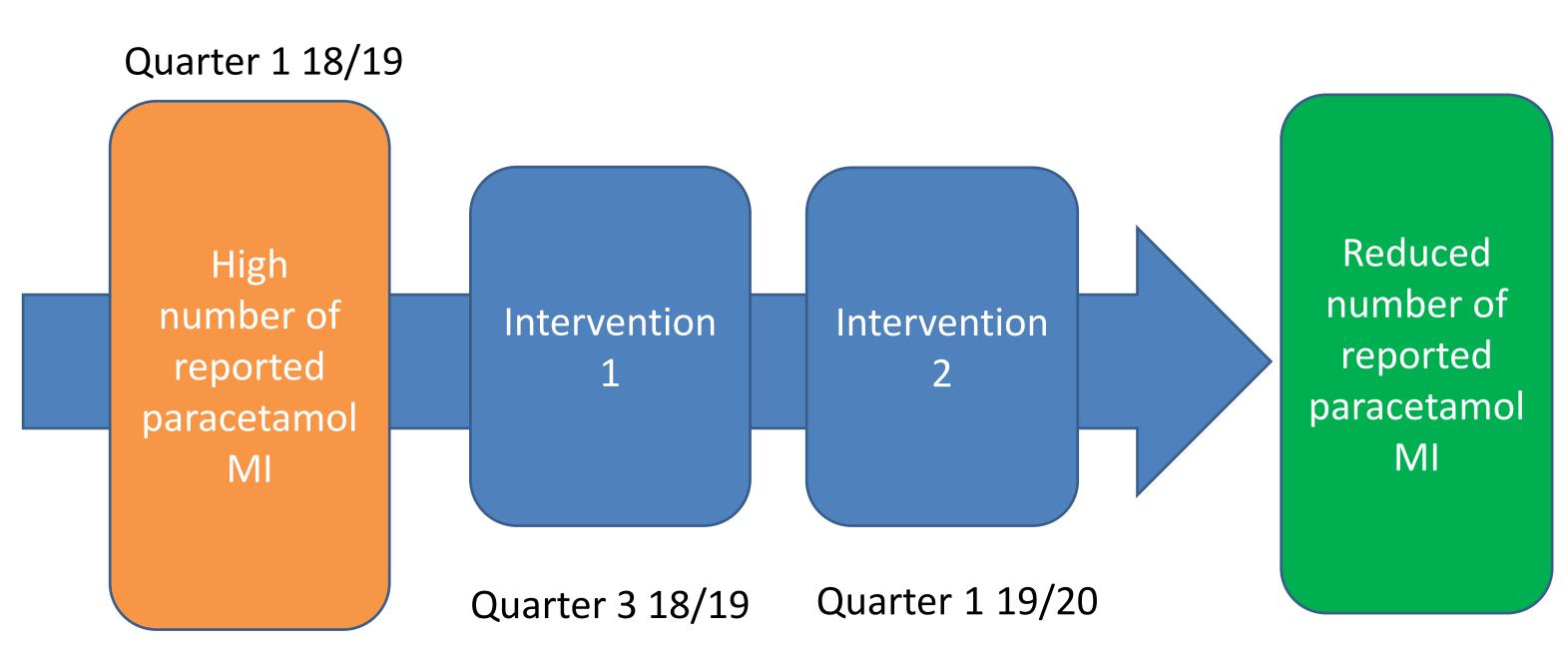
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#### Introduction:

Paracetamol is one of the most commonly administered medicines to children. Accidental overdoses with intravenous paracetamol in children <10kg have been reported worldwide, including fatalities

High numbers of medication incidents (MI) involving paracetamol on CCH paediatric wards were reported.

To reduce the level of harm the multidisciplinary team reviewed incident trends and implemented staged interventions



### Results

Measures	Intervention 1	Intervention 2	
Percentage reduction in reported MI involving paracetamol	75%	90%	
Percentage reduction in MI reported with a level of	50%	100%	
harm Level of harm reported	Low harm		
Incident category			
Percentage reduction of reported oral dosing errors	100%	100%	
Percentage reduction in the number of IV dosing errors for babies <10kg	50%	80%	
Percentage reduction in duplication of doses	40%	100%	

## Table 1: Standardised CCH paracetamol dosing

See full guidance for loading doses & further information on prescribing	Route:	Oral	Rectal**	Intravenous
Prematurity >32 weeks to 37 weeks CGA	Dose	See information in text below	See information in text below	See information in text below
Birth (>37 weeks) to 3 months Corrected for prematurity (CGA).	Dose	15mg/kg***	15-20mg/kg***	10mg/kg (1ml solution per kg)
	Frequency	8 hours	8 hours	8 hours
	Maximum total daily dose	60mg/kg/day	60mg/kg/day	30mg/kg/day
> 3 months Corrected for prematurity (CGA). < 10kg in weight	Dose	15mg/kg	15-20mg/kg	10mg/kg (1ml solution per kg)
	Frequency	4-6 hours*	4-6 hours*	8 hours
	Maximum total daily dose	75mg/kg/day	75mg/kg/day	30mg/kg/day
10-50kg	Dose	15mg/kg	15-20mg/kg	15mg/kg (1.5 ml solution per kg)
	Frequency	4-6 hours*	4-6 hours*	4-6 hours*
	Maximum total daily dose	75mg/kg/day	75mg/kg/day	60mg/kg/day
>50kg	Dose	1g	1g	1000mg (100 ml)
	Frequency	4-6 hours*	4-6 hours*	4-6 hours*
	Maximum total daily dose	4g 4 doses/day	4g 4 doses/day	4g**** 4 doses/day

\*\*\*\*In patients >50Kg with hepatocellular insufficiency, chronic malnutrition or dehydration the maximum daily dose must not exceed 3g/day

#### Methods

#### **Intervention 1**

- -Paracetamol Medication Safety Bulletin circulated to staff
- -Standardised dosing approved in cross-site guideline (see Table 1)
- -Staff education at clinical governance, staff induction and Pain Study Day
- -Removal of multi-route screens on electronic prescribing system

#### **Intervention 2**

-Introduction of dose and volume/ weight checks in the CCH paediatric IV administration guide for nurses (see Table 2)

## Conclusion

A significant level of harm has been reported with paracetamol MI in children. Regular review of MI numbers and trends, with targeted education and standardisation of practice can reduce this risk, including those MI causing harm.

Despite the reduction in errors, the level of harm remained the same. This can be explained by the potential adverse effects of inadvertent overdoses of paracetamol in children. Future work is needed to reduce incidents involving intravenous paracetamol in babies <10kg

Table 2: IV quick guide dose and volume checks for nurses

Quick Reference\* Intravenous Paracetamol 10mg/mL (100mL vial size)

Dosing and Administration Guide 2 - 10 kg

Weight	Dose (mg)	Volume (mL)	Frequency***	Maximum total daily dose****
1kg	See premature neonate dosing guideline			
2kg and > 37 weeks CGA	20	2	<u>8</u> hours	30mg/kg/day
3kg	30	3	<u>8</u> hours	30mg/kg/day
4kg	40	4	<u>8</u> hours	30mg/kg/day
5kg	50	5	<u>8</u> hours	30mg/kg/day
6kg	60	6	<u>8</u> hours	30mg/kg/day
7kg	70	7	<u>8</u> hours	30mg/kg/day
8kg	80	8	<u>8</u> hours	30mg/kg/day
9kg	90	9	<u>8</u> hours	30mg/kg/day
10kg	150	15	<u>4-6</u> hours	60mg/kg/day