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## **Rounding of Antibiotic Suspensions**

#### Introduction

Electronic prescribing has decreased the rate of medication errors significantly. However, it may not generate an easily administrable dose especially for

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### **Process Flow Map**



pediatric medications<sup>1</sup>. Rounding of doses can ease administration for caregivers and nurses and reduce errors arising from overlooking of decimal points.

Based on pharmacy interventions data from Sept 2017 to Feb 2018, 4% of interventions were related to rounding of medications to a more convenient dosing for administration and 60% of these interventions pertained to antibiotic suspensions.

Hence, we proposed to come up with a standardised rounding table at CPOE (Computerised Physician Order Entry) and RxManager. When Dr orders the antibiotic child order (e.g. cloxacillin suspension 12.5 mg/kg QDS) in Sunrise Clinical Manager (SCM), the system auto-calculates the standardised dosing based on patient's weight (e.g. if weight is 15.9 kg, CPOE will suggest 225 mg (9 ml) of cloxacillin).

This study aims to decrease the percentage of interventions related to rounding of antibiotic suspensions to at least 50%.

#### Methodology

Pharmacy suggested the rounding of antibiotics suspensions based on weight and child orders.

The algorithm was to round the suspension volume to whole number wherever possible; in cases where it is not feasible, the rounding is based on the gradations of the syringes we supply (e.g. > 3ml to round to nearest 0.2 ml as the gradation of our 6 ml and 12 ml syringe is in 0.2 ml).

None of the rounded dose exceeded 20% from the original intended dose.

The rounded doses were vetted by drug information pharmacists and physicians from Infectious Diseases Service before it is uploaded into order entry worksheet on 1<sup>st</sup> March 2018.

Physicians can choose to accept or reject the rounding upon ordering at CPOE/Rx Manager.



Figure 1: Percentage of interventions related to rounding of antibiotic suspensions decreased from 2.46% 6-months pre-implementation to 0.46% 6-months post-implementation (p<0.05).

Time Taken to Perform Interventions by Pharmacists				
	September 2017 – February 2018	March 2018 – August 2018	Time saved (hours)	
Total time taken to intervene on rounding of antibiotic suspensions (hours)	12.9	2.4	10.5	

Man-hour Cost Savings per year

The number and percentage of interventions pertaining to rounding of suspensions were measured at baseline (6 months pre-implementation) and 6 months post-implementation.

Differences between the frequency of pre-implementation and postimplementation interventions, time and man-hour costs savings were then calculated.

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#### References

<sup>1</sup>JOHNSON et al. *Pediatrics* 2011;128:e422–e428

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	Time saved per year on intervention (hours)	Man-hour cost savings per year (\$)*	
Rounding of antibiotic suspensions	21	1155	
*based on hourly rate of \$55 per hour			

#### Conclusion

3.00%

2.71%

Rounding of medications to an administrable dose decreases the number of interventions, time spent on intervening and man-hour cost savings significantly. It can also potentially prevent medication errors resulting from administration (e.g. due to misplaced decimal points) by caregivers and nurses.