Computerized One-Stop TPN Calculation and Online Ordering Reduced TPN Prescription Time and Errors in NICU

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Khoo ZX, Singapore General Hospital Tagamolila VC, Singapore General Hospital Tan MG, Singapore General Hospital Beh HL, Singapore General Hospital Poon WB, Singapore General Hospital



Singapore General Hospital

SingHealth

INTRODUCTION

Parenteral Nutrition (PN) prescription in preterm infants is often complex. There are many factors that need to be considered, e.g. fluid restriction, metabolic demands, type of venous access, physician's experience and knowledge of PN and institutional practices. These factors may predispose to errors. A pre-intervention survey indicated 100% of doctors(n=12) and 45% of nurses(n=38) opined the previous ordering system was too onerous and time consuming.

AIMS

1. To improve the efficacy and efficiency in TPN prescription

2. To improve precision and minimize TPN prescription errors

METHODOLOGY

Audit of all neonates requiring PN admitted to Singapore General Hospital Neonatal Intensive Care Unit(NICU) over two 10 day periods before and after the intervention. We studied the time spend for total TPN prescription, individual PN prescriptions, and frequency for subsequent PN rate adjustment.

Historical controls required 2-steps method, with initial manual calculations on paper and subsequent transcribing into an existing online PN system. The intervention group used a new one-stop PN ordering system, designed with the functions of automated volume. composite. osmolality and calories counter-checking, calculation. instant and incorporated these into an online medication and nutrition prescription platform.

RESULTS

There were a total of 112 sets of prescriptions, 63 orders in the intervention group and 49 in the control group. The number of PN orders per day was not significantly different, 4.4 and 4.5 respectively for controls and intervention. Physicians took an average of 73.7 minutes per day to complete the TPN prescription during the control period. This was significantly reduced to 64.2 minutes(p=0.23) after the intervention. Frequency of subsequent PN rate adjustment was reduced from 6.4 episodes per day to 0.5 per day during the control and intervention periods respectively. There was no medication errors reported during both study periods.

CONCLUSION

The one-stop TPN order system reduced TPN prescription time by 12.9% and significantly decreased need for subsequent PN rate adjustment by 92.9%.

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