

EVALUATION OF THE CLINICAL PHARMACIST IMPACT ON TOTAL PARENTERAL NUTRITION PRESCRIPTION ORDER REVIEW AND PREPARATION IN NEONATAL INTENSIVE CARE UNIT

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BACKGROUND

Clinical Pharmacist (CP) services to hospitalized patients are highly recommended especially in vulnerable populations such as neonates. Latter are in need for prompt nutrition support but total parenteral nutrition (TPN) practices remain unsatisfactory due to lack of knowledge of neonatal nutritional needs. CP plays a crucial role in all steps of TPN: prescribing review, compounding and administering instructions. However, there is insufficient evidence related to the role of CP in Neonatal Intensive Care Unit (NICU) setting, and most of the literature is either outdated or focuses on lack of standardization of practices, and the role of CP as prescriber in NICU. Few (and none in our country) have focused on the role of CP in all TPN related processes and the impact on decreasing the potential errors and fatal events.

PURPOSE

To evaluate the impact of involving CP in TPN order review and preparation in NICU on the potential errors related to 2in1 (Dextrose/Aminoacids) and Lipid prescription orders.

MATERIALS AND METHODS

A 6-month prospective analysis was conducted in NICU where TPN order set forms, that were elaborated by CP, were filled by neonatologists and sent on a daily basis to CP for review, calculations, issuing of labels and instructions for compounding and administration. Any noted error or discrepancy in the order was communicated to the neonatologist for prompt amendment.

RESULTS

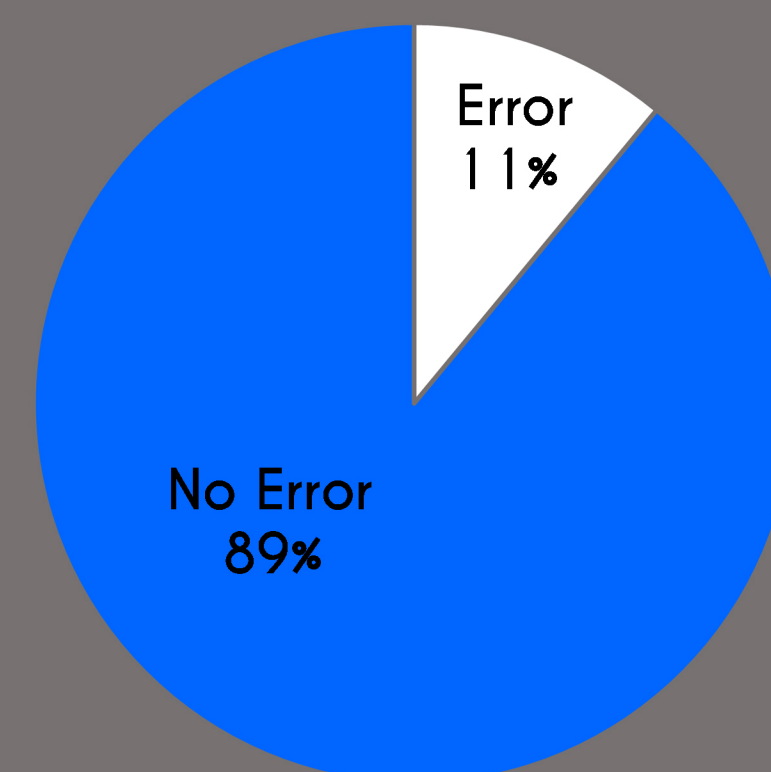
209 2in1 and 149 Lipid prescription orders were analyzed.

57.5% of 2in1 and 11.5% of Lipid prescriptions contained errors in dosing, infusion rate and volume, missing components, wrong venous access, and high risk of precipitation.

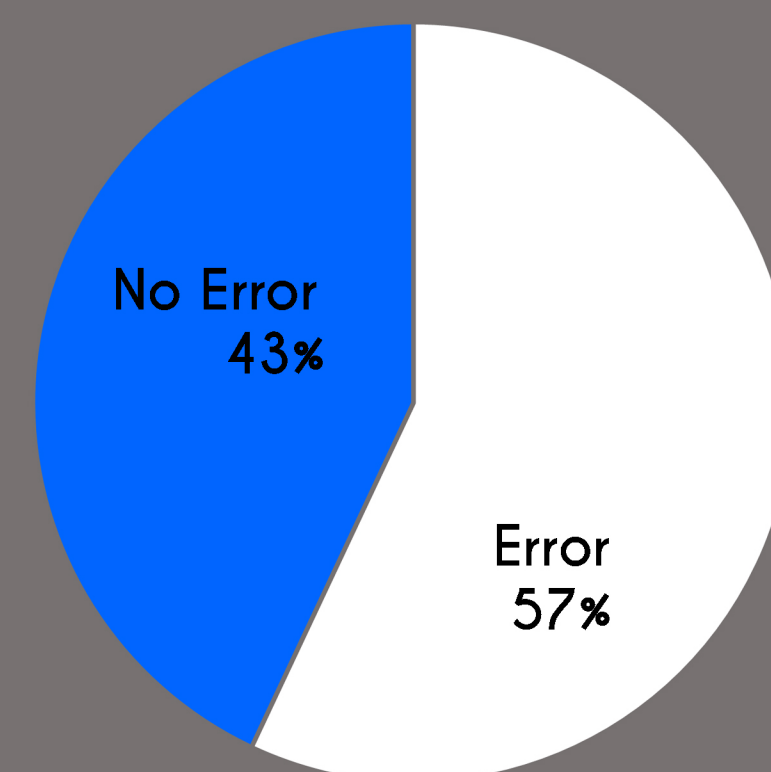
Most common 2in1 order errors prevented by CP involved: Amino acids dose (14.6%), followed by Total infusion volume (13.2%), Rate of infusion (13.2%), Heparin dose (13.2%), Missing component (12.5%), Precipitation of Calcium and Phosphorus risk (12.1%), Dextrose dose (9.2%), Venous access not mentioned (8.4%), Venous access (central vs. peripheral) (1.8%), Trace elements dose (1.1%), Electrolytes dose (0.7%).

Most common Lipid order errors prevented by CP involved: Rate of infusion (44.5%), followed by Total infusion volume (37%), Lipid dose (11.1%), Lipid soluble vitamin dose (3.7%), Missing component (3.7%).

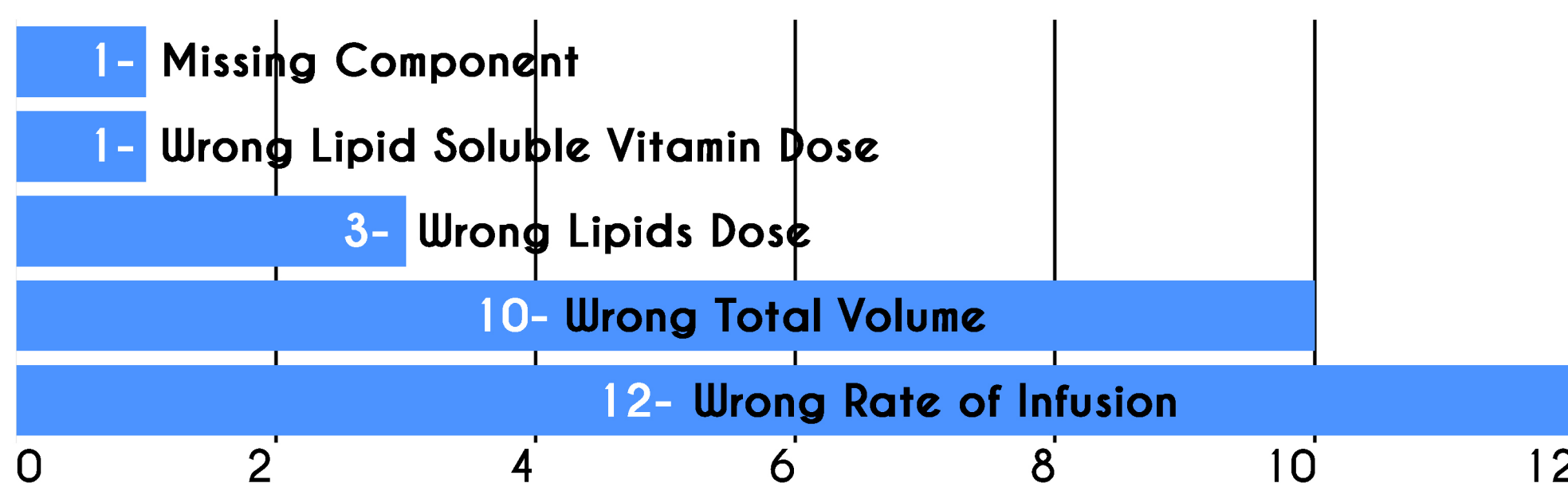
LIPID ORDERS COMPLIANCE



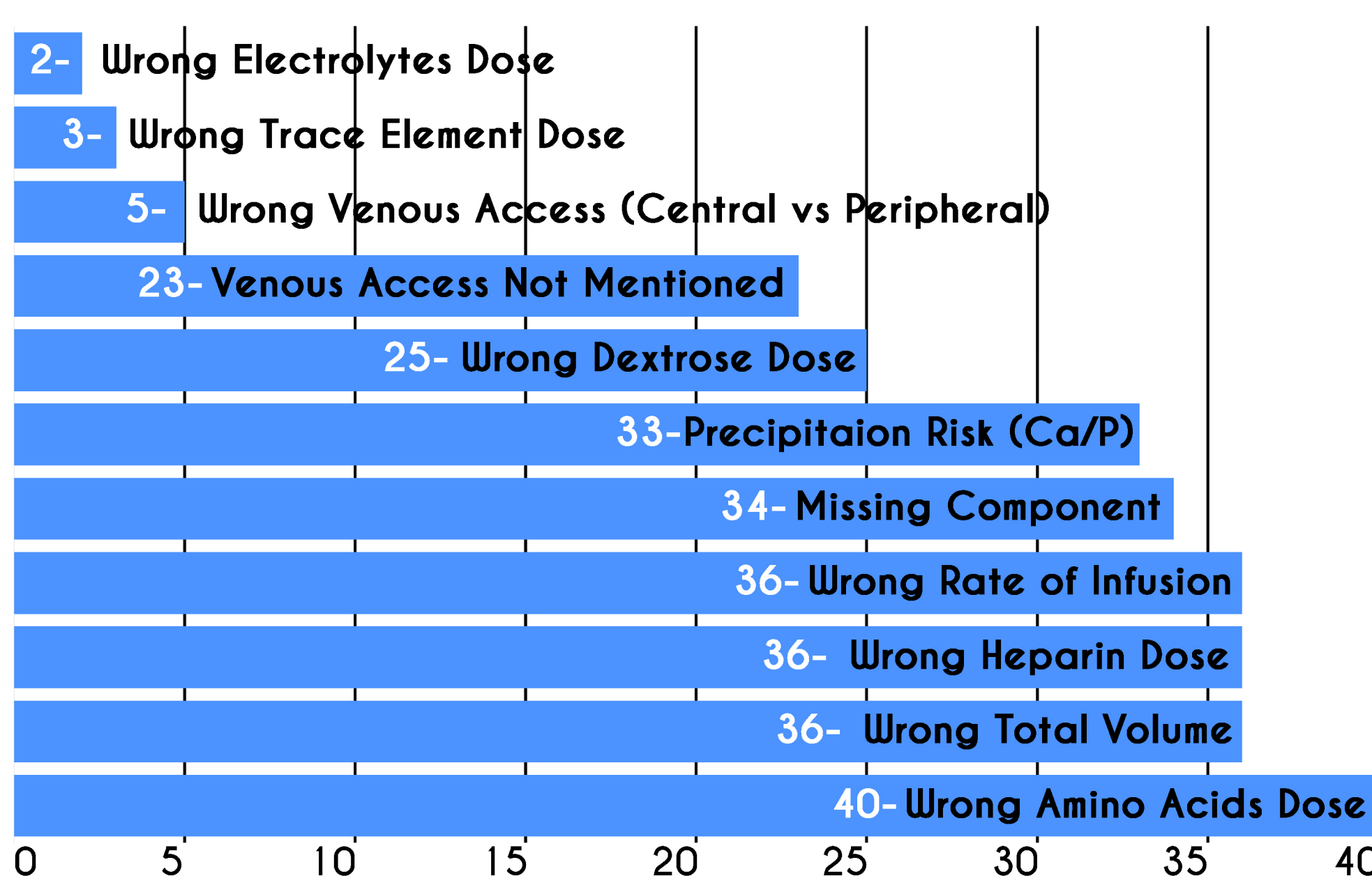
2IN1 ORDERS COMPLIANCE



LIPID ORDERS ERROR TYPES PREVENTED BY CLINICAL PHARMACIST



2IN1 ORDERS ERROR TYPES PREVENTED BY CLINICAL PHARMACIST



DISCUSSION

Errors of ordering resided more in 2in1 rather than Lipid prescriptions; to note that same order contained sometimes more than one error.

Upon review of orders and before issuing of labels and preparation, CP could detect and prevent errors belonging to different categories (doses, missing items, venous access, rate/ volume of infusion...). Some these errors could have led to fatal events if not prevented by CP, such as Calcium/ Phosphorus precipitation and wrong venous access (ie. high osmolality preparation administered through peripheral rather than central line).

CONCLUSION

This study shows the impact of including CP in TPN processes by highlighting all the potential errors of prescription/ preparation and fatal events that he/ she prevents thus achieving optimal neonatal nutritional needs and contributing to patient safety. Further studies could be conducted to assess the financial impact of CP driven TPN error prevention as well as other roles of CP in NICU setting which remains a neglected area.