

CLINICAL EVALUATION OF COMPOUNDING DEVIATIONS IN AUTOMATED PARENTERAL NUTRITION: A HOSPITAL-BASED STUDY

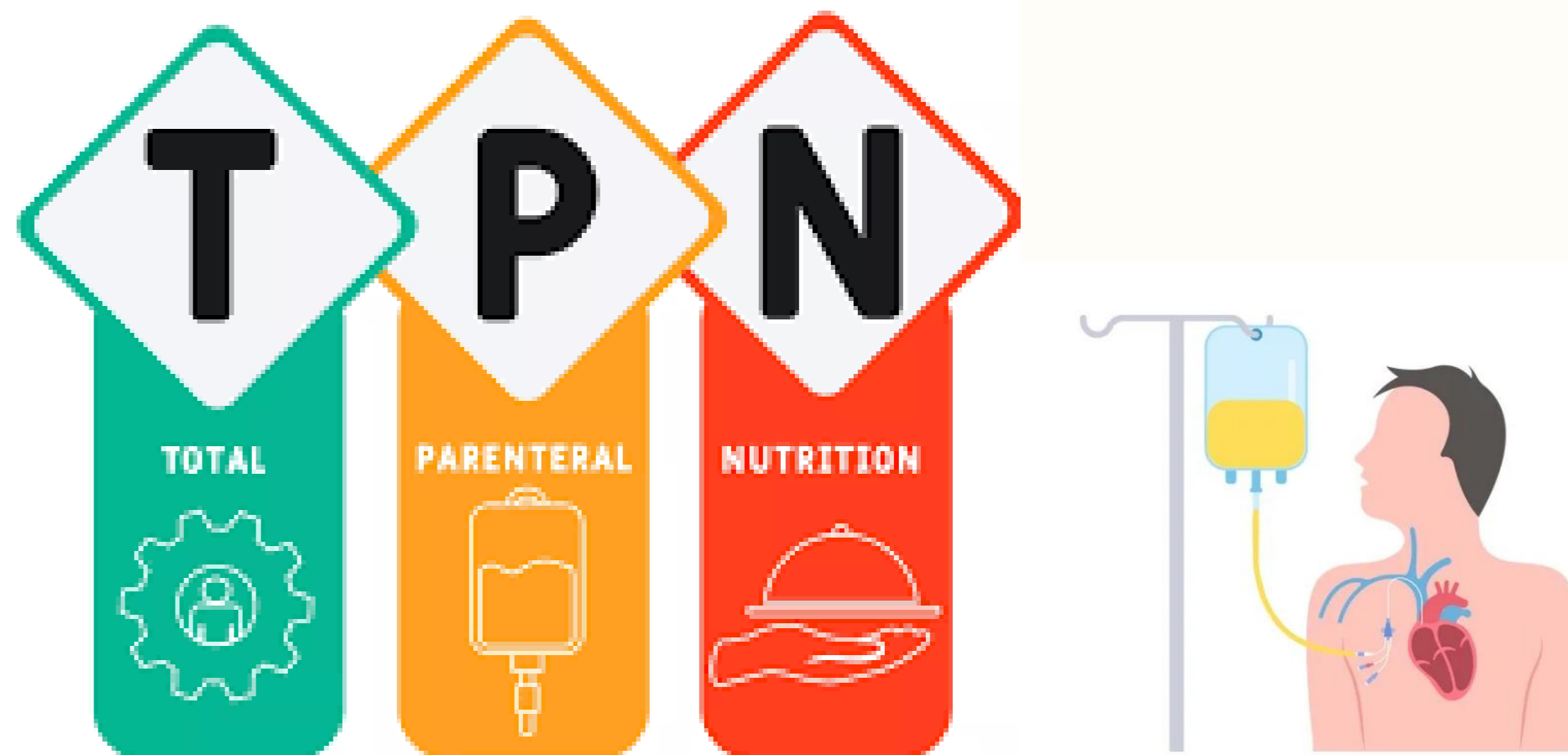
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BACKGROUND AND IMPORTANCE

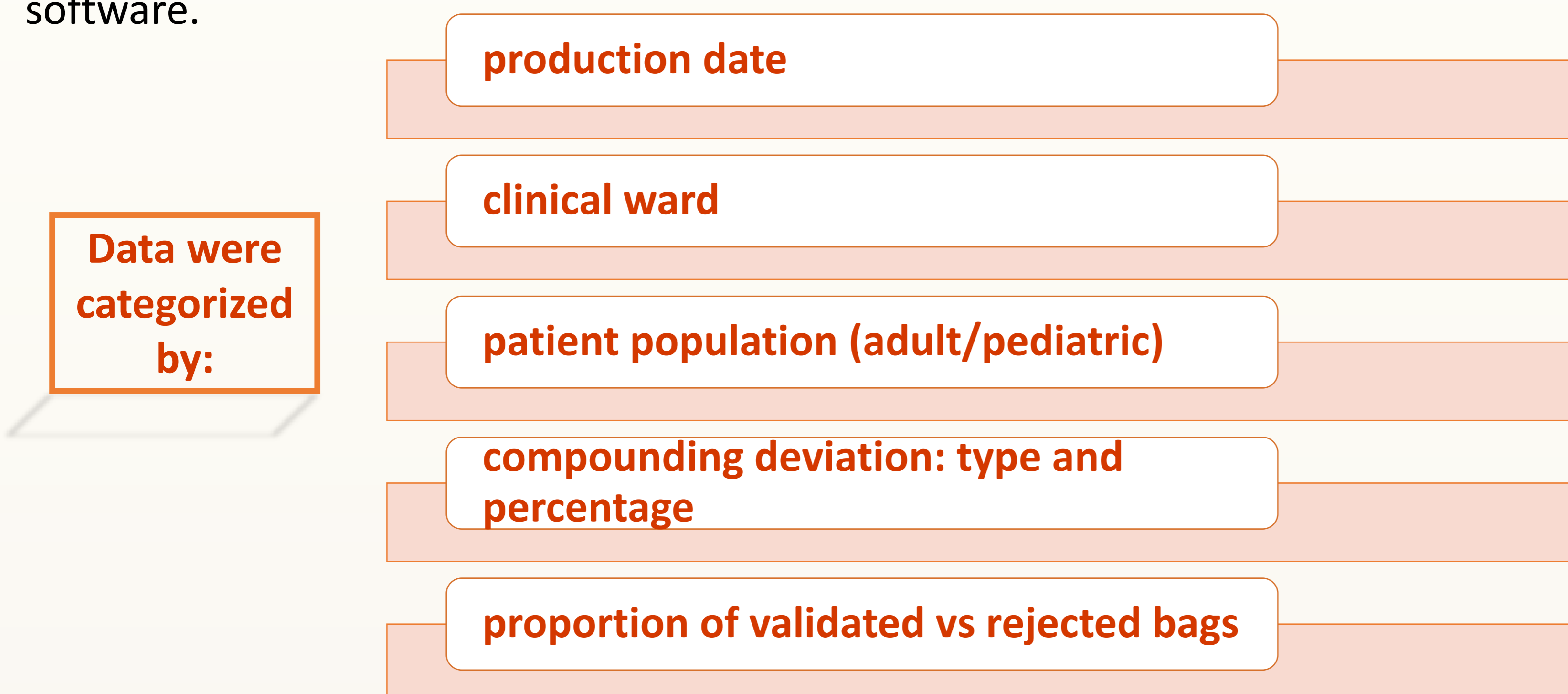
Automated compounding systems (ACS) for parenteral nutrition (PN) aid the bag preparation process. In our hospital setting, the ACS integrates a nutrient volumes deviation detection system. Identifying these discrepancies is crucial as they may compromise patient safety, causing hydroelectrolytic imbalances, volume alterations, and metabolic dysfunctions.

AIM AND OBJECTIVES

The objective of this study is to analyze deviations identified during PN bag compounding and to define a standardized clinical decision-making procedure involving the hospital pharmacist (HP) and the prescribing physician (PP) for assessing bag suitability.

MATERIALS AND METHODS

Data related to bag compounding performed at a hospital between **January 2025** and **July 2025** were extracted from the ACS software.

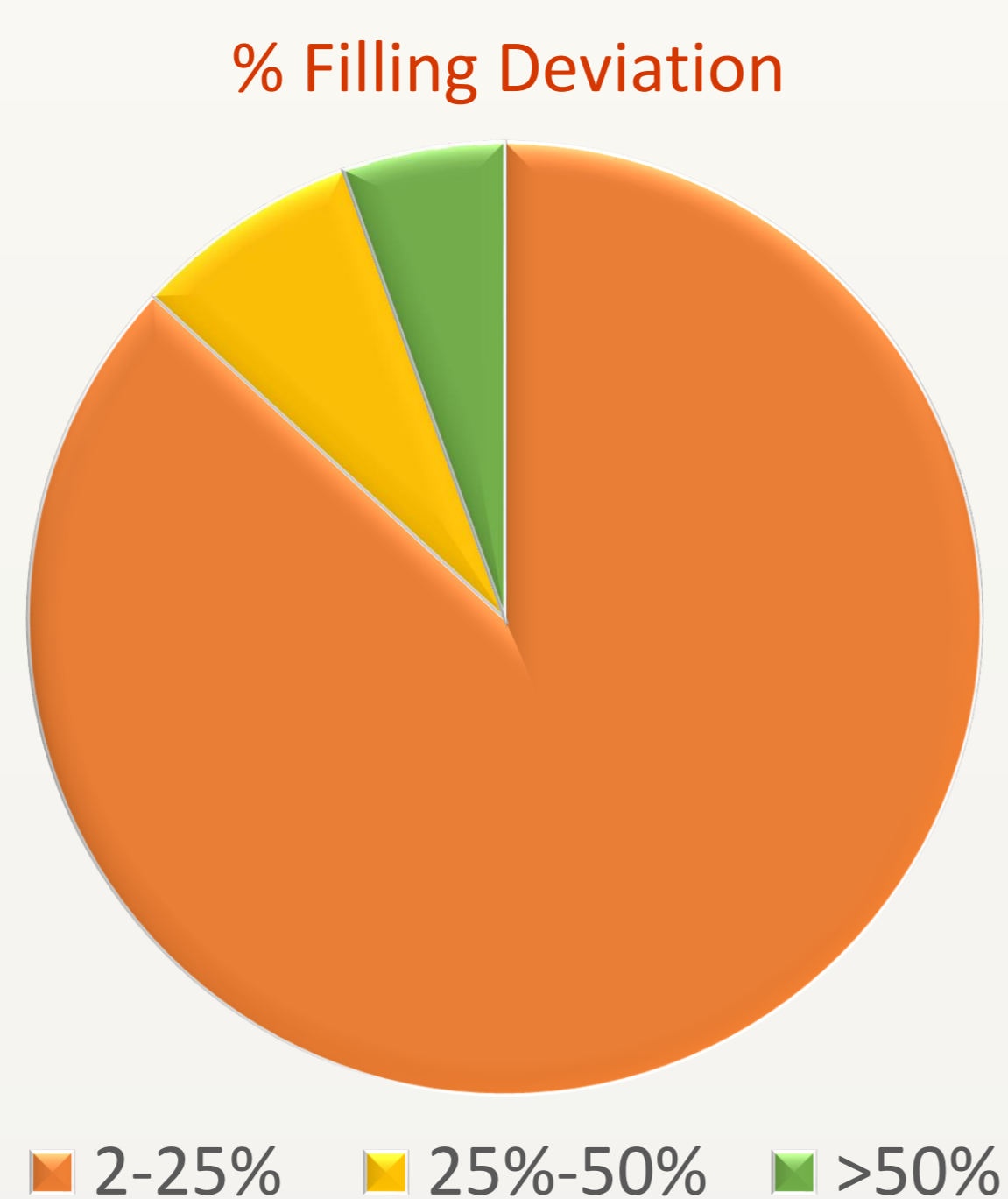


For deviations between **2-4%**, the HP consulted with the PP to assess bag suitability based on the patient's laboratory parameters and clinical status.

Bags with deviations **exceeding 4%** were systematically discarded and recompounded.

RESULTS

During the study period, a total of **1898** nutritional bags were compounded. Of these, **91/1898 (4.8%)** showed a filling deviation **exceeding 2%**.



Following joint decision-making between the HP and the PP, considering the patient's laboratory values and clinical conditions, **64/91** bags were deemed **suitable for administration** as the deviation was not considered clinically significant. The remaining **27/91** bags were **rejected**.

Main reasons for discarded bags:

Significant variations in sodium quantity
15 bags

Excessive concentration of disodium fructose diphosphate in bags for preterm neonates
3 bags

Potassium overdosage in pediatric emergency bags
9 bags

CONCLUSION AND RELEVANCE

The analysis confirmed that a 2% threshold procedure with systematic multidisciplinary evaluation based on laboratory and clinical parameters effectively ensures safe nutritional therapy. This approach proved essential for vulnerable populations, highlighting the fundamental role of interprofessional collaboration in preventing clinically significant errors in ACS which could affect patient outcomes.

