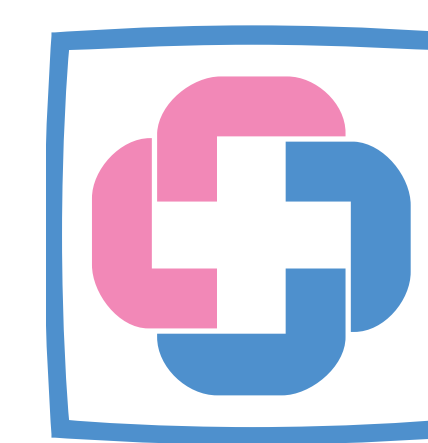




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Aim for Zero Errors: To Reduce Intravenous Total Parenteral Nutrition (TPN) and Lipid Infusion Errors through Process Re-Design

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BACKGROUND

From Jun 2017 to Jan 2018, there were 5 medication errors attributed by switching of the intravenous TPN/Lipid infusion lines which resulted in the wrong rate being infused to patients. The contributory factors were:

Variations of standards in performing TPN change between neonatal, paediatric and adult patients.

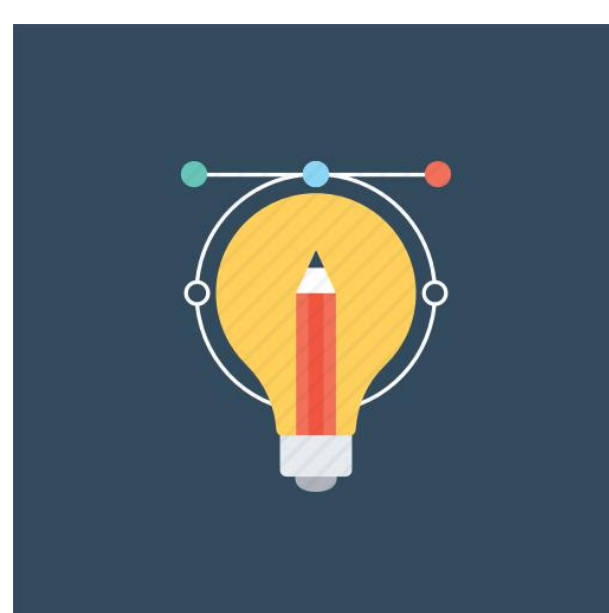
Lack of policy and procedure (P&P) and work instructions to guide nurses.

Independent counter checker not performing role.

Late delivery of TPN/Lipid bags resulting in nurses rushing through the process

AIM

A multi-disciplinary workgroup was formed (nurses from neonatal, paediatric, gynaecology and speciality line, pharmacist and executives) with the aim to reduce such errors through process re-designing.



METHODOLOGY



All 5 errors went through root cause analysis using the HFACS (Human Factors Analysis & Classification System) to identify the contributory factors. In addition, the team conducted focus groups with nurse clinicians to gather feedback on the challenges they faced in performing the procedure. Both the contributory factors and challenges were then analyzed, after which the commonalities faced were tabulated.

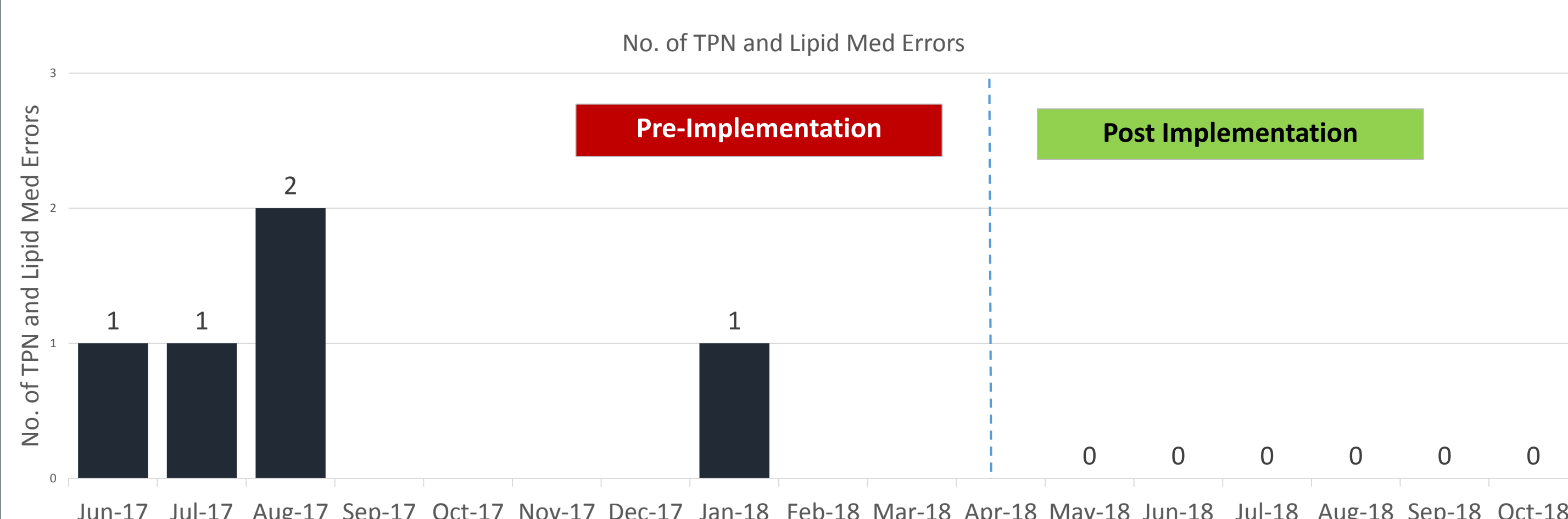
INTERVENTION

With the commonalities indicated, the team brainstormed and proposed solutions as follows:

- 1 Standardizing infusion pump placements for TPN and Lipid
- 2 Harmonizing the Policy & Procedure
- 3 Creating a competency checklist to standardize practices with the roles of operator and checker and performance of independent checking explicitly indicated.
- 4 Formulating an audit checklist to monitor for compliance
- 5 Designing a pictorial guide serving as visual cue, highlighting important steps during the changing procedure
- 6 Changing the TPN/Lipid delivery time and assignment to designated cubicle for high usage wards

The speciality line nurse taught nurse clinicians from all disciplines through hands-on demonstration and structured teaching materials. The nurse clinicians then guided nurses in their respective departments. Competency tests will be carried out to re-assess nurses every 2 years.

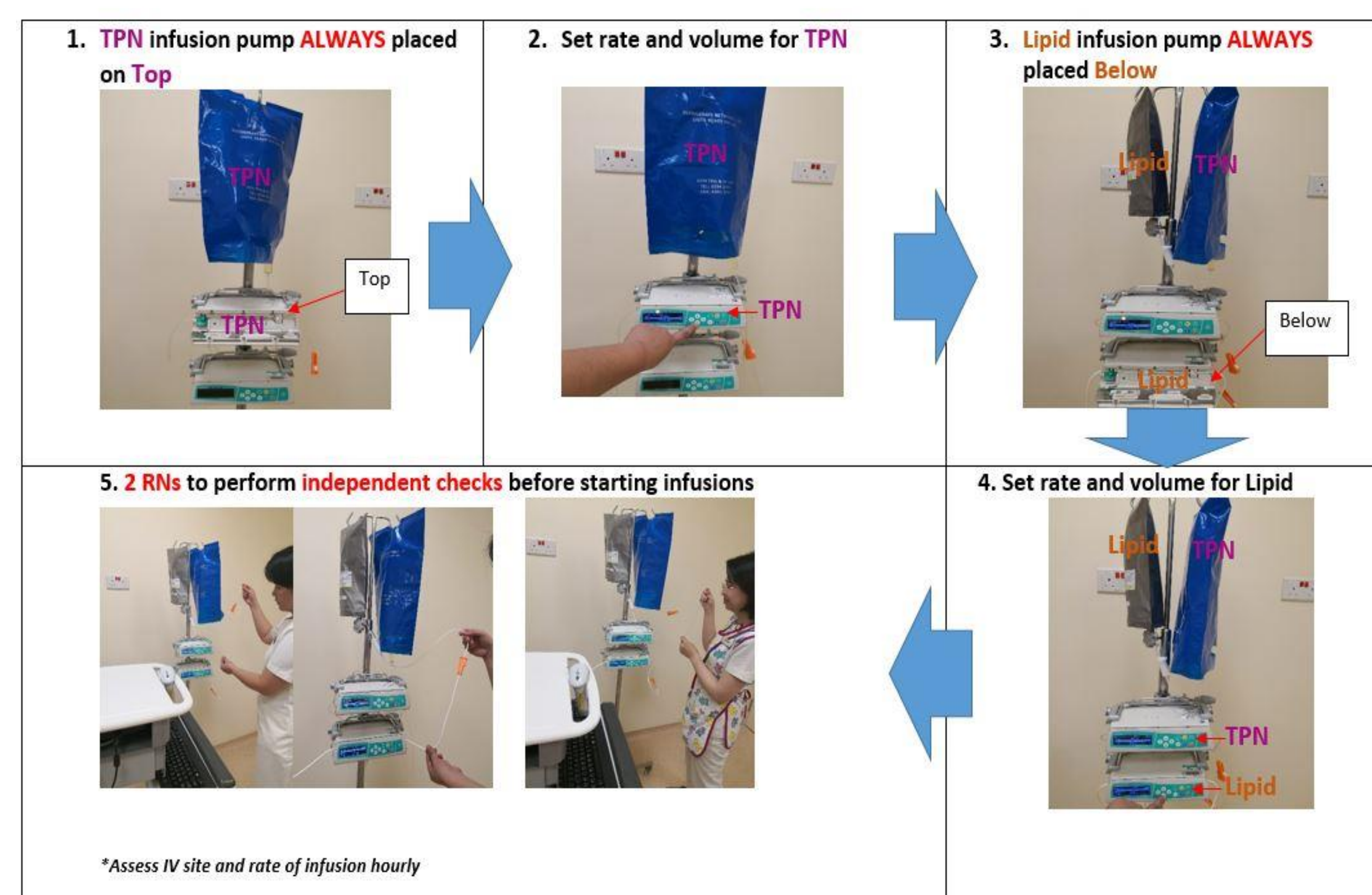
RESULT



Since Implementation from April 2018, we have achieved 6 months of zero errors of the same nature. The probability of actual incidences of happening is 0.0498, whereby the reduction in actual compared to expected is statistically significant at 95%.

Nurses gave feedback that they were more confident of changing the lines now because the guidelines available were structured and easy to follow. With awareness of the errors, coupled with the competency checklist with the roles of the assistant clearly stated, nurses know the importance of independent checkers. Pharmacy reversed the order of sending. There is also a designated cubicle for them to send. This helped to ease the stress as they did not have to rush through the process.

Pictorial Guide for Nurses in administering TPN and Lipid



CONCLUSION

Within the hospital, the initiative has been spread to Neonatal units, all pediatric inpatient wards and all gynecology inpatient wards. With the standardized practice across all disciplines, the team has achieved patient safety through continuity of care.