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# REDUCTION OF EXTRAVASATION INJURIES FROM INTRAVENOUS CANNULAE – A QUALITY IMPROVEMENT PROJECT AT A TERTIARY PEDIATRIC REFERRAL CENTRE IN QATAR

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### **Background / Context**

Extravasation injury refers to the unintentional dispersal of solutions from a vein into the surrounding tissues during intravenous administration, with subsequent tissue injury owing to the properties of the solution.

Infiltration, in this context, is the unintentional dispersal of solutions from a vein into the surrounding tissues without evidence of subsequent tissue injury.

Extravasation injury is the damage caused by the inadvertent infiltration of vesicant solutions or medications from a vessel into surrounding tissue spaces during intravenous infusion. The damage can extend to involve nerves, tendons, and joints and may continue for months. The impact of such injury can have detrimental psychological and physical ramifications for our patients and their families. Treatment delays can result in the necessity of surgical debridement, skin grafting, amputation and, in some cases, any of the above may be the unfortunate consequences of such an injury.

### **Problem**

Sidra Medicine is a tertiary pediatric referral hospital with all significant sub-specialities with 250 inpatient beds and approximately 15,000 peripheral intravenous cannulations a year. On review of some of the clinical incidents reported in 2020, infiltration/extravasation was one of the most common causes of Harm; there was also one reported sentinel event due to extravasation in 2020.

### **Strategy for Change**

We want to ensure that all our clinicians within Sidra have the requisite knowledge, education, skills, and competence to manage peripheral and central venous devices so that we can achieve zero Harm from extravasation. We planned to

1. Train 25 frontline staff who will be the link nurses
2. Develop intra-hospital online training course for frontline staff
4. Data collection every month after classifying incidences into Extravasation and Infiltration
5. Quarterly benchmarking with selected pediatric centres or institutions
6. Aim for a reduction of extravasation by 50 % by the end of one year (post interventions)

## **Measure of Improvement**

With our interventions, we managed to reduce the incidence of extravasation by 22.5 %, and there were no sentinel events reported in 2022.

## **Lessons Learnt**

The engagement of physicians and nurses is the key to success

## **Message for Others**

A comprehensive approach with training and awareness of extravasation among physicians and nurses significantly reduced morbidity due to this complication. The documentation of insertion and maintenance of vascular access devices was denoted as a Key Performance Indicator (KPI) for the clinical units, and the audits on this were widely circulated. Root cause analysis was done for each reported extravasation event, and a comprehensive procedure was compiled to prevent, detect, and treat extravasation. A rapid escalation of significant extravasation events were made through our vascular management nursing service, thus ensuring appropriate bedside management and timely referral to plastic surgery.

## **References**

1. Infusion Nurses Society: Policies and Procedures for Infusion Therapy for the neonate to adolescent Neonate to Adolescent, 3rd Edition. 2021.
2. Mecoli MD, Ding L, Yang G, et al. Factors associated with intraoperative intravenous catheter extravasation in children. *Anaesth Intens Care* 2022; 50: 306–11.