Optimizing IV Fluid Therapy on Medicine Wards

Vaishvi Patel, Anastasia Howe, Inka Toman, Hernando Leon, Veron Pye and Pamela Mathura

**DEFINE OPPORTUNITY**

**BACKGROUND:** IV Fluid therapy (IVT) order is one of the most common orders that is placed for a medicine patient admission. Adjustments to intravenous (IV) fluids are made depending on volume status assessment and changing goals of therapy which remain rather subjective by physician dependent. IVT are very impactful and beneficial but can bring harms to patients if used incorrectly.

There is no clearly documented Canadian guidelines on IVT. However, NICE (British) guidelines recommended daily reassessment of IV fluids and suggest choosing an alternative oral way of fluid replacement if IV therapy for rehydration is exceeding 3 days. An Australian study showed the negative effect of both "restrictive" and "liberal" fluid replacement and FEORCA trial emphasized better outcomes in patients with goal-directed hemodynamic therapy compared to standard "liberal" infusions.

As for concurrent use of diuretics with IVT, there are very few indications for it and a cohort study in 2010 from Yale showed that in patients with heart failure it could lead to worse outcomes.

**THE PROBLEM:** Continuous IV fluid orders for admitted patients are not consistently reassessed (for example, there are many orders beyond 48 h post initial medicine unit admission order). At times, IVT is used concurrently with diuretics which is not only non-beneficial and potentially harmful for the patient, but it also creates unnecessary workload for nursing staff and increases healthcare expenditures.

**OBJECTIVES:**

- **Aim 1:** Reduce the number of IV fluid orders unreviewed beyond 48 hours on general medicine and family medicine units 17, 18, 19 at the Sturgeon Community Hospital (SCH) by over 50% over the post-intervention
- **Aim 2:** Decrease the number of adverse events (local, phlebitis/systemic volume overload) due to the use of IV fluids.
- **Aim 3:** Decrease the number of simultaneous IV fluid and diuretics orders.
- **Aim 4:** Increase knowledge surrounding IV fluid therapy within the healthcare team.

**PROCESS ASSESSMENT:**

IV fluids ordering and usage was assessed at three units (17, 18, 19) at the Sturgeon Community Hospital using a mixed-method approach including both quantitative and qualitative analysis. Quantitative analysis consisted of a chart audit, while qualitative tools included Gembka Walks meeting the staff at each site, observing the clinic space and the standard workflow as well as the Cause-and-Effect diagram and Process Map.

**PREINTERVENTION CHART AUDIT:**

- 25 patient charts were randomly analyzed to assess IV fluid usage.

**RESULTS:** Based on the process map, most IVT orders are placed on admission and reminders for reassessment occur at that time and during daily rapid rounds (providing that the nursing staff bring up concerns about IVT to the attention of the attending physician or if the patient is nearing discharge). Otherwise, daily IVT reassessments are mainly based on the physician’s memory and clinical judgment.

**REFERENCES AND ACKNOWLEDGEMENTS:**


**POST-INTERVENTION RESULTS**

**ACT TO IMPROVE**

**INTERVENTION AND MEASUREMENT APPROACH:**

Interventions were chosen based on what was the most impactful, manageable, measurable, and affordable, as well as what required the least change to existing workflow.

**Survey:** Nursing and prescribing staff at SCH surveyed about current IV fluid ordering and management practices. Survey results analyzed and gaps identified.

**Education:** Virtual educational sessions on Choosing IV Fluids delivered to nursing staff and clinical assistants.

**Sticky Notes:** Nursing staff encouraged to use sticky note function on Connect Care to remind providers about fluids reassessment.

**Mandatory Stop Time:** 14 days of mandatory stop time for IV fluids on first admission order to units 17, 18, 19.

**Audit:** Random patient chart audit performed to assess effect of interventions.

**Feedback and Audit:** Feedback provided to SCH staff on efforts and chart audit performed to assess continuous compliance.

**LESIONS LEARNED/CONCLUSION:**

Based on the initial chart audit and the process assessment along the multimodal intervention there are challenges to timely reassessment and discontinuation of IV fluids.

Connect Care Interface: IV fluid orders can be placed without a stop time and are displayed at the bottom of the on-going medication list in Connect Care and thus often missed.

Priority: Fluid reassessment is a low priority.

Role confusion: There is no clear defined ownership of IV fluid reassessment, resulting in it not being completed.

Busy environment: Modifications and reassessments of IV fluids is considered cumbersome and time consuming.

**WHY THIS QI MATTERS:**

Adverse events related to IVF misuse are often seen, yet missed. The aim of this QI project was to shed light on the lack of standardization in IV fluid prescription and use a multimodal approach to make improvements. This project intervention outcomes support patient outcomes, increase provider education, and reduce per capita cost of care. We hope that with increased awareness, IV fluid prescribing is given the same priority as other drug prescribing specifically through formal start and stop times. And perhaps inspire an agreement for standardizing IVT prescribing and reassessment practices in Alberta.