Improving IV Fluid Prescribing

A. Gomaa¹, J. Wilkinson¹
1 Northampton NHS Trust, Northampton, United Kingdom
Contact: abdul-rahman.gomaa@nhs.net

INTRODUCTION

Intravenous (IV) fluids are some of the most commonly prescribed day-to-day drugs. They have their indications, benefits, risks, side-effects and complications. Often, the task is delegated to the junior most members of the team. Evidence suggests that such prescriptions are rarely ever done correctly despite the presence of clear guidelines (NICE CG174). This is thought to be due to lack of knowledge and experience, which often breeds confusion. Consequently, this puts patients at increased risk of harm and may incur unnecessary costs to the Trust.

Northampton General Hospital NHS Trust is a busy acute Trust with 630 beds covering a population of 380,000. On average, there are usually 48 to 60 patients on IV fluids in any one day.

Retrospective review of prescriptions within the Trust between 2012-2016 identified poor control of the process. There were considerable variations in IV fluid prescriptions; none of which adhered to NICE’s guidelines. At times, some prescriptions were placing patients at increased risk of harm and may incur unnecessary costs to the Trust.

Aim

Establish a quality improvement project to ensure that all IV fluid prescriptions are safe, appropriate and adhere to NICE guidance by April 2018.

METHOD

Review and improve the prescribing process of “IV fluid prescribing” via several simultaneous approaches.

Teaching sessions were delivered to all junior doctors in order to improve knowledge and awareness of appropriate IV fluid prescribing and promote familiarity with the current NICE IV fluid guidelines. This included a ‘feature session’ at our local hospital Grand Round.

A point-of-care aide-memoire containing a summary of the information needed for correct prescription was designed and printed. This complimented the teaching sessions and supported good clinical practice.

Using serial Plan-Do-Study-Act (PDSA) cycles, a novel “IV fluid bundle” (figure 2) was developed, fine-tuned and trialled on five wards. (three surgical, two medical). The aim of the bundle was to ensure that patients were clinically reviewed in order to assess their volaemic status in order that appropriate IV fluids could then be selected and prescribed safely.

The impact of these interventions was assessed on the trial wards via a weekly point prevalence audit of the IV fluid bundles for the duration of the trial. Parameters looked at were: incidence of deranged U&E’s, incidence of AKI and the number of days between the latest U&E’s and the patient’s IV fluid prescription.

RESULTS

Initially a total of 100 consecutive IV fluid prescriptions across all adult wards were reviewed.

Volumes – 16% had the correct volumes prescribed for maintenance fluids.

Electrolytes & Glucose – Patients received excessive amounts of sodium within their IV fluid prescriptions yet minimal potassium. Only 25% contained the correct amount of glucose.

With a limited uptake (50%) of the IV fluid bundle we were able to significantly improve the measured outcomes and balancing measures (Graph 1).

Of the patients on the IV fluid bundle:

• All patients had a documented review of both fluid status and balance.
• Incidence of deranged U&E’s decreased from 48% to 35%.
• Incidence of AKI decreased 14% to 10%.
• The average number of days between the latest U&E’s and a fluid prescription decreased from 2.2 days to 1.0 day.

DISCUSSION

We aimed to tackle these issues with some simple changes, geared to each of the confounding issues we identified from previous audits and process mapping runs.

This is an ongoing quality improvement project within a PDSA cycle; various interventions are being implemented currently. Early results are encouraging. With the increased uptake of NGH’s IV fluid bundle (Figure 2) we saw improvements in the observed measures (Graph 1).

We are currently in the process of delivering teaching sessions to all junior doctors, as well as rolling out NGH’s IV fluid bundle Trust-wide. Once all the interventions have been delivered and established, we aim to re-assess the IV fluid prescriptions within our Trust and evaluate the impact of the changes.

CONCLUSIONS

Prescribing IV fluids correctly is a complex task.

Ensuring that all IV fluid prescriptions within the Trust are safe, appropriate and adhere to evidence-based NICE guidance requires a careful, measured, long-term approach.

Changing prescribing habits is the most challenging change to accomplish.

Though provisional data goes some way to show that introducing NGH’s IV fluid bundle can change prescription habits and reduce the incidence of associated complications, further work needs to be done before more reliable results and conclusions may be drawn.