Improving Paediatric Prescribing Through Use Of An Electronic Prescribing System

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Background

Paediatric prescriptions are almost 50% more likely to contain an error than adult orders. The risk of prescription error is further increased when prescribing for malignant disease[1]. In April 2012, the National Cancer Registration and Analysis Service (NCRAS) launched the world's first national Systemic Anti-Cancer Therapy (SACT) database. Since 2014 it has been mandatory for all NHS England specialist trusts to send monthly submissions to SACT, regarding the treatment of malignant disease in secondary care[2].

In 2017 Royal Manchester Children's Hospital (RMCH) introduced ChemoCare - an electronic prescribing system for paediatric chemotherapy - in order to minimise prescription errors and more easily communicate with SACT.

Aims

The primary aim of this report was to:

- Investigate whether implementing ChemoCare has affected the incidence and type of errors made in paediatric chemotherapy prescriptions, compared with written prescriptions

The secondary aims of this report were to:

- Explore the reasons why these prescribing errors occur, using data from a questionnaire sent to pharmacists and prescribers
- Analyse RMCH trust compliance with communicating chemotherapy treatment data to SACT

Methods

Data collection took place over a four-week period in Spring 2018. Prescriptions were reviewed by pharmacists and categorised as written or electronic.

Prescriptions were then checked for 7 different error types, as shown in Figure 1.

ChemoCare treatment data was retrospectively reviewed in order to determine how many prescribed cycles had been marked as 'completed'.

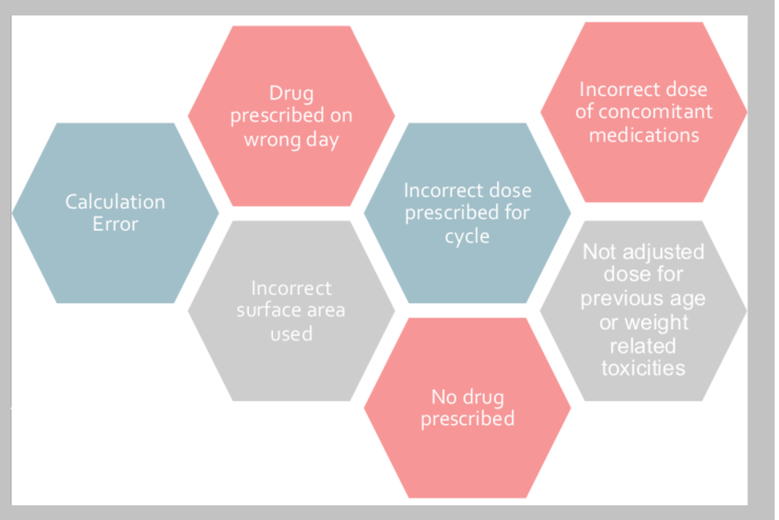

Figure 1: A pictorial representation of the 7 error types checked for

Results

Of the 143 prescriptions analysed, written prescriptions were three times more likely to contain errors than electronic orders. The error incidence results are displayed below. (Figure 2)

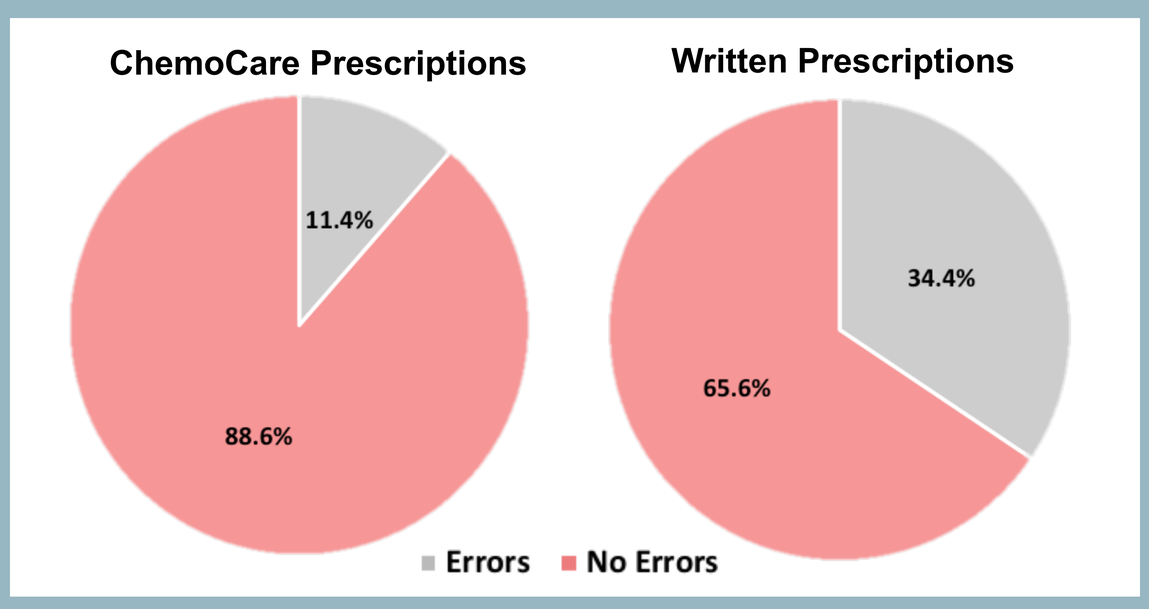

Figure 2: Pie charts comparing the error incidence amongst electronic and written prescriptions

The Fisher's Exact Test showed that two of the error types – 'wrong calculation' and 'wrong drug prescribed for cycle' – occurred significantly more frequently in written than electronic prescriptions. The p values were 0.017 and 0.008 respectively.

Discussion

Of the 409 treatment cycles prescribed and administered on the electronic system, 56.5% (n=231) had not been marked as 'completed'. The data is displayed in Figure 3 below. These cycles would therefore not be returned to SACT as administered chemotherapy.

Failure to communicate accurate chemotherapy data to SACT not only **limits research opportunities** to progress safety aspects of delivering chemotherapy, but also has **significant cost implications for the Trust**, as chemotherapy treatment costs are not recovered.

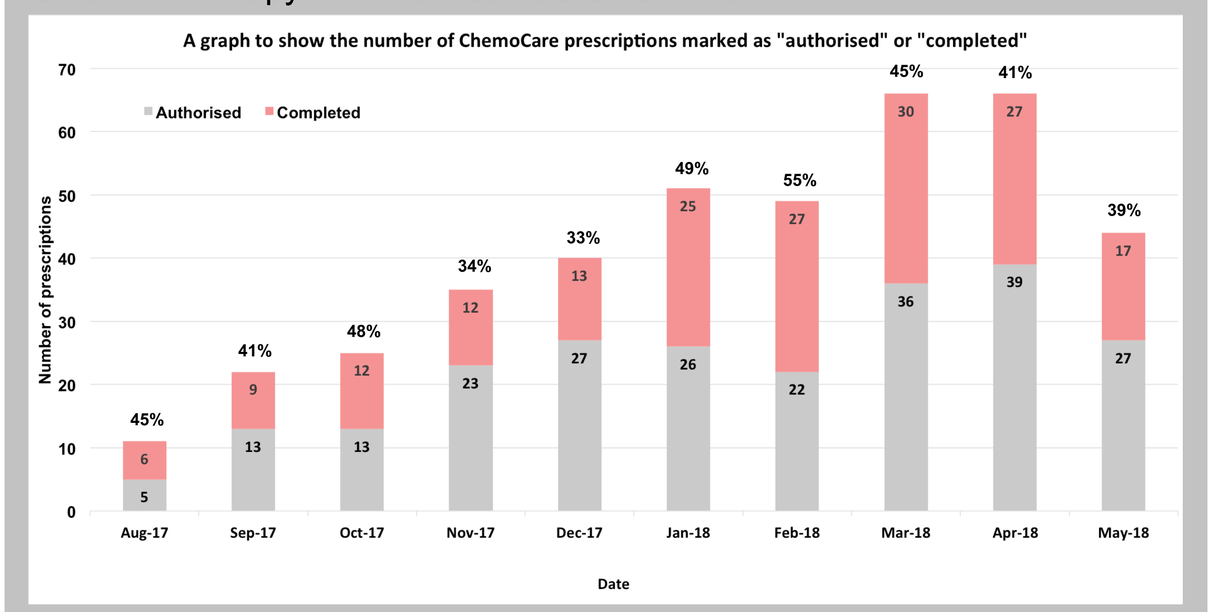

Figure 3: A bar chart to show the number of chemotherapy cycles on ChemoCare and whether they are marked as 'authorised' or 'completed'. The proportion of 'completed' cycles are shown as a percentage above each bar

This study also noted the **importance of regularly updating the patient's weight on ChemoCare** in order to ensure drug dose accuracy. The ChemoCare system prompts prescribers to input an updated value when authorising a prescription. However, it also allows the user to override the system, therefore creating the potential for not weight-adjusted toxicity errors occurring.

Conclusions

- **This study supports the use of an electronic prescribing system for ordering paediatric chemotherapy**
- The introduction of a chemotherapy-specific safe prescribing poster – similar to one currently displayed in RMCH (Figure 4) - is suggested in order to improve compliance with ChemoCare
- Further studies analysing national compliance with data return to SACT, are required to identify cost implications for the NHS and subsequent areas for quality improvement

Figure 4: Safe prescribing in children poster[3]

References

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2. NCRAS. Systemic Anti-Cancer Therapy Dataset [Internet]. [cited 2018 Jun 26]. Available from: http://www.ncin.org.uk/collecting_and_using_data/data_collection/chemotherapy
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