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Promoting the use of safer injectable medicines using a novel metric

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What was done and why

- In 2002, to reduce the risk of patient harm, the National Patient Safety Agency (NPSA) in the UK recommended restricting the supply of strong potassium chloride (KCl) solutions in ampoules and maximising the supply of ready-to-administer (RTA) infusions.[1]
- The World Heath Organisation's High 5s project recommended standardisation of concentrated high risk injectable medicines including KCl.[2]
- Later guidance recommends the use of ready-to-use (RTU) or ready-to-administer (RTA) injectable products where these are available to reduce the risk of patient harm from errors in the preparation of injections and infusions on hospital wards.[3]
- Although organisations are asked to state that recommendations have been implemented, the extent of implementation is not measured. Compliance is therefore assumed rather than demonstrated.
- Following publication of the Carter Report[4] which refers to Medication Safety as a Clinical Service providing organisational assurance and governance to ensure patients are not harmed by medicines, we developed a series of metrics to measure compliance with national guidance for the safe use of injectable medicines

How it was done

- A simple metric to compare the numbers of concentrated and RTA/RTU injectables issued to clinical areas by Pharmacy was developed (Box 1)
- The metric is expressed as a percentage (%) and informs the organisation the extent to which safer injectable medicines are used.
  A high % indicates good compliance.
- Pharmacy issue data for high risk injectables including intravenous potassium chloride, IV midazolam, IV magnesium, IV fentanyl were used (Box 2).
- Metrics for the two hospitals within our organisation (Site 1 and Site 2) were calculated and compared.
- Variations in practice were identified and an action plan to maximise the metrics score was put in place

Box 1. Medication Safety Metric calculation

Metric % = Amount of drug issued as Low risk formulation / (Amount issued as Low risk formulation + amount issued as high risk formulation)

Box 2. High and low risk formulations of high risk drugs

High risk drug	High risk formulation	Low risk formulation
Potassium chloride	20mmol/10ml amps	>40mmol/500ml RTA infusions
Midazolam used for conscious sedation	10mg/2ml solutions	1mg/ml solutions
Magnesium sulphate solutions issued to obstetric wards	50% solutions	20% RTU solutions
Fentanyl for critical care sedation	500mcg/10ml ampoules	2.5mg/50ml RTU solutions

What was achieved

- Metrics for four high risk drugs across two hospital sites are presented (Table 1)
- On sites 1 and 2 high strength potassium chloride RTA infusions were being used but only 94.5% and 85.65% respectively at baseline
- On Site 2 metrics for safer formulations of magnesium sulphate 20% and fentanyl 2.5mg/50ml were less than 1% at baseline
- Midazolam 1mg/ml was being used consistently across both sites
- Following promotion of safer injectable products metric values for all formulations increased throughout 2017.

Table 1. Monthly and baseline metrics for four high risk drugs

		Calculated metric % for baseline and monthly for 2017										
High Risk Drug		2016	Jan 2017	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Potassium chloride (all clinical areas)	Site 1	86.69	83	83	84	78	91	84	88	89	93	92
	Site 2	81.23	82	75	91	79	80	86	86	92	90	94
Potassium chloride (excluding paediatrics)	Site 1	94.05	95	89	90	88	98	89	94	98	97	97
	Site 2	85.65	90	80	93	82	89	93	89	97	94	96
Midazolam 1mg/ml	Site 1	99.61	100	100	100	100	100	100	100	100	100	100
	Site 2	98.19	100	100	100	100	100	100	100	100	100	100
Magnesium sulphate 20%	Site 1	99.67	100	100	99	100	100	100	100	100	100	100
	Site 2	0.92	0	100	100	100	48	100	100	100	100	78
Fentanyl 2.5mg/50ml	Site 1	95	98	95	96	98	98	98	98	97	98	98
	Site 2	0.92	96	100	90	100	95	92	100	100	97	99

What is next

- The use of the metric has highlighted and quantified unwarranted variation in the use of safer injectable medicines across our organisation.
- Monthly monitoring with further analysis where metric results are unexpectedly low has facilitated further reductions in the use of concentrates by identifying causes, encouraging changes in prescribing practices and raising awareness of the availability of ready-to-administer formulations.
- This was especially the case for potassium chloride where there was intermittent unwarranted variation
- The metrics model is being used successfully to measure implementation of other initiatives to promote safe medicines use.
- Discussions are underway to benchmark data between organisations locally.
- Data are reported upwards within the organisation to provide assurance that risks are being actively managed.
- We believe that these metrics are a measure of medication safety within organisations. Further work is needed to validate the relationship between the metrics and patient safety

References

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http://www.eahp.eu/gpis/promoting-use-safer-injectable-medicines-using-novel-metric

Conflicts of Interest

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