Video simulation to improve guidelines against Never Events

Yincent Tse, Karen Maddison and Nadeem Moghal.

Great North Children's Hospital, Newcastle Upon Tyne, UK. Email: yincent.tse@nuth.nhs.uk

Incident

A baby had a near fatal cardiac arrest during a potassium infusion with an incorrect dosage

Aim

A guideline for safe infusion of concentrated potassium solution for use across different wards and specialties in a large UK children's hospital

Guideline by	
expert	
committee	>3.0 m

five drafts later (version 4b)

the perfect guideline...

Table C - Potassium level 42.5 mmol/L

Different child unwell, requires potassium infusion

"Let's try the new guideline"

"Table D looks unsafe"





- '....confusing units....

... mmol/kg/day, mmol/kg/hr, mmol/bag, mmol/L, ml/hour, um..."

>20 minutes before prescription written

Theory: Guidelines can be improved after simulation nt cimulation

PDSA 1

Test of change:

Can we simulate a scenario? Can it be filmed Can we collect useful information

Plan:

Invent scenario and measures Recruit on ward: any junior doctor & nurse Mobile phone camera

Patient simulation 1	
nformation to share from the start Nurse to doctor:	
Patient: George Smith	Measures to collect:
arge gut losses Biochemistry back – potassium 1.8, rest of results Consultant request that we give potassium	 Do they ask for or know where guideline is? (Intranet) Does doctor ask for weight? Is the weight confirmed on documentation Is the correct table chosen? Is the prescription correct?
Nurse to doctor: Age 2 Neight 12kg	 6. Is the potassium available on the ward? 7. Is it set up properly? 8. Time from request to ready to infuse? 9. Debriefing – comments, 'Do they feel safe?'
He <u>is</u> fluid restricted <u>Has</u> central line	

Do:

Feedback

Safety agenda helped recruit volunteers "Testing guideline, not you" Video quality poor but acceptable Further learning by reviewing video



Weight le <u>is</u> flu

PDSA 1 - Prescribing simu ... 4 minutes

Study:

14 minutes to prescribe

"Reading guideline first time is daunting" Doctor: "Tables are confusing" Prescriber wants clear direction and choices

"Complex calculations reduces confidence" Nurse:

Scribbled notes

21000 500					
	1 -2 400m/	I sag.	NEWCASTLE UPON	TYNE HO	SPITALS NHS TR
NAME.	GEORGE	Smit	H		WEIG
		PRESCR	IPTION	-	
Date No	Fluid*	Vol	Additive & Dose	Rate	Signature
20/1/12.	O. A. Nach. IL	125ml.	20 mmils/L.	25m/2	- (Menpooro

Ambiguous prescription

3 different possible prescriptions

... 8 minutes ..

			PRESCR	RIPTION	
Date	No	Fluid*	Vol	Additive & Dose	Rate
20/1/12.	i.	O. A. Nach. IL	125ml.	30 mmils/L.	25-11/2
20/1/12		0.9% Nach. 11	125 M	EIO mmulsicce : y	25ml/hr
20/1/12		8.0mmilskcl 12	125 ml.		25ml/h

Act:

Improve camera Improve flow chart Tables – more didactic Simply units

$\mathsf{PDSA} \ 2 \rightarrow 6$

Cycle	Situation
PDSA 2	Ward 1A (different nurse / doctor) – filmed
PDSA 3	Junior doctor teaching – 30 doctors
PDSA 4	Pharmacy group – 6 pharmacists
PDSA 5	Paediatric ICU
PDSA 6	Ward 4 (oncology)



Table C - Potassium 500mmol/L Prescribe on fluid prescription chart as: Potassium Chloride (0.5 mmol/ml) Y ml to be given over 2 hours word Sive via central venous catheter only on Wards 1A, 3, 4 or PICU GNCH Dosage Give 0.5 mmol/kg of potassium over 2 hour infusion. Round down to nearest weight. Do not exceed infusion rate in table below. Dispensing instructions Only draw up into the syringe the required volume (maximum volume 40ml). Administer via a syringe pump Need continuous ECG and oxygen saturation monitoring Prescribe as a 2 hour infusion to give 0.5 mmol/kg of potassium Veget finasion Only draw up into the syringe the required volume (maximum volume 40ml). Administer via a syringe pump Need continuous ECG and oxygen saturation monitoring Prescribe as a 2 hour infusion to give 0.5 mmol/kg of potassium	at -						_	_					
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Conclusion

Guideline evolved through testing and feedback, resulting in uniformity of prescriptions and time taken to prescribe

Reflections

Simulation tests different microsystems and skill mix Labour intensive (each cycle >1 hour) Can this be used for other guidelines? Unknown whether this guideline can prevent a similar error