Video simulation to improve guidelines against Never Events

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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
...five drafts later (version 4b)

...the perfect guideline...

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

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

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

Study:
14 minutes to prescribe
Doctor: “Reading guideline first time is daunting”
“Tables are confusing”
Prescriber wants clear direction and choices
Nurse: “Complex calculations reduces confidence”

Act:
Improve camera
Improve flow chart
Tables – more didactic
Simply units

PDSA 2 → 6

<table>
<thead>
<tr>
<th>Cycle</th>
<th>Situation</th>
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<tbody>
<tr>
<td>PDSA 2</td>
<td>Ward 1A (different nurse / doctor) – filmed</td>
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<tr>
<td>PDSA 3</td>
<td>Junior doctor teaching – 30 doctors</td>
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<tr>
<td>PDSA 4</td>
<td>Pharmacy group – 6 pharmacists</td>
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<tr>
<td>PDSA 5</td>
<td>Paediatric ICU</td>
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<tr>
<td>PDSA 6</td>
<td>Ward 4 (oncology)</td>
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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