



1. Statewide Hospital Pharmacy, Tasmanian Health Service
2. Launceston General Hospital
3. North West Regional Hospital
4. Royal Hobart Hospital

Who Flagship Area : High-Risk Medicines

Potassium is a high risk medicine. Potassium can cause catastrophic harm when administered in central use and has been implicated in deaths both nationally and internationally. Potassium ampoules were available in areas outside critical care within the Tasmanian Health Service (THS).

Aim of this project was to reduce the use of potassium ampoules and remove the requirement for potassium ampoules to be utilised outside critical care areas.

Stakeholder consultation highlighted use of potassium ampoules in non-critical areas stemmed from lack of suitable premix alternatives. Formulary changes led to the addition of potassium chloride 20 mmol/100 mL bags, potassium dihydrogen phosphate bags 20 mmol/100 mL and 10 mmol/250 mL. Potassium chloride 10 mmol/100 mL and 40 mmol/100 mL were already in use.

Methods included imprest reviews with the removal of potassium ampoules from all non-authorised areas. To reduce the risk of selection error, specific premix strengths were allocated to clinical areas and imprest restrictions were imposed – potassium chloride 20 mmol/100 mL could not be co-imprested with potassium chloride 40 mmol/100 mL bags. Other premix strengths were available via individual patient dispensing.

Development of a statewide protocol provided necessary governance for the changes and supported the rationalisation of standard potassium dilutions.

Resources including alerts, newsletters, lanyard and wall charts regarding the correct administration and storage of IV potassium products were distributed and showcased on the THS medication safety webpage. Ongoing education was offered at ward level and within THS pharmacies. Training modules were developed for all clinical staff. The module is mandatory for THS pharmacy staff including stores staff and pharmacy technicians. Regular audit of supply of concentrated vials of potassium is reported to Medication Management Safety Committees.

Safe Medication Practice Unit

STORAGE OF POTASSIUM CONTAINING FLUIDS

Potassium Fluids – suitable for Peripheral Use

General Potassium Containing Fluids

- 10 mmol Potassium Chloride in 100 mL Sodium Chloride 0.9% (Isotonic)
- 10 mmol Potassium Chloride in 500 mL Sodium Chloride 0.45% & Glucose 5% (D5 1/2 NS)
- 20 mmol Potassium Chloride in 100 mL Sodium Chloride 0.9% & Glucose 5% (D5 NS)
- 20 mmol Potassium Chloride in 1 litre Sodium Chloride 0.9% & Glucose 5% (D5 NS)
- 20 mmol Potassium Chloride in 1 litre Sodium Chloride 0.9%
- 20 mmol Potassium Chloride in 1 litre Glucose 5%
- 20 mmol Potassium Chloride in 1 litre Glucose 4% & Sodium Chloride 0.18%
- 20 mmol Potassium Chloride in 1 litre Concentrated Sodium Lactate (Hartmann's)
- 40 mmol Potassium Chloride in 1 litre Sodium Chloride 0.9% (D5 NS)
- 40 mmol Potassium Chloride in 1 litre Sodium Chloride 0.9% & Glucose 5% (D5 NS)

General Phosphate & Potassium Containing Fluids

- 10 mmol Potassium Dihydrogen Phosphate in 250 mL Sodium Chloride 0.9%

Concentrated Potassium – for CENTRAL use ONLY

Concentrated Potassium Containing Infusions

- 20 mmol Potassium Chloride in 100 mL Sodium Chloride 0.9%
- 40 mmol Potassium Chloride in 100 mL Sodium Chloride 0.9%

Concentrated Potassium & Phosphate Containing Infusions

- 20 mmol Potassium Dihydrogen Phosphate in 100 mL Sodium Chloride 0.9%

Store in own drawer or cupboard (separate to all other fluids)

Should be labelled "Concentrated IV Fluid for Central Use"

THS Safe Use of Potassium Protocol – available on the SDMS

September 2021

Medication Safety Information

Medication Safety Alert 30 September 2021

Issued by Safe Medication Practice Unit

New Premixed IV Infusion :

Potassium Chloride 20 mmol in 100mL Sodium Chloride 0.9%

Summary of Issues

- Potassium chloride is a high-risk medication
- Concentrated potassium vials have been associated with serious patient harm following selection errors, and administration after inadequate mixing
- Premixed potassium chloride infusions support patient safety by avoiding the need to prepare the infusions from concentrated potassium vials
- A new pre-filled intravenous (IV) potassium chloride formulation is available at Acute Hospitals in the Tasmanian Health Service.
- This is a concentrated infusion for central use only
- Cardiac monitoring may be required according to rate of infusion (see [Safe Use of Potassium Protocol](#))
- This product is not held on imprest at Primary Health Facilities. Contact Health Pharmacy Service to discuss supply on an individual patient basis

Storage and Supply

Premixed potassium chloride 20 mmol in 100 mL sodium chloride 0.9%

- May only be on imprest in Critical Care Units or Named General Ward of Potassium Protocol
- May NOT be imprest together with potassium chloride 40 mmol in 100 mL 0.9% to minimise the risk of a selection error
- Must be stored in its own drawer or cupboard, separate to all other fluid shelf labelling clearly identifying the product and that it is a "Concentrated Potassium Fluid for Central Use"
- May be dispensed to individual patients on wards following pharmacy review

Selection Error Risk

The THS stocks four 100 mL potassium containing premixed IV infusions:

Product	Strength	Peripherally	Centrally
Potassium chloride 10 mmol in sodium chloride 0.2%	10 mmol/100 mL	Yes	No
Potassium chloride 20 mmol in sodium chloride 0.9%	20 mmol/100 mL	No	Yes
Potassium chloride 40 mmol in sodium chloride 0.9%	40 mmol/100 mL	No	Yes
Potassium dihydrogen phosphate 20 mmol in sodium chloride 0.9%	20 mmol/100 mL	No	Yes

Action required for premixed potassium containing infusions

Ensure all medical, nursing and pharmacy staff:

- Are aware of the available premixed infusions
- Take care to avoid selection errors, particularly with the 100 mL product
- Ensure clear labelling of products and storage shelves
- Follow safe use and storage recommendations

For more information contact

Safe Medication Practice Unit
thsm.safety@tas.gov.au

or your pharmacy department

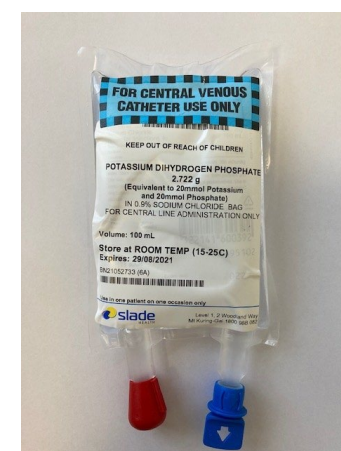
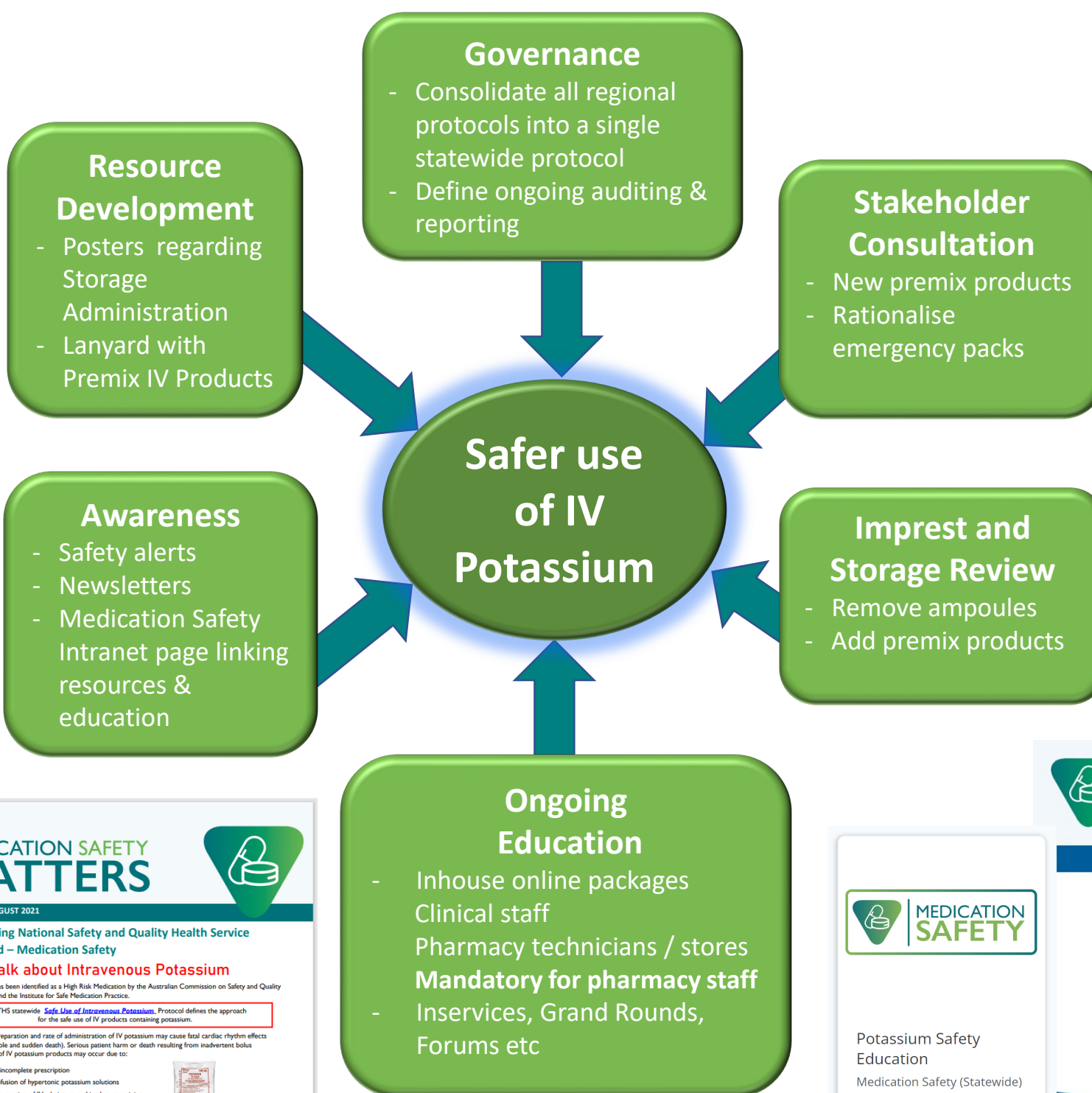
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SAFE USE OF INTRAVENOUS POTASSIUM

Education Package

Supporting

[Safe Use of Intravenous Potassium Protocol](#)

Potassium Safety Education

Medication Safety (Statewide)

Aim of this education is to ensure the safe storage, prescribing, administration...

Safe Medication Practice Unit

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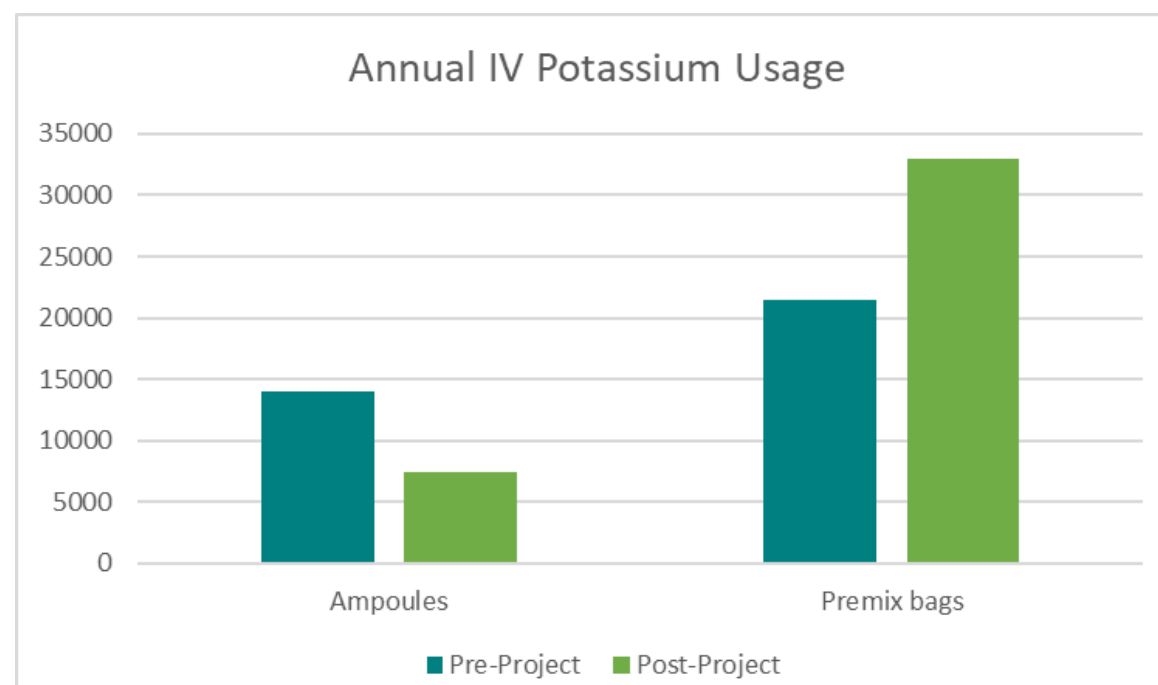
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Evaluation of usage has shown significant reduction, 45% initially and 47% on re-audit 12 months after implementation, in the use of potassium ampoules. There has been a corresponding increase in the use of the equivalent premix bag alternatives.

Discussion The establishment of the statewide Safe Medication Practice Unit (SMPU) provided resources for a multipronged approach to remove potassium ampoules from all clinical areas outside critical care. Providing suitable alternatives was key to the success. The SMPU collaborated with the statewide pharmacy service in South Australia to standardise the formulation, labelling and packaging of the pre-mix potassium dihydrogen phosphate bags.

Contact Details ths.medicationsafety@ths.tas.gov.au



Note: Usage includes ampoules supplied to critical care and to manufacture parenteral nutrition.