Intravenous Potassium Chloride: Is the Medication Use Process Secure?

Background and importance Potassium chloride (KCl) is a high risk medicine and a ‘never event’. The development of quality assurance strategies for the KCl use process is essential to minimise risk.

Aim and objectives To assess compliance with guidelines for KCl prescription, pharmaceutical evaluation and administration for KCl use to identify priorities for improvement.

Material and methods A prospective observational study was conducted including patients treated with intravenous KCl (outside the intensive care unit) over 4 non-consecutive days from February to March 2020. The KCl use guidelines of the French National Agency for Medicines and Products Safety was considered as a reference. Data collected were: for the prescribing stage: indication, information that must appear on the prescription, concentration and flow rate; for the pharmaceutical evaluation stage: entry of pharmaceutical intervention (PI) for a non-compliant prescription; and for the administration stage: labelling, administered concentration and flow rate. Data were collected from the electronic medical records and the observation of KCl administration.

Results During the study period, 34 patients (53% men) were included, with a median age of 76 years (range 26–94). The KCl use process was compliant for 6% (2/34). The prescribing stage was non-compliant (NC) for 88% (30/34); 76% (26/34) with NC indication, 53% (18/34) with incomplete prescription and 12% (4/34) too concentrated. The pharmaceutical evaluation stage was NC for 83% (25/30); it was missing in 58% (15/26) of non-indication PI, 89% (16/18) of missed information PI and 75% (3/4) of NC concentration PI. The administration stage was NC for 68% (23/34); 53% (18/34) with incomplete labelling and 15% (5/34) too concentrated. The flow rate was 100% compliant.

Conclusion and relevance This study highlights a lack of compliance with recommendations. Because of this audit, we have identified an action plan for improvement: raising awareness of KCl good practices among physicians, pharmacists and nurses; identification of high risk medicines by a specific logo on software; and setting up intravenous KCl prescription protocols and an automatic reassessment request after 2 days. For pharmacists, it will be necessary to set up a simulation for pharmaceutical evaluation on fictional cases. For nurses, the labelling rules should be recalled.

References

Conflict of interest No conflict of interest.

Acknowledgements

Background and importance Following the recommendations of the Spanish Delegation from the Institute for Safe Medication Practices (ISMP), the safety commission of our hospital developed a programme to promote the safe use of intravenous potassium between 2012 and 2015. An audit carried out found that consumption from concentrated solutions (CS) was 10 times higher than from prediluted solutions (PS). A protocol was circulated to the service areas (SA) through institutional messages and training sessions. As a consequence, the amount of potassium consumed from PS was 3.7 times higher than from CS.

Aim and objectives In 2019, the International Medication Safety Network (ISMN) included the use of intravenous potassium as one of the main measures to avoid serious medication errors. The objective was to determine the degree of...
adherence to the intravenous potassium programme after its completion 5 years ago.

**Material and methods** A retrospective observational study was conducted between June and December 2019. Potassium CS and PS were used in our hospital were identified and the potassium mEq/kg consumed with both methods were calculated. The intensive care unit was excluded because its use of CS is accepted by the ISMP.

**Results** Two types of CS were found: potassium chloride 2 mEq/mL and monopotassium phosphate 1 mEq/mL. Regarding PS, eight types were available: glucose 5%+10 mEq K, glucose 5%+15 mEq K, glucose 5%+20 mEq K, glucosalone+10 mEq K, glucosalone+15 mEq K, physiological+10 mEq K, physiological+15 mEq K and physiological+20 mEq K. Potassium consumption was 501 650 mEq in CS and 125 620 mEq in PS. Therefore, the ratio of potassium consumed using CS was four times higher than that consumed in PS.

**Conclusion and relevance** After 5 years from the end of the programme implemented to reduce the consumption of potassium CS in our hospital, there has been a loss of adherence to the protocol that has led to a considerable increase in CS consumption, multiplying its use by four versus the recommended SP. Therefore, it is necessary to circulate the protocol for the use of intravenous potassium chloride, which must be maintained over time through annual audits and continuous dissemination sessions.

**REFERENCES AND/OR ACKNOWLEDGEMENTS**

Conflict of interest No conflict of interest