Improving medication safety across Lancashire and South Cumbria Critical Care Network

Background

Analysis of incident data from northwest (NW) critical care units between 2009 and 2012 indicates that a total of 2238 incidents reported were related to medication errors (Thomas and Taylor, 2014). Of these, 65% were deemed to be avoidable, with up to 20% of these resulting in harm events for patients. Within Lancashire and South Cumbria, an average of 20-30 medication incident reports are generated each month, with issues occurring throughout the medication administration process. Figure 1 shows NW medication incident data from 2014, with the red arrows representing units from Lancashire and South Cumbria. Figure 2 demonstrates the increasing trend in medication related incidents from 2009-2014.

Aims and Objectives

The Critical Care Network established a multi professional group consisting of medical, nursing and pharmacy representatives. The group aims to improve the safety of medication administration within adult critical care units across the Network.

Methods

The multi professional group review national recommendations, local incident data and audit information through qualitative and quantitative analysis methods in order to inform improvements as identified in figure 3.

Results

Several incidents have highlighted issues relating to incorrect fluid in arterial transduced flush solutions as well as harm events related to noradrenaline administration. Local audit data has also demonstrated significant delays in antibiotic administration.

Through consensus achievement, the group has developed a variety of resources to support improvements in relation to these issues.

Resources include;

- Inotrope syringe change protocol
- Trial of standard strength noradrenaline
- Improved labelling
- Standards for arterial flush solutions
- Delayed antibiotic guidance

Conclusion

Through the establishment of a multi professional group of critical care practitioners, a number of resources have been developed to support improvements and reduce the risks associated with medication errors and delays in antibiotic therapy.

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Figure 1: NW medication incident data 2014

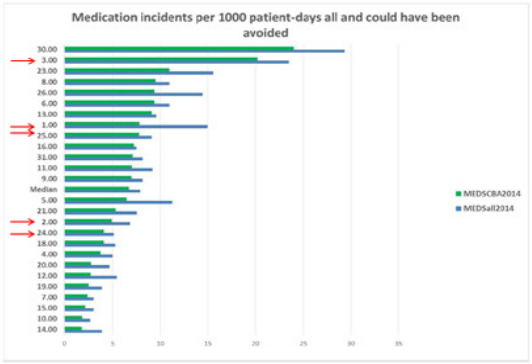


Figure 2: L&SCCCN medication incidents 2009-2014

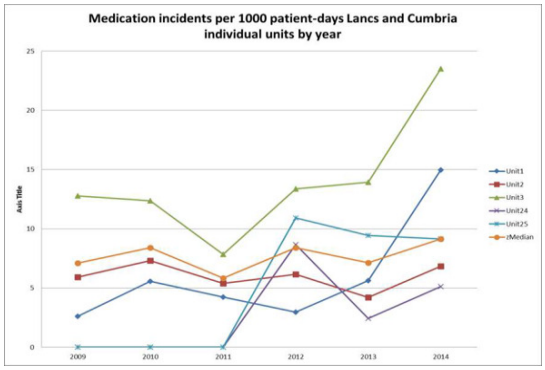
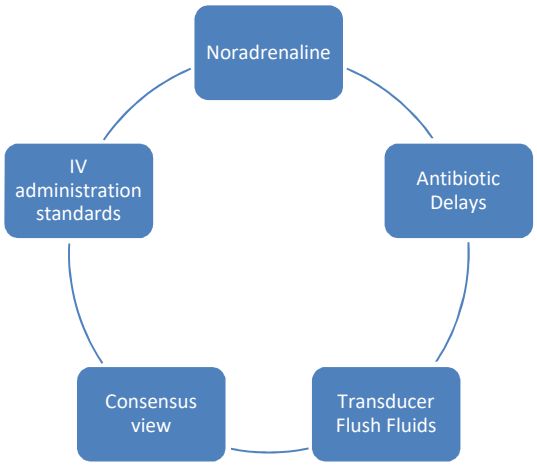


Figure 3: L&SCCCN medication safety improvement areas



References

NPSA (2008) Rapid Response Report NPSA/2008/RRR06: Problems with infusions and sampling from arterial lines. Available at: www.nrls.npsa.nhs.uk
NPSA (2008) Supporting information for Rapid Response Report NPSA/2008/RRR06: Problems with infusions and sampling from arterial lines. Available at: www.nrls.npsa.nhs.uk
NPSA (2007) Promoting safer use of injectable medicines
Thomas A.N. and Taylor R.J. (2014) An analysis of patient safety incidents associated with medications reported from critical care units in the North West of England between 2009 and 2012. Anaesthesia. Vol: 69(7) pp.735-45

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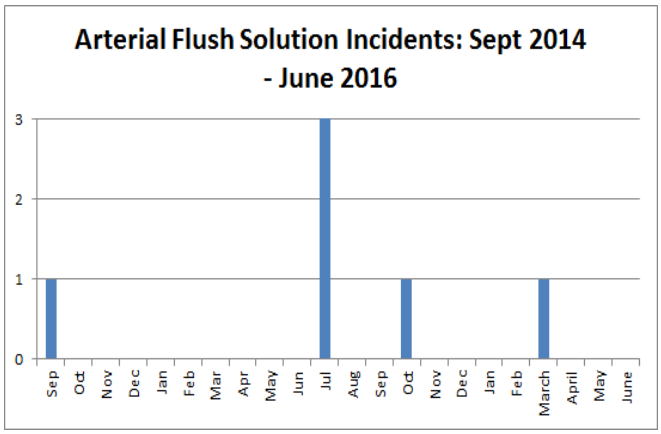
Key Issues and Actions: Arterial Flush Solutions

L&SCCCN Arterial Flush Solution Incidents



Standards for Arterial Cannula Solution Infusions

Issue

Arterial cannulas are routinely used in critical care areas as a means of access to obtain samples of arterial blood, this enables analysis of a range of blood tests e.g. blood gases, glucose and electrolytes. Regulated infusions of solutions including sodium chloride or heparinised sodium chloride are currently administered via transducer infusion sets to keep the arterial cannula patent. In June 2008, the NPSA identified 2 deaths and 82 other incidents where incorrect solutions had been attached to these sets and administered via the arterial cannula, and subsequently issued a rapid response alert (NPSA, 2008). Despite this, recent regional and local incident reports have identified a number of cases whereby arterial flush solutions have been found to contain solutions other than the usual 0.9% Sodium Chloride or heparinised 0.9% Sodium Chloride (Thomas and Taylor, 2012). In some cases harm has resulted to the patient. In response to this, the Network has created this standard in collaboration with the Network Medication Safety Group as a means to reduce the risk of further errors occurring.

Recommendation

It is essential that arterial flush solutions are prescribed in accordance with existing policies, providing clear information about the type and volume of solution to be administered, along with a legible signature of the prescriber (see local prescribing policy). The solution must be selected and checked by 2 registered nurses, ***both of whom are equally accountable for the checking procedure***. Before attaching and commencing infusion, an adhesive label must be applied to the solution bag and signed by both nurses, this should state;

- The name of the solution to be administered
- Date and time of administration
- ***NB: If heparinised saline is to be used, this must be a premade solution.***

It is recommended that

- Infusion pressure bags are clear (not opaque) to allow easy checking of the solution once in progress.
- On handover of care, initial safety checks must include confirmation of flush solution as per prescription chart.
- In the event of the incorrect solution being found to be infusing, this must be stopped immediately and medical staff and senior nurse informed. An incident report must be completed outlining the details of the error, including staff involved in solution checking procedures.
- This standard is applicable to all areas utilising arterial cannula solution infusions and it is also recommended for use with central venous catheter (CVC) flush solutions.

References

NPSA (2008) Rapid Response Report NPSA/2008/RRR06: Problems with infusions and sampling from arterial lines. Available at: www.nrls.npsa.nhs.uk

NPSA (2008) Supporting information for Rapid Response Report NPSA/2008/RRR06: Problems with infusions and sampling from arterial lines. Available at: www.nrls.npsa.nhs.uk

Thomas T. and Taylor R.J. (2012) Review of patient safety incidents reported from critical care units in North-West England in 2009 and 2010. Anaesthesia. 67(7) pp.706-13

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Incorrect Fluids:

- Wrong Heparin dose
- Sterile water for irrigation
- 0.45% Sodium Chloride 5% Dextrose
- 0.45% Sodium Chloride KCL 0.15% in 5%Dextrose
- 10% Mannitol
- Hartmann's' Solution: Litre bag

Double check sticker: Designed by UHMBT

TRANSDUCER FLUSH

This should be 500 mls
0.9% NaCl solution

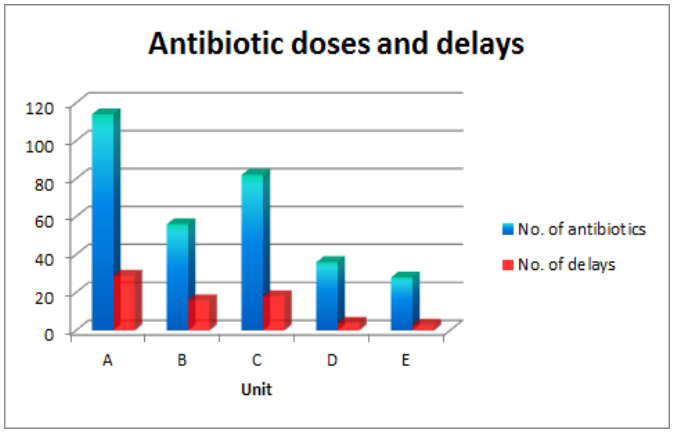
Connector Name (Print) ..... Checker Name (Print) .....

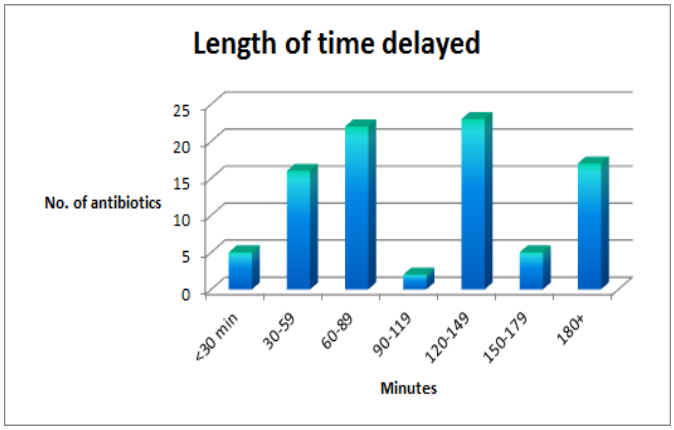
Date ..... Time .....

Improvement methodology: PDSA Cycle

Key Issues and Actions: Antibiotic administration delays

In 2014, 314 antibiotic days were audited, delays were documented on 70 occasions (22%). These delays were often significant, with most delays exceeding 1-2 hours.





Reasons given for delays include workload and prescribing practices, along with previous delays in administration

Code	Reason
1	No IV access
2	Inappropriate IV access (e.g. only has peripheral cannula, medication to be given centrally)
3	Inappropriate access for the volume of IV medications due at same time (e.g. only one lumen available for multiple meds)
4	Unit Pressure – Too busy to complete
5	Doubled up -2 patients –both meds due at same time
6	No Stock
7	On dialysis /filter
8	Patient not present on the unit (theatre /scan)
9	Earlier doses given late
10	Incomplete / incorrect prescription
11	Antibiotic levels not taken /not available
12	Antibiotic levels outside parameters
13	Reason unknown
14	Other