RISK ASSESSMENT OF THE PREPARATION OF INTRAVENOUS ADMIXTURES WITHIN AN ACUTE HOSPITAL SETTING

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INTRODUCTION

An essential element of the centralised preparation of intravenous admixtures within a hospital environment involves the aseptic preparation of such products under controlled conditions. The achievement and maintenance of these conditions call for a quality assurance framework together with the use of equipment such as aseptic enclosures and clean environments. In principle, centralised preparation of standardised infusion solutions may be an effective means to enhance patient safety. However, such controls may not always enable the timely availability of all medicines within an acute setting.

AIMS

- To identify and contrast the expected impacts on the quality of intravenous medication therapy for the projected scenario of central preparation by Pharmacy versus the traditional decentralised preparation at clinical areas by Nursing.
- To formulate a composite risk assessment tool to be piloted within an acute care setting at the main general hospital of the Maltese Islands (Mater Dei Hospital).
- To evaluate how various risk control measures can effectively lower specific risk profiles without adveresly impacting delivery of care.

METHOD

Three classes of drugs were chosen from the list of intravenous medications used within the Intensive Therapy Unit (ITU) namely; the anaesthetic agents, the antiarrhythmics and the anti-bacterials. These amounted to a total of 38 different preparations.

The risk assessment was divided into 3 main modules:

1.Direct Risk to Patient Safety

The risk factors considered were adapted from the UK National Patient Safety Alert 20[1] and Institute for Safe Medication Practices' list[2] of high alert drugs and were adapted to local practice.

2.Relative Impact on Pharmacy's Capacity per Preparation

The relative impact on capacity per preparation was determined by calculating the time taken from when the drug was ordered by ward, to delivery of the intravenous preparation back to the clinical area.

3.Impact on Efficacy of Delivery (%EOD) - Turnaround Time.

This impact was quantified as an expression relating the actual time taken from point of drug order to delivery to clinical area, versus the required timeframe specified by the healthcare professionals at ITU for each drug prescribed. This was expressed as a percentage.

RESULTS

Out of the 38 preparations analysed, 24 were of low risk to patient safety, 13 were of moderate risk and 1 preparation was of high risk to patient safety.

Most anaesthetic agents (67%, n=6), needed for emergencies, carry a moderate risk to patient safety and so theoretically they merit to be prepared in pharmacy rather than in clinical areas. However, the resulting efficacy in providing a timely service with these agents was very low as they carried less than 30% EOD (Figure 1).

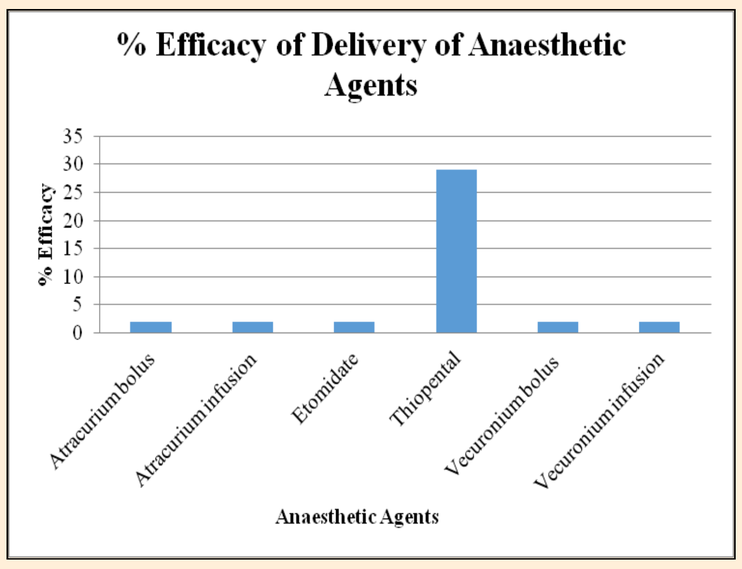

Figure 1 - Percentage efficacy of delivery of anaesthetic agents

4 out of the 7 antiarrhythmic drugs used in the ITU are of low risk to patient safety. All of the antiarrhythmics have a very low percentage EOD (2%). Therefore, IV antiarrhythmics can be left to be prepared in clinical areas, provided that the necessary precautions are taken and risk minimising strategies are implemented.

As can be seen in Figure 2, most of the antibacterial drugs (72%, n=25) were found to be of low-risk to patient safety, with only seven out of twenty-five being found to be of moderate risk. The antibacterial drugs, that are given at standard dosing intervals, scored 100% EOD.

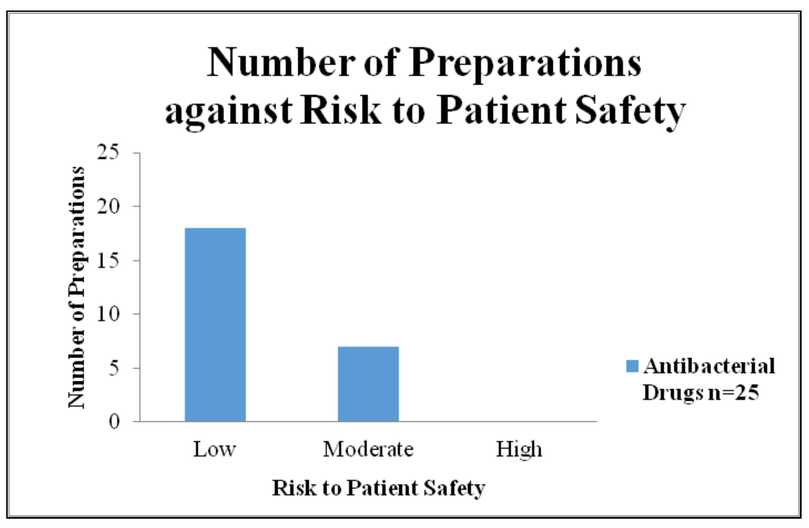

Figure 2 - Number of preparations against risk to patient safety for antibacterial drugs

CONCLUSION

Risk assessments such as this one are important tools that resolve compound risks to their elemental counterparts, enabling a targeted risk reduction strategy through a continuous quality improvement approach. This study also highlights how hospital pharmacy forms an integral part of the interdisciplinary hospital healthcare team as opposed to a self-contained, specialised profession limited to the pharmacy building.

References

1.National Patient Safety Agency (NPSA). Promoting Safer Use of Injectable Medicines - Patient Safety Alert 20. NHS [Internet]. 2007 Available from: http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59812

2. Institute for Safe Medication Practices (ISMP). ISMP's List of High Alert Medications. [Internet]. 2012 Available from: https://www.ismp.org/tools/highalertmedications.pdf