CENTRALISED NON-HAZARDOUS INTRAVENOUS COMPOUNDING: IMPROVEMENT OF CLINICAL PRACTICE

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BACKGROUND

In April 2016 the Central IntraVenous Additive Service (CIVAS) began to compound non-toxic injectable therapies with a robotic system1. The production started with antiemetic therapies, followed by antibiotic therapies ready to infuse, as cefazoline 1g in syringes and piperacillin-tazobactam 4.5g in bags.

PURPOSE

Here we present the process of selecting the new drugs to centralise their production in the CIVAS, along with the results of the performance validation of their robotic compounding.

MATERIAL AND METHODS

An analysis of the current therapeutic usage of antibiotics within our hospital has been carried out through the electronic medical record (EMR). Drugs in ready-to-use injectable form and those with a daily consumption under 20 units were excluded. Among the remaining medications, only those with a physico-chemical stability2 of at least 7 days were considered, so to guarantee the production in batch and a medium storage time.

For every molecule identified, a testing production of 5 batches of 10 preparations each were compounded by means of the robotic system APOTECAnunit,. The dosage error and the preparation time were evaluated for each drug.

RESULTS

The drugs identified are oxacillin 1g, cefotaxime 2g, azithromycin 500mg, vancomycin 500mg and ceftriaxone 1g. All those drugs are in lyophilic form to reconstitute with sterile water and than diluted in 100ml Normal Saline bags for the injection. The average dosage error ranges from 0,4% of cefotaxime to 6,6% of azithromycin, always compliant with the 10% error limit set by the Official Pharmacopeia. The compounding time per preparation goes from 4m16s for azithromycin to 5m4s for vancomycin. It includes both the reconstitution and the final dilution steps.

CONCLUSION

We identified 5 new antibiotics suitable for batch production. The validation process showed satisfactory performances, just the high values of dose errors recorded for azithromycin and oxacillin (associated with low statistic deviations) suggest a refinement of the drug parameters. The annual workload, including piperacillin-tazobactam 4.5g and cefazoline 1g already compounded inside the automated system, is estimated in 80,000 bags.

REFERENCES

2 Stabilis 4.0, www.stabilis.org

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Abstract n 3PC-039