PERFORMANCE ANALYSIS OF A FULLY AUTOMATED ONCOLOGY PHARMACY PRODUCTION: A 2018 UPDATE

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BACKGROUND

The aseptic compounding of injectable anticancer drugs is centralized in the Oncology Pharmacy and, since 2014, is performed by using a fully automated platform that enables control of the whole production activities. The platform includes a robotic system for fully automated preparation (APOTECAchemo), a supporting device for manual compounding (APOTECAs), and a workflow management software (APOTECAmanager). The production is mainly just-in-time (80% outpatient and 20% inpatient) and performed in a Class C cleanroom by five pharmacy technicians and two pharmacists. The daily working time is from 8am to 4pm (Monday-Friday) and 8am to 1pm (Saturday).

The aim of this study was to analyze the performances of the fully automated oncology pharmacy production.

MATERIAL AND METHODS

The performances were analyzed by means of the statistical tool of the APOTECA platform over a period of nine months (January-September 2018). Productivity, dosage accuracy, precision, and turnaround time were measured and compared between automated preparation with APOTECAchemo and manual preparation supported by APOTECAs.

RESULTS

Overall, 18,524 preparations (62.6% infusion bags, 26.3% syringes, 11.1% elastomeric pumps) were compounded with APOTECAchemo and 5,272 preparations (52.2% infusion bags, 46.8% syringes, 0.9% elastomeric pumps) with APOTECAs. In total, 82 different active ingredients were processed. Regarding dose accuracy, APOTECAchemo showed better performances with 96.6% of preparation with a deviation of ±5% versus 93.0% of the manual compounding. Less than 1% of preparations compounded automatically presented a drug error exceeding 10%. The turnaround time, calculated from the prescription time to the delivery time, was similar for both procedures. The average output amounts to 13.2 preps/hr for APOTECAchemo and 15.0 preps/hr for APOTECAs.

CONCLUSION

The utilization of the fully automated platform for managing the oncology pharmacy activities guarantees the possibility to measure and control every single step of the whole production process. In-process controls, such as gravimetric check, barcode and photographic recognition, allow to prompt corrective actions in case of deviations.


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