

Operational Interventions to Improve the Performance of Cytotoxic Medicines Compounding

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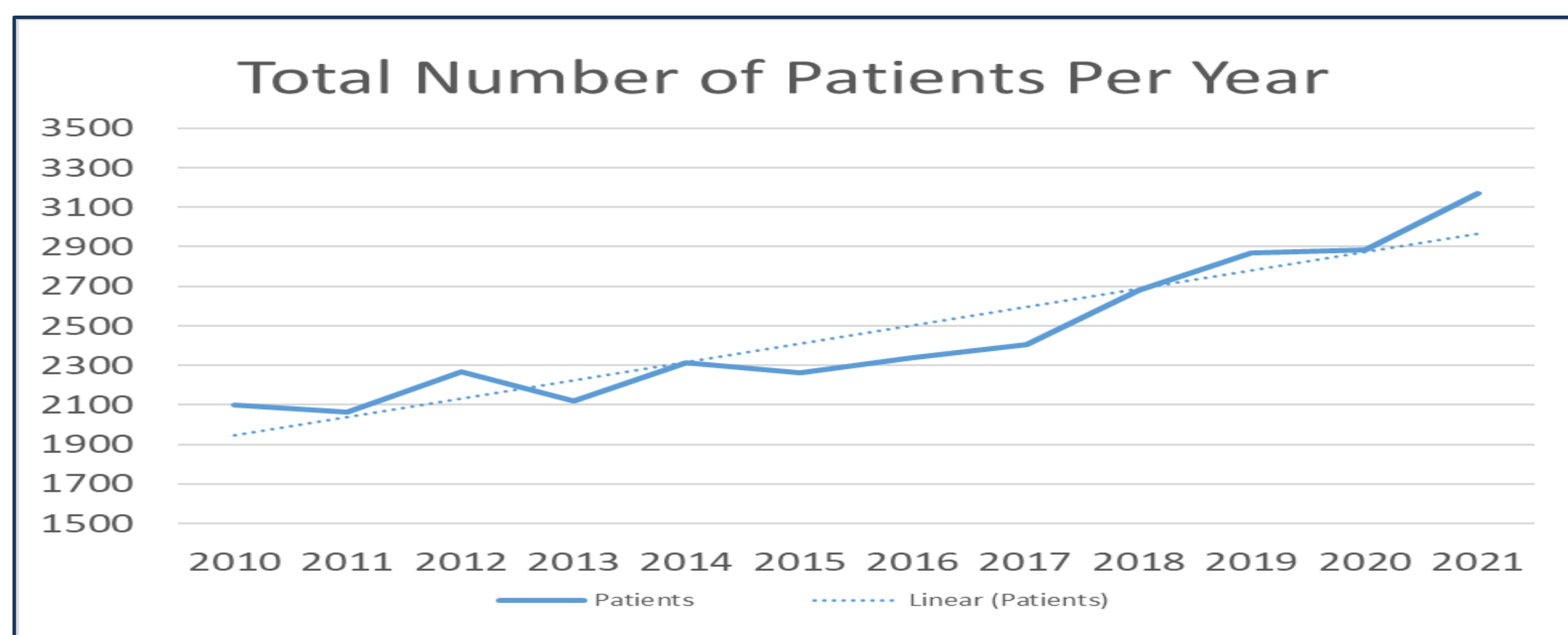
What was done:

Evaluation of the performance of cytotoxic compounding after the implementation of relevant operational interventions designed to optimise drug preparation and delivery, between 2018 and 2021 in a University Hospital Centre.

Retrospective analysis of the average waiting times of patients for treatment delivery in some day hospitals (DH), after implementation of the operational interventions.

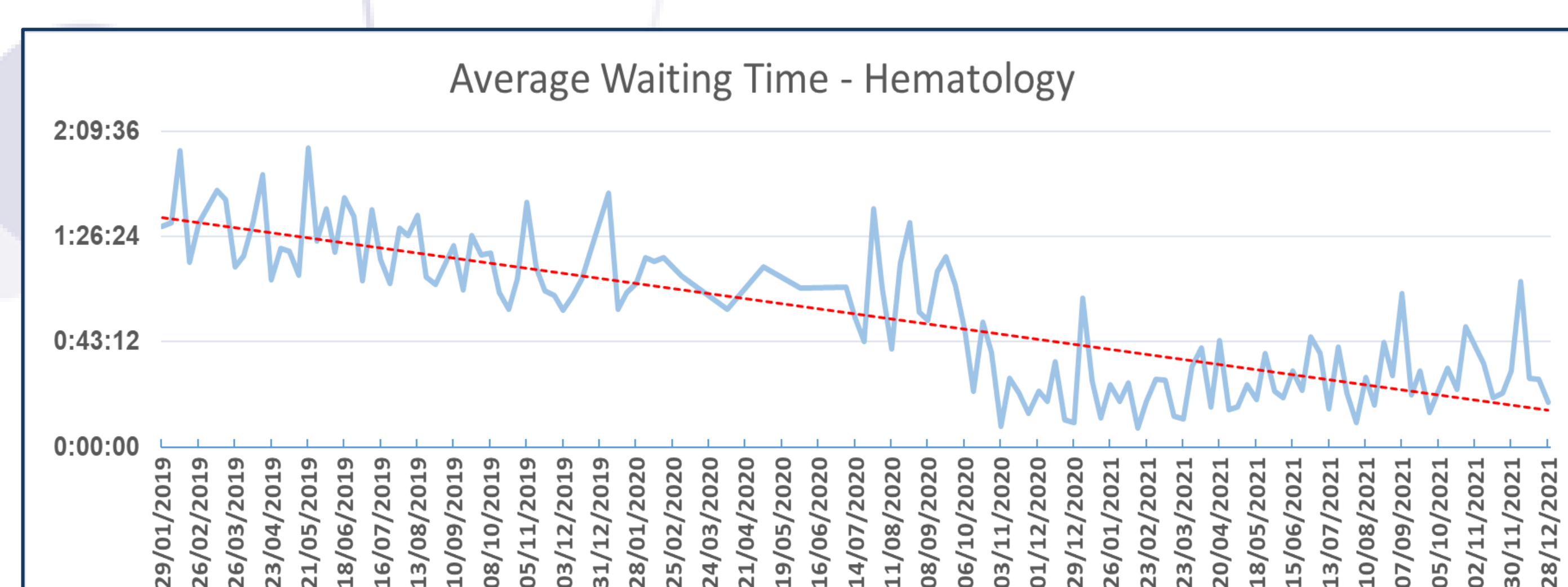
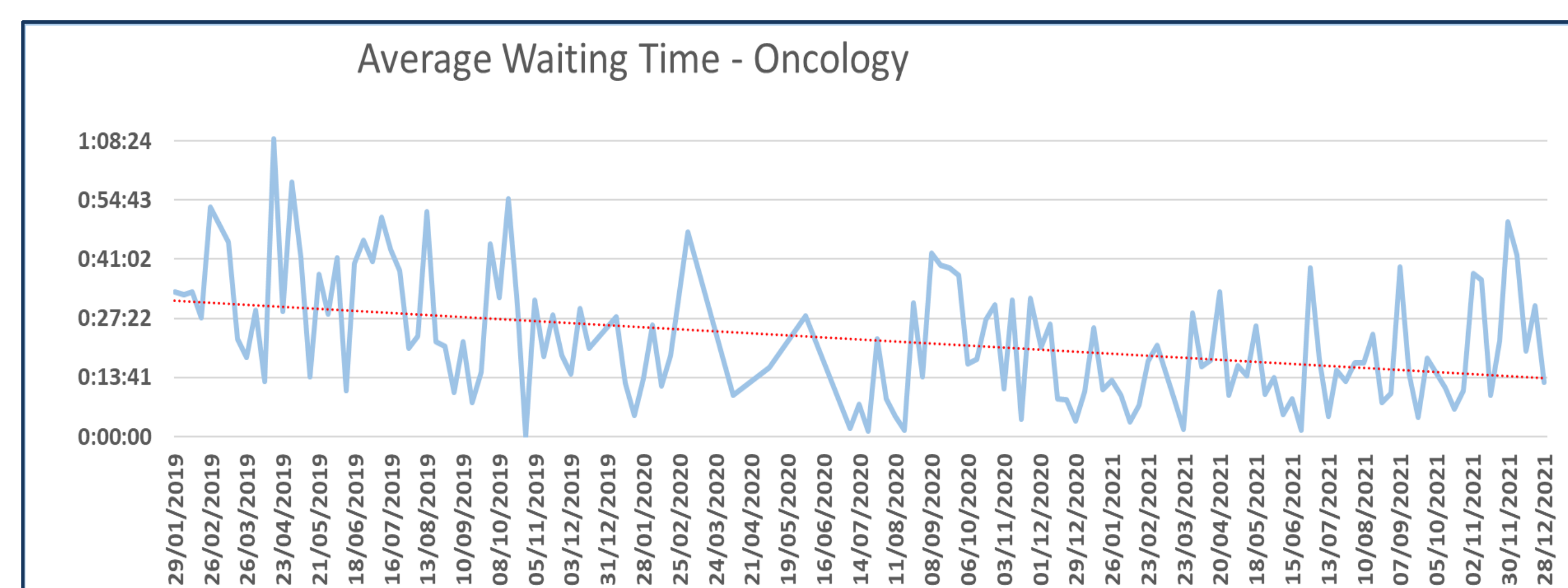
Why was done:

Cytotoxic medicines are drugs used mainly in the treatment of neoplasms. Their preparation is a key activity of Hospital Pharmacy, carried out in a Class II Type B2 Vertical Flow Chamber (VFC). With the emergence of new cytotoxic drugs, the increase in the number of patients (2100 in 2010 to 3168 in 2021), and preparations (from 30000 in 2010 to 40000 in 2021), the time spent by Pharmacists in routine work and in the organisation and research of information also increased, and innovative approaches in terms of Resources optimisation are deemed.

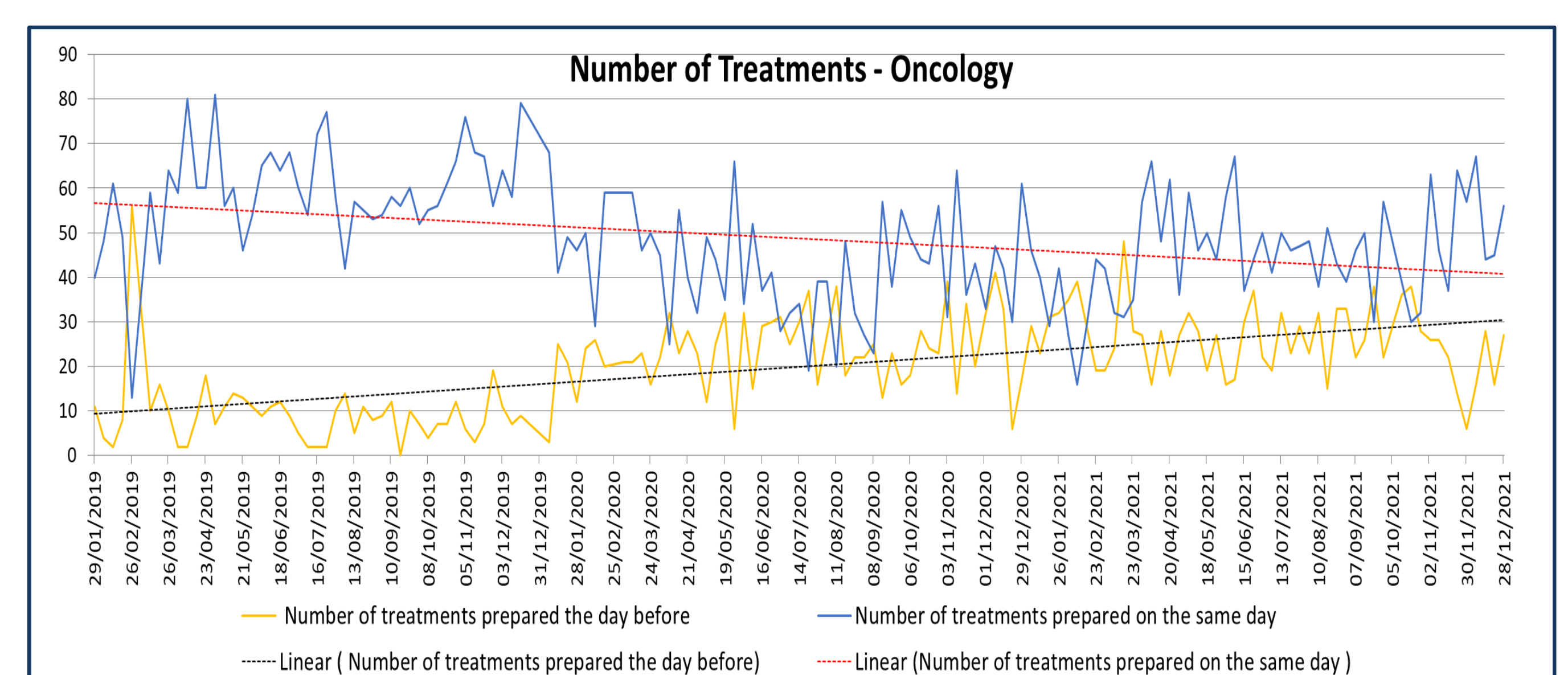


How it was done:

We began with the computerisation of the chemotherapy protocols, in order to standardise the prescribed treatments, which allows to reduce transcription and prescription time and associated errors. A comprehensive database was also created with the main characteristics of cytotoxic drugs and their physicochemical stability, in order to support pharmaceutical validation. In partnership with DH nursing team, every patient's treatment schedule was determined beforehand, which allowed an enhanced organisational workflow, and the grouping of more complex drugs to prepare at the same time, and the preparation of drugs with adequate stability in the day before. This resulted in a reduction of average waiting times from 2 hours to only 30 minutes. The DH that benefited the most from these changes was Haematology, which adopted all proposed changes from the start after a multidisciplinary team meeting.



Currently, about 45% of treatments are prepared the day before. Since the compounding unit is structured in rotating shifts, this practice allows to minimise drug wastage and to reduce preparation time, which improves the organisational capacity and agility in response to patient needs. When available, preference was given to ready-to-use drug solutions instead of powder formulations, e.g. Pemetrexed and Bortezomib, reducing preparation time and increasing operator safety. Also, in Gastroenterology DH, we promoted switch from original infliximab to its biosimilar by centrally preparing the biosimilar. We used two pharmacy technicians in the same cabinet instead of one, increasing the preparation yield.



The last intervention was in the transportation of the compounded preparations, through the implementation of the delivery of treatments via a pneumatic tube system. This system ensures the integrity of the material and the conformity of the transport, thus allowing the safety and stability of the material transported, without bumps and avoiding changes in physical properties. It was possible to obtain a higher frequency of transportation and better workflow at peak times.



What was achieved:

With the same human resources and the operational changes described, it was possible to improve the compounding unit performance, and to reduce patient waiting times in 75%, saving time and money.

What is next?

With the increasing number of patients and cytotoxic preparations, it was necessary to reorganise the compounding unit in several key features.

These data should be considered for the future planning of new Cytotoxic production Unit.

Key Words:

