



Implementation of an Advance Preparation of Medicines Model in a Cytotoxic Preparation Unit

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WHAT WAS DONE?



A ready-to-use model was implemented for those medicines whose dose is fixed, as part of a strategy to optimize the unit's human resources¹.

WHY WAS IT DONE?

The increase in cancer incidence, combined with new and more innovative oncology treatments, leads to the necessity to increase the compounding capacity of oncology medicines^{2,3}. This consequently has a negative impact on the workload of oncology pharmacists. About 80% of these medicines are to be administered during the morning or early afternoon, affecting the response time due to the large workload and lack of production capacity in short periods.

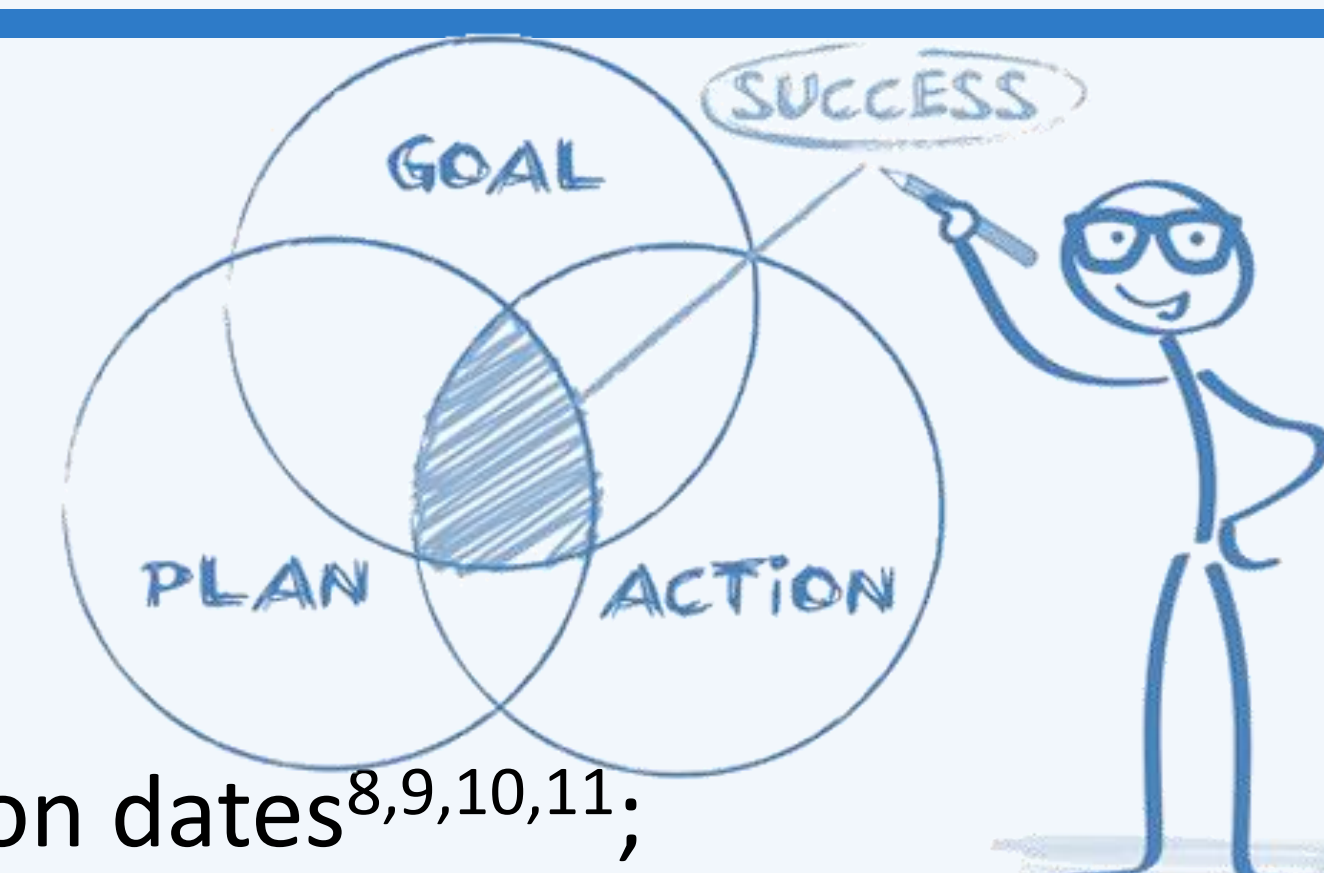
The ready-to-use model allows:

1. To reduce the morning workload and distribute tasks equitably throughout the day, since fixed doses are prepared in the afternoon or at the weekend;
2. Medication is readily available for administration;
3. To reduce medication-related errors.

HOW WAS IT DONE?

This model is based on **three foundations**:

- Standard aseptic handling plus the use of closed system transfer devices (CSTD)^{4,5,6,7};
- Microbiological control upon batch release;
- Robust bibliography that supports the physical-chemical stability used as a reference for expiration dates^{8,9,10,11};



It was implemented in two phases:

- 1- Preparation of a test batch of fixed-doses, with elaboration of the specific protocols, compounding procedures and labels;
- 2- Full implementation of the model, with implementation of a digital circuit.

**The first medicines included were:
daratumumab, nivolumab, pembrolizumab and pertuzumab.**

WHAT HAS BEEN ACHIEVED?

The ready-to-use model was evaluated at three levels:

1. **Financial impact:** positive balance. Medicine vials are saved since compounding is done at the same time. The ratio between the investment required to acquire CSTD and the saved is **1:4,5**.
2. **Preparation time:** Similar to normal compounding.
3. **Annual effectiveness rate** - **54%** This is the percentage of fixed doses that were prepared in advance.

WHAT NEXT?



The model proved to be effective in improving human resources management. With the effectiveness rate obtained, **4% of the total medicines that are administered are previously prepared. This value could reach 8% when the model is fully implemented.**

It can be replicated in a dose-banding system¹². Selecting, for example, rituximab, 5-FU and azacitidine, **25% of the daily preparations depends only on the time profitability of the cytotoxic preparation unit.**

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