

Challenges of In-House Development and Implementation of a CPOE for Oncology

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Abstract. Hospital Italiano de Buenos Aires (HIBA) is an academic tertiary care hospital highly specialized that has started the process of informatization of chemotherapy protocols. The objective is to describe the development of a computerized physician order entry (CPOE) oriented to the oncology adult patient and the members of the healthcare team that works with him (physicians, pharmacists, nurses and administrative staff) to improve the process and prevent errors at a critical point in the patient's health care: during prescription, preparation and / or administration. The development of this system consisted of several stages: inquiries about the usual work and perception of needs of the potential users; user-centered design; interoperability with the electronic health record (EHR) and development of a final prototype

Keywords. CPOE, oncology, chemotherapy

1. Introduction

The oncological patient represents a healthcare challenge [1] Patient safety is of vital importance and this is where information systems can reduce the rate of errors and adverse events. [2] The prescription cycle in oncology turns out to be complex due to the coexistence of multiple structured schemes and the high toxicity of drugs.[3] The benefits of implementing a CPOE for indication of medications have been described, from the reduction of errors to integration of clinical decision support systems. [4] and some have shown their long-term benefit [3, 4] One of the challenges in oncology is to prevent errors that may occur during the different phases of the prescription cycle[5] Some appears to be associated with more significant adverse outcomes, with approximately one third of all errors identified as serious or life-threatening [5]. Methods A descriptive observational study was carried. The study is a mixed design, with a qualitative and quantitative approach.

2. Results

In October 2012 we started to develop and implement a CPOE integrated into the hospital's EHR, planning to incorporate pediatric patients at a later stage [7] For the start a surveyed and meetings were held between the project team. In a first stage in the standardization of order sets we start working in spreadsheet format for a year. The team was made up of one health informatics specialist, one process analyst and two developers. Six people participated in the preparation committee of order sets: one clinical oncologist, one hematologist, one gynecologist, head of oncology pharmacy, and oncology nursing supervisors. This phase lasted 7 months. By July 2013, the 50 most used protocols in the institution were completed, agreed between the prescribing services, oncology pharmacy

and nursing. In October 2013 there were 100 standardized protocols. The second stage began with the development of the RCM to structure the order sets, add agendas in the ADT for the sectors that treat cancer patients, connect the prescription module with the pharmacy administration system (PAS), incorporate the preparation processes of the oncology pharmacy into the PAS, and modify the EHR to allow the prescription of oncological protocols. Finally, the design was completed and it was implemented in November 2014.

3. Discussion

Protocols were added up until reaching almost all of those available for adults. The implementation was followed by a process of continuous improvements and system adjustments that allowed a superior user experience and avoid frequent errors that were detected. As a strength, the in-house development that allowed the system to adapt to the previous workflow and fully interoperate with the HER.

4. Conclusions

We have described the process of implementing a CPOE of chemotherapy in a high complexity hospital with its own development team and how it was arrived from a paper model to another that interoperates with 4 simultaneous systems in a complex circuit in which physicians, pharmacists, nurses and administrators interact in different stages, which are often critical for the patient.

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