An Oncology Nursing Intervention to Reduce Adverse Drug Events in Ambulatory Cancer Patients

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Abstract

Objective: To increase cancer patients safety in our Day Oncology Care Unit (DOCU).

Methods: We conducted a retrospective review of records to determine the most frequent causes of Adverse Drugs Events (ADEs) and the time it took to detect and treat them. We then provided nursing education to instruct oncology nurses on how to address and prevent ADEs.

Results: After the implementation of this project, the incidence of ADEs has been as it has been the time invested in addressing those complications correctly.

Conclusion: Nursing staff education at a DOCU has improved patient’s safety and reduced ADEs.

Introduction

The sense of safety in drugs administration is really important. There is always a risk of mistake when it comes to administer pharmacological agents, and some of those mistakes might have potentially fatal consequences. But in the case of cytotoxic agents the risk might be even higher, so the caution should be extreme. With the increasing administration of chemotherapy in Day Cancer Units, where the patients stay only for a few hours, there may be even a greater risk due to high volume of patients, time pressures, and lower levels of control (1). The published data show that 1 in 10 patients will suffer an adverse event related to the way health care is delivered, most of them due to drug use, representing about 40% of cases. Even more relevant is the percentage of these adverse events which are preventable, around 50% (3). All these adverse events will not only seriously affect the functional status or quality of life of the patient, but they will be expensive too.

In clinical oncology it is well known that antineoplastic agents must be used carefully because of their high toxicity and narrow therapeutic window (2-5). It has been described that in 10% of the cases when the drug infusion is delayed, the speed of infusion rate will be increased and / or the hydration time will be reduced to finish in time despite the consequences on patient safety. There is a need to improve cancer patients’ safety at every level of care, but especially in the nursing units where these patients will receive most of the systemic treatments they need. In fact, more than 90% of cancer treatments will be administered in a (DOCU).

At our hospital, we initiated a project based on the assumption that the continuing education of oncology nursing regarding the ambulatory process managing antineoplastic treatments would contribute to improvement of cancer patients’ safety, increase patients’ satisfaction and ultimately would reduce health care costs. We sought to reduce the rate and severity of adverse events and improve our response to errors.

Methods

Firstly, we collected data with regard to the most frequent causes of adverse events occurring in our DOCU, their seriousness, and the average time it took to recognize symptoms, how quickly the treatment was started and the outcome of each clinical episode.

Secondly, we then provided nursing education. This consisted of advising nursing staff of the need to adhere to the written protocols of systemic therapies administration and protocols on how to deal with toxicities and acute complications which were previously designed to be applied in our DOCU. A copy of all these clinical protocols were provided after a meeting with the nursing supervisor and staff nurses. They were also informed about the most usual drug reactions, the importance of a prompt action, the possible consequences and potential prevention strategies. We collected data again following our nursing education intervention.

Results

The most common Adverse Drugs Event (ADE) was hypersensitivity reaction, followed by pharyngo-laryngeal dysesthesia secondary to oxaliplatin, a drug whose use is increasing in oncology (Figure 1). Most of the ADEs were mild (82%) versus 18% serious and 2% very serious requiring Intensive
Treatment Unit admission and/or an emergency room for stabilization or even a resuscitation.

All very serious complications were secondary to hypersensitivity reactions to taxanes or platinum components. In those cases the drug could not be repeated, and therefore they required a drug replacement rate of 100%. For serious cases, most of them were also due to hypersensitivity reactions (95%), the replacement rate reached 75%, and for mild cases the replacement rate was 0%.

With regard to the number of consultations in other services as a result of an ADE in the DOCU, there were about 18% of patients with mild reactions just consulting with other professionals, while 29% of those with serious reactions and 50% of those with very serious reactions just asking for another opinion when the complication had been resolved.

The time invested in the detection, treatment initiation and resolution of ADEs and time savings are reflected in Figures 2-4.

In only 3% of the episodes the patient was able to identify a responsible staff nurse, and only 18% of reactions were included in a nursing record. On the other hand, 90% of patients reported having been treated by at least 3 different staff nurses, while 7% did not remember or remember the nurse wrongly. We were even able to estimate the rate of hypersensitivity reactions secondary to a quick infusion rate or to a short length of stay in the DOCU. This rate was above 25%, which means a high proportion of those complications might have been avoided.

After implementation of nursing education, we saw a reduced (36%) rate of hypersensitivity reactions (Figure 1) without a substantial change in the volume or type of drug combinations administered. This demonstrates that most ADE are related to the way of drugs administration. The rate of reactions was reduced not only in number but also in their severity. Also, after the implementation of this project, the nursing staff was able to react quickly to the reaction and to apply preventive measures in many cases.

Updates and better training have provided the staff nurses with greater confidence in themselves so that their initiative has increased. After the project was implemented, staff nurses introduced themselves to the patients as their responsible nurses, and the number of nursing staff necessary to address each complication was reduced. This fact reduced the confusion created by an unexpected ADE. Thus, the rate of complications treated by the nurse in charge became 77% while pre-project it was 16%. It was also reduced the rate of substitution drugs in parallel with the severity and number of complications. In severe cases there remains a replacement rate of 100%, while only 43% of the severe reaction will change their treatment and 0% of the mild. Furthermore, both the registration rate of complications such as taking vital signs during the ADE became both 100%, except in the case of minor events in which the latter is 89%.

Regarding to the number of consultations in other services as a result of an ADE in the DOCU, there were 7% of patients with mild reactions just consulting with other professionals, while 12% of those with serious reactions and 16% of those with very severe reactions just asking for another opinion when the episode had been solved. The time savings at every stage of the process of attention to the complication is shown in Figures 2-4.

We again estimated the rate of hypersensitivity reactions secondary to a quick infusion rate to shorten lengths of stay and to lower secondary workday schedule. This rate was above 25%, but following the implementation of the project was reduced to 5-8% currently.

Discussion

The incidence of cancer continues increasing as well as the number of survivors thanks to the advances in therapies (1). Health care strategy for these patients has switched from the conventional hospitalization to the DOCU and nowadays more than 90% of cancer treatments are administered in this unit, which implies an extra effort to improve safety.

This task is complex involving the entire health system and a comprehensive and multidisciplinary team which can provide environmental safety, management of clinical risk in a correct way and deliver of an appropriate patient care. There are several data showing that ADEs related to health care are very frequent, most of them secondary to drug administration and almost a half of them (3) are generally preventable. This fact makes necessary to develop projects to improve cancer patients’ safety. In this way the implementation of our project based in oncology nursing education has improved patient safety indicators, quality of health care at the DOCU and secondarily becomes effective and a cost-saving strategy.

Reference(s)

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Illustrations

Illustration 1

Figure 1: ADEs Pre and Post
Illustration 2

Figure 2: Time spent on each phase of attending to the complications of drug administration Pre and post
Illustration 3

Figure 3: Time to detection of symptoms pre and post
Illustration 4

Figure 4: Time to initiation of specific treatment pre and post