

## THE USE OF TRIGGER TOOLS IN THE IDENTIFICATION OF ADVERSE DRUG EVENTS\*

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**ABSTRACT:** Checking whether the strategies aimed to improve the safety of drug use are effective is a major challenge. Therefore, the use of mechanisms to monitor these results is clearly necessary. The tool “Global Trigger Tool for Measuring Adverse Events” of the Institute for Healthcare Improvement has been developed to meet this challenge. The use of triggers in the selection of medical records with higher probability of showing adverse drug events (ADE) is adopted by health organizations in several countries. The present experience report aimed to describe the experience of application of the “Medication” module of this tool in a Brazilian public hospital in the state of Paraná. The experience was conducted from November 2012 to January 2015. It is a low-cost method that could be routinely used in the hospital.

**DESCRIPTORS:** Drug; Trigger tool programs; Patient safety; Pharmacovigilance.

### USO DE RASTREADORES PARA A IDENTIFICAÇÃO DE EVENTOS ADVERSOS A MEDICAMENTOS

**RESUMO:** É um desafio verificar se as estratégias voltadas para aumento da segurança no uso dos medicamentos são efetivas. Dessa maneira, mostra-se clara a necessidade de mecanismos para acompanhar estes resultados. A ferramenta “Global Trigger Tool for Measuring Adverse Events” do Institute for Healthcare Improvement foi desenvolvida para vencer este desafio. O uso de rastreadores para seleção de prontuários, com maior probabilidade de apresentarem eventos adversos, tem sido um método adotado por várias instituições de saúde, em vários países. O objetivo deste relato é descrever a experiência obtida na aplicação do módulo “Medicamento” desta ferramenta em um hospital público brasileiro no estado do Paraná. Realizada no período de novembro de 2012 a janeiro de 2015. A aplicação do método foi de baixo custo e viável para aplicação regular na Instituição.

**DESCRIPTORIOS:** Medicamento; Programas de rastreamento; Segurança do paciente; Farmacovigilância.

### USO DE RASTREADORES PARA IDENTIFICACIÓN DE EVENTOS ADVERSOS A MEDICAMENTOS

**RESUMEN:** Verificar la efectividad de las estrategias para mejorar la seguridad en el uso de los medicamentos es un gran desafío. Así, hay una evidente necesidad de establecer modos de acompañar esos resultados. La herramienta “Global Trigger Tool for Measuring Adverse Events” del Institute for Healthcare Improvement fue desarrollada para vencer ese desafío. El uso de rastreadores para selección de prontuarios, con más probabilidad de presentar eventos adversos, viene siendo un método utilizado por variadas instituciones de salud, en distintos países. El objetivo de este relato es describir la experiencia obtenida en la aplicación del módulo “Medicamento” de esta herramienta en un hospital público brasileño en el estado de Paraná. El estudio fue realizado en el periodo de noviembre de 2012 a enero de 2015. La aplicación del método fue de bajo costo y viable para uso regular en la Institución.

**DESCRIPTORIOS:** Medicamento; Programas de rastreamento; Seguridad del paciente; “Farmacovigilancia”.

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\*Article extracted from the dissertation titled “Frequência de eventos adversos a medicamentos em um hospital universitário” (Frequency of adverse drug events at a teaching hospital). Universidade Federal do Paraná, 2015.

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**Received:** 01/03/2016

**Finalized:** 14/03/2017

## ● INTRODUCTION

Medications are key resources used to mitigate patient suffering, but they carry the inherent risk of causing adverse drug events. The measurement of damage caused by drugs has been addressed by several studies aimed to find strategies for the identification of these events <sup>(1)</sup>.

The mechanisms used to measure these events range from simple strategies such as voluntary reporting <sup>(1)</sup>, to the most complex strategy, namely, intensive monitoring of adverse drug events <sup>(2)</sup>. The major limiting factors for the implementation of these strategies is that voluntary reporting of ADE depends on incentives and motivation, and intensive monitoring of ADE is expensive <sup>(2)</sup>.

Therefore, the Institute for Healthcare Improvement (IHI) introduced a method to identify adverse events using triggers, called "IHI Global Trigger Tool for Measuring Adverse Events" <sup>(3)</sup>, which aims to guide the analysis of medical records, to increase the sensitivity of the procedure of identification of adverse events. This tool is composed of several modules intended for specific lines of care and includes detailed information on its application, concepts, composition of the work and training team, criteria for the selection of medical records, systematic review of medical records and type of systematization of the results.

In the "Medication" module, the strategy consists of identifying abnormal results of laboratory tests, administering specific drugs and describing the symptoms of adverse reactions in order to detect the situations more likely to be caused by adverse drug events (ADE).

The IHI proposed the establishment of a practical, inexpensive and feasible method that can be used retrospectively for the regular measurement of adverse events and, thus, evaluate the effectiveness of the actions of patient safety programs.

This report is aimed to describe the experience acquired in the use of the module "Medication" of this tool in a Brazilian public hospital.

## ● EXPERIENCE REPORT

The experience was conducted in a 450-bed public teaching hospital exclusively covered by Brazil's Unified Health System (SUS). The medication module of the "IHI Global Trigger Tool for Measuring Adverse Events" <sup>(3)</sup> was used to identify the presence of adverse drug events. The research was developed between November 2012 and January 2015, after project approval on October 30, 2012 by the Research Ethics Committee on Human Beings, under statement n. 139695.

At the preliminary stage, the original trigger tools were adapted to the local conditions. At that time, the team checked whether the recommended tests and the drugs listed were adopted at the hospital where the experience was conducted, as well as whether different trigger tools were tested for the final composition of the list (Table 1).

Table 1 - List of trigger tools proposed by the IHI 2009 and results obtained after local adaptation. Curitiba, PR, Brazil, 2012 (continues)

Code	IHI Trigger tools	Trigger tools after local adjustment
M1	<i>Clostridium difficile</i> positive in stool	Maintained
M2	Activated partially thromboplastin time (APTT) > 100 seconds	Maintained
M3	International Standard Ratio (RNI) > 6	Maintained
M4	Glycaemia < 50mg / dL	Maintained
M5	Serum creatinine elevation 2x normal value	Maintained
M6	Phytomenadione	Maintained
M7	Diphenhydramine	Maintained
M8	Flumazenil	Maintained

M9	Naloxone	Maintained
M10	Antiemetic drugs: Droperidol, Ondansetron, Promethazine, Hydroxyzine, Metoclopramide, Trimethobenzamide or Prochlorperazine	Adjusted: Antiemetic drugs: Metoclopramide, Ondansetron or Promethazine and description of nausea/vomiting
M11	Excessive sedation, hypotension	Maintained
M12	Abrupt suspension of medication	Maintained
M13	Local setting	Defined by: Transfer to intensive care unit (ICU)

SOURCE: *Institute for Healthcare Improvement (IHI) and author*

The experience report was based on the review of 192 medical records of adult patients after hospital discharge, and was performed in three stages (Figure 1). In the first stage, carried out by students in their final years of medical or pharmacy schools, the presence of a trigger tool or a clearly described adverse event was verified. The second step consisted in the assessment of patients who underwent screening regarding the occurrence of an adverse drug event and was supported by search of literature studies available in databases containing information on drugs, such as the UpToDate<sup>®</sup> and Medscape. In the third stage, a multidisciplinary committee<sup>(4)</sup>, consisting of a physician, a nurse and a pharmacist assessed the patients and defined, by consensus, whether an adverse drug event has occurred.

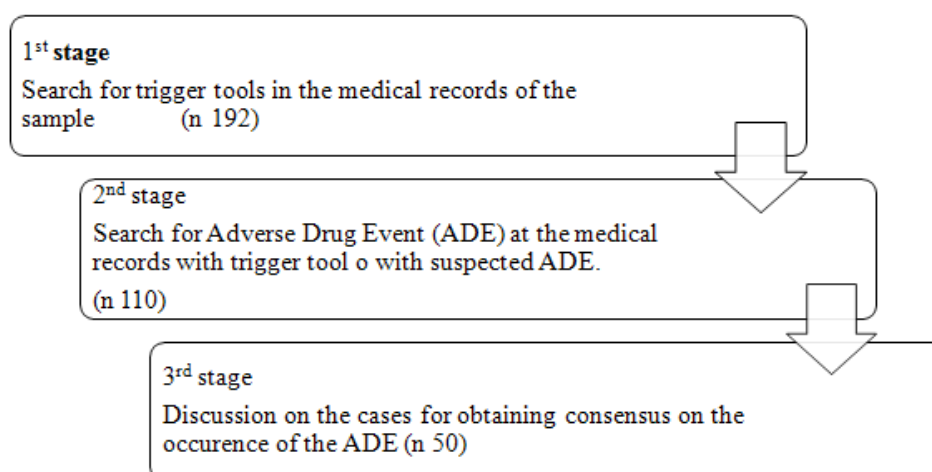


Figure 1 - Description of the adapted method and number of medical records assessed at each stage. Curitiba, PR, Brazil, 2014

The application of the IHI method resulted in the situational diagnosis of the organization, since the tool made it possible to know the number of adverse drug events that occurred during the assessed period.

## ● DISCUSSION

The original method proposed by IHI<sup>(1)</sup> recommends evaluation of medical records with identification of the trigger tool and measurement of the ADE performed simultaneously in 20 minutes. Confirmation of the ADE is subsequently made by a physician<sup>(1,3,5)</sup>.

In this experience report, the tool was administered in three stages, which favored its execution without negative impact on the results.

The support provided by scholars during the first stage not only reduced the time spent by the researchers in this objective and less complex stage of the method, but also contributed to their formation<sup>(6-7)</sup>, by increasing the awareness of these professionals about the importance of the theme.

Assessment of the occurrence of adverse events in the second stage took longer than the other steps because of the need to consult databases containing specific information on each one of the drugs suspected of causing the event. This condition contributed to the identification of the case as an adverse drug event.

Confirmation of ADE by professionals<sup>(4)</sup> of different formations, in the third stage, provided a more in-depth discussion of each case, taking into account specific knowledge of each category and resulting in greater clarification for all the participants.

Despite the standardization of the collection instruments, concepts and training of the participants, the time taken to obtain data in confirmed cases of adverse drug event was three times higher than the time of 20 minutes suggested by the method. This could be explained by some structural characteristics of the organization, e.g. the use of handwritten medical records, readability problems and the use of non-standard abbreviations. In some cases, emotional involvement may also have contributed to the longer duration of the process.

At the end of the experiment, the method was considered feasible and was included among the regular strategies to measure adverse events in the organization. The implementation of these methods is encouraged by the legislation<sup>(8)</sup>.

## ● CONCLUSION

The method "IHI Global Trigger Tool for Measuring Adverse Events"<sup>(3)</sup> proved to be useful and can be routinely used in the organization, to provide insight on adverse drug events, though it requires a longer time than recommended. The implementation of electronic medical records in the organization, in addition to other benefits<sup>(9)</sup>, facilitates the application of this methodology.

Other modules of the referred tool such as care, surgery, intensive care, perinatal and emergence of "IHI Global Trigger Tool for Measuring Adverse Events"<sup>(3)</sup> can be used as future valuable strategies in the measurement of adverse events related to other aspects of care.

Awareness of the occurrence of adverse events and identification of the events that can be prevented is essential for the improvement and safety of work processes<sup>(10-12)</sup>. Moreover, since the combination of strategies can improve the identification of harmful incidents, the method described can be of great benefit to patient safety.

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