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### Scientific and Technological Research

## Checklist verification for surgery safety from the patient's perspective<sup>☆</sup>

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#### ABSTRACT

**Introduction:** The World Health Organization (WHO) Safe Surgery Saves Lives Campaign based on the checklist is aimed at improving surgical safety. The Hospital General de Medellín (HGM) implemented the checklist in June 2009.

**Objective:** To describe the application of WHO's surgical checklist based on patient-verifiable items and to describe the behavior of adverse events, before and after the implementation of the checklist at the HGM, Colombia.

**Methods:** Cross-sectional study. All major surgery patients of the HGM operated on between February and March 2011 were included. Questions were addressed on patient-verifiable aspects on the checklist and about the perception of safety about the hospital. The number of surgical adverse events prior to, and after the implementation of the checklist, was compared.

**Results:** 246 patients agreed to take part in the trial. According to the patients over 90% of the items on the checklist were complied with. The lowest performing item (86%) was the complete introduction of the surgical team members and their roles. 97% of the patients recommended this hospital for surgical procedures. A decline in the number of adverse events following the implementation of the checklist was observed (7.26% in 2009 vs. 3.29% in 2010).

**Conclusions:** The OGM administers the WHO checklist. The incidence of adverse events decreased following its implementation.

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## Verificación de la lista de chequeo para seguridad en cirugía desde la perspectiva del paciente

### R E S U M E N

#### Palabras clave:

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**Introducción:** La campaña «Cirugía segura salva vidas» de la Organización Mundial de la Salud (OMS), basada en la lista de verificación, busca mejorar la seguridad de las cirugías. El Hospital General de Medellín (HGM) implementó la lista de chequeo en junio de 2009.

**Objetivo:** Describir la aplicación de la lista de verificación en cirugía de la OMS, a partir de ítems verificables por el paciente, y describir el comportamiento de eventos adversos antes y después de implementar la lista de verificación en el HGM (Colombia).

**Métodos:** Estudio de corte transversal. Se incluyeron todos los pacientes de cirugía mayor del HGM atendidos en febrero y marzo de 2011. Se preguntó por aspectos de la lista, verificables por el paciente, y por la percepción de seguridad en este hospital. Se comparó el número de eventos adversos en cirugía antes y después de la implementación de la lista de verificación.

**Resultados:** Un total de 246 pacientes aceptaron participar en el estudio. Los ítems de la lista de verificación se cumplieron en más del 90%, según los pacientes. El ítem de menor cumplimiento (86%) fue el de la presentación completa de los miembros del equipo quirúrgico, incluidas sus funciones. El 97% de los pacientes recomendaron este hospital para intervenciones quirúrgicas. Se observó una reducción de los eventos adversos en cirugía luego de la implementación de la lista de verificación (7,26% en 2009 vs. 3,29% en 2010).

**Conclusiones:** La aplicación de la lista de verificación de la OMS se cumple en el HGM. La incidencia de eventos adversos disminuyó con su implementación.

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## Introduction

Patient's safety is a key factor in health care services. The 55th Assembly of the World Health Organization (WHO) held in Geneva in 2002, emphasized its importance and the need to establish rules and standards in the area<sup>1</sup>; in 2004, the 57th WHO Assembly approved the creation of the World Alliance for Patient Safety,<sup>2</sup> and guidelines were defined to reduce the number of errors in health care. Along these lines, the Alliance launched in 2008 its second safety challenge: Safe surgery saves lives,<sup>3</sup> aimed at improving the safety of surgery throughout the world, defining a basic set of standards applicable in any country. This set of standards was compiled in a checklist,<sup>4</sup> called the WHO surgical checklist, made up by a set of 19 items that must be checked throughout the surgical procedure, divided into three time points: before, during and after the intervention. The study of the checklist utilization showed a considerable decline in the mortality and complication rates in patients over 16 years of age, undergoing non-cardiac surgical procedures, at several hospitals around the world. Following the launching of the WHO campaign, the campaign was developed in various countries and the checklist was implemented for all surgical procedures.

In Colombia, the Colombian Society of Anesthesiology and Resuscitation (SCARE) has strongly supported the Safe Surgery Saves Lives campaign since it was launched in the country,<sup>5</sup> adapting the checklist and promoting its utilization in every surgery performed, partnering with the Ministry of Social Protection (MPS) and the Pan American Health Organization (PAHO) in this endeavor.

The Hospital General de Medellín (HGM) implemented the WHO checklist for surgical safety in June 2009, as part of the hospital's policies and practices.

Two years after launching the WHO Safe Surgery Saves Lives Campaign SCARE and the Hospital General de Medellín initiated an assessment project of the HGM's safe policies and practices. There are some evaluation papers published in the literature on the application of the checklist from the perspective of the health care providers, but none verifying its application with the patient.<sup>6-8</sup> The results of the evaluation of the application of the surgical safety checklist at the Hospital General de Medellín in Colombia are herein presented, from the patient's perspective.

## Objective

To verify the application of the surgical safety checklist to every patient undergoing major surgery between February and March 2011 at the Hospital General de Medellín, Colombia, and to describe the behavior of surgical adverse events, before and after the implementation of the checklist.

## Materials and methods

A cross-section study was completed, including the universe of patients who underwent major surgery (except for cardiovascular procedures) during February and March 2011 at the HGM: patients had to be at least 18 years old, had to be Medellín residents for the last six months and must have voluntarily agreed to answer the survey. Patients in poor general health

conditions were excluded. A questionnaire was prepared with the items on the WHO checklist that were amenable to patient identification; additionally, patients were asked about their perception of safety at that Hospital. A nurse was trained to administer the survey, a pilot test was done with 10 patients and the instrument was adjusted accordingly. The survey was administered to patients in the course of the 48 hours following surgery. For quality of information purposes, a nurse who works at the Quality and Planning Office of the HGM revised the surveys completed daily. Furthermore, the adverse events statistics of the Surgical Department of the hospital for 2009 and 2010 was obtained and compared against the percentages corresponding to the total number of surgeries performed during the study period. Both the SCARE Research Committee and the HGM Research Committee approved this study.

## Results

A total of 246 patients were surveyed during February and March 2011, 29% females and 71% males. The mean age was 48.5 years; the age range was between 18 and 88 years.

Table 1 summarizes the findings from the answers to each of the items in the questionnaire. The results illustrate that according to the patients, the items on the checklist for the before and after time points are properly complied with at the Hospital General de Medellín. The lowest performing item is the complete introduction of all the surgical team members, including their respective roles. The anesthesiologist is the professional who complies with the highest percentage of post-surgical recommendations. The nursing staff is the least compliant in this regard.

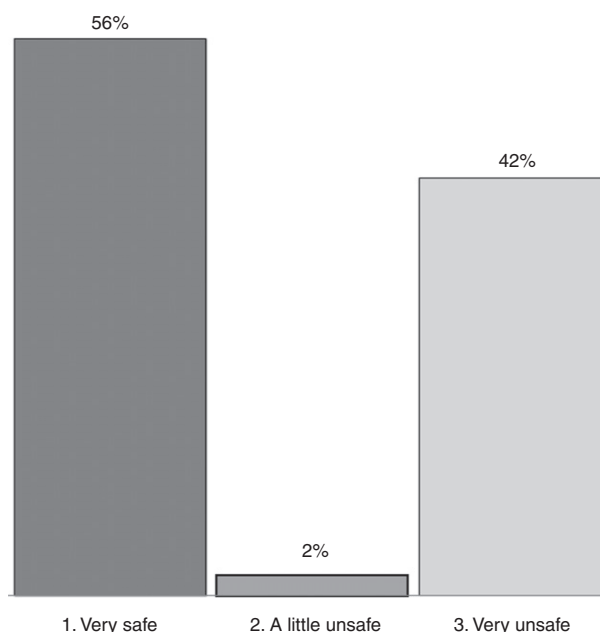
The perception of safety at the Hospital General de Medellín surgical department is high; a considerable percentage of patients had no fears about the potential of making mistakes during the procedure and most patients recommend this hospital for surgery (Fig. 1).

The process of adverse events management at the Hospital General de Medellín includes all Adverse Events and the Near miss and Close-call; surgical events accounted for 34.28% of the total number of events reported in the Hospital in 2009 and just 12.31% in 2010, showing a decline during the study period (Fig. 2). Of the total number of surgeries, 7.26% experienced adverse events in 2009 and 3.29% in 2010.

## Discussion

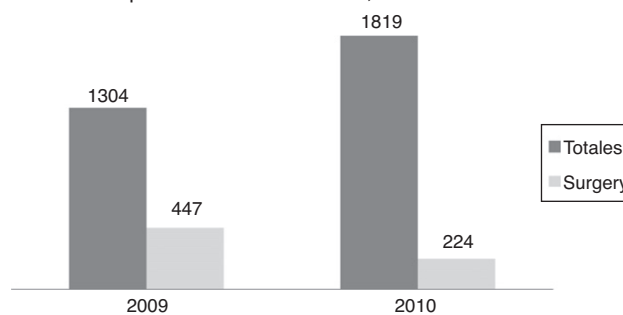
The World Health Organization launched the Safe Surgery Saves Lives campaign in response to the considerable number of medical errors occurring during surgical procedures throughout the world, which in fifty percent of the cases are preventable through simple measures. This Checklist for surgical safety includes 19 items that systematically control the aspects identified as critical to the safety of surgical interventions. This systematization of criteria also contributes to improving the communication among the surgical team members. Its implementation has been adapted to the conditions prevailing in Colombia and in other countries, and to particular criteria in each hospital. The checklist administered at the Hospital General de Medellín since 2009, corresponds

How safe do you feel about the possibility of mistakes during treatment or surgery at this hospital?



**Fig. 1 – Perception of safety regarding the surgical intervention at the Hospital General de Medellín, Colombia, February and March, 2011.**

Surgical adverse events compared against the total adverse events.  
Hospital General de Medellín, Colombia. 2009 - 2012



**Fig. 2 – Surgical adverse events versus total adverse events – Hospital General de Medellín, Colombia, 2009-2010.**

to the original WHO list and it was the basis for the evaluation.

The results obtained are satisfactory, keeping in mind that the list implementation must go hand-in-hand with a cultural change in the organization; such change is not easy to accomplish in a short period of time.<sup>9</sup>

Verification of signature of the informed consent, which was obtained in 100% of the patients, is emphasized. This is extremely important in cases where complications arise; the informed consent is a way to assist both the professionals and the health care institution in medical liability processes.

**Table 1 – Results of the survey on the verification of the use of the surgical safety checklist and opinion about surgical safety at the Hospital General de Medellín, Colombia. February and March, 2011.**

Question	Answer			
	Yes	%	No	%
<b>Verification of surgical safety checklist:</b>				
1. <i>When you were in the OR prior to the administration of anesthesia (before losing consciousness), were you asked:</i>				
1.1. Your full name?	245	99.59	1	0.41
1.2 Which site of your body will undergo surgery?	229	93.09	17	6.91
1.3 What surgical procedure will be performed?	229	93.09	17	6.91
1.4 Did you sign the informed consent?	246	100.00	0	0
1.5 Was the surgical site marked with a marker or with ink?	219	82.02	27	10.98
1.6 Were you asked about any allergies to any substance or drug?	244	99.19	2	0.81
1.7 Did all the team members in the OR introduce themselves by name and role during the procedure?	211	85.77	35	14.23
1.8 Did they address you by name?	244	99.19	2	0.81
1.9 Did they tell you which part of your body was going to be operated on?	228	92.68	18	7.32
1.10 Did they tell you what surgery they were going to perform?	228	92.68	18	7.32
2. <i>When you woke up after surgery:</i>				
2.1 Did the surgeon give you any recommendations to follow after the surgery?	147	59.76	99	40.24
2.2 Did the anesthesiologist give you any post-surgical recommendations?	153	62.20	93	37.80
2.3 Did the nurse give you any recommendations for care after surgery?	100	40.65	146	59.35
3. <i>Opinion about the safety of the services provided at the Hospital General de Medellín</i>				
3.1 When you learned that you would be operated at this hospital did you experience any fears about the possibility of mistakes during the surgery?	54	21.95	192	78.05
3.3 Would you recommend other people to undergo surgery at this hospital?	238	96.75	8	3.25

The item referring to marking the surgical site scored 82%; it must be said, however, that not every surgery has this indication and hence this figure should not be considered inappropriate.

The item with the lowest score – 85.77% – is the introduction of each one of the surgical team members, with their full names and their roles. It is very important to meet this criterion, not so much for the medical team, but for the patient. In case of a complication, the patient shall be able to identify each person's participation in the OR in terms of the event.

There is, however, room for improvement in terms of the post-surgical role of each team member, according to the WHO checklist. However, the role of the anesthesiologists stands out as the highest compliance score in this regard. This evidences the commitment of these specialists to the safety of surgical procedures, as discussed by doctor Merry.<sup>10</sup> It is surprising, however, that the least involved in terms of postsurgical recommendations are the nurses, despite their tradition of being closer to patients.

Most of the evaluations on the behavior of adverse events in hospitals have been done from a medical perspective, as reported in a study from Adelaide University.<sup>11</sup> This study contributes with new information when considering the evaluation of the checklist utilization from the patient's perspective, but no other similar studies are available in the medical literature.

The results of this study are consistent with the findings of other researchers around the world, regarding the benefits of using the checklist for surgery and the decline in the number of adverse events,<sup>4,12-15</sup> and it is an incentive to do new research to measure the effects of the implementation of the checklist and of the patient's safety policies in Colombian hospitals.

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## Conflicts of interest

The authors claim no academic, institutional or operational conflicts of interests with regard to this research work.

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