

Compliance in Filling Surgical Safety Checklist at The Central Surgical Installation

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ABSTRACT

Background: One indicator to reduce unwanted events in the operating room is to implement the filling of the surgical safety checklist (SSC) sheet.

Objective: The purpose of the study was to identify the level of compliance in filling SSC in the sign in, time out, and sign out phases at the central surgical installation.

Methods: The research method uses quantitative descriptive with an observational study approach. The sampling technique used purposive sampling with 72 respondents. The research instrument uses SSC sheets according to Hospital's SOP which refer to World Health Organization (WHO) standards. This research has received ethical approval from RS X with number 070/17/Ethical Clearance/RS X/III/2023. Data collection was carried out by researchers and research assistants, namely anesthesia students who were practicing at the hospital. In addition, this data was also checked by the anesthesia management team before analysis. Data analysis uses univariate analysis with the form of data presentation using categorical data, the results of which are frequency distributions and percentages using computer software.

Results: The results showed that in the SSC filling the sign in phase had the highest non-compliance rate on aspiration risk items and complicating factors (63%), while in the time out phase the highest non-compliance rate on the estimated length of operation item (90%), and in the sign out phase the highest non-compliance rate on verbal confirmation items of instrument completeness, the number of gauze or sponges, number of needles/other sharp tools (68%).

Conclusion: The filling of SSC sheets has not been fully carried out and the filling is done at the end after the operation is completed due to the workload and lack of labor resources. In addition, to speed up the process of transferring patients from the pre-anesthesia room to the operating table. It is expected that the surgery team (doctors, anesthesiologists, and surgical nurses) can be used as input so that the filling of the SSC sheet can be applied according to the sign in, time out, and sign out phases to minimize the possibility of surgical risk errors.

Keywords: patient safety; sign in; sign out; surgical safety checklist; time out anesthesia

INTRODUCTION

Patient safety is a cultural aspect that must be implemented by health workers in hospitals as an effort to prevent injuries and reduce unexpected events. Based on the International Patient Safety Goals (IPSG), there are 6 patient safety goals, one of which is the accuracy of the surgical location, the accuracy of the patient, and the accuracy of the surgical procedure. World Health Organization (WHO) stated that patients undergoing surgical procedures have increased every year, in 2017 there were 140 million patients registered, while in 2019 there was an increase of 148 million patients, which resulted in relatively low survival rates in various countries.¹

In Indonesia the number of patient safety incidents reached 7,465. According to the National Patient Safety Committee (KNKP) in 2019, data on the incidence of KNC was 38% and KTD was 31%. From this figure, the death rate reached 171 with 1,183 minor injuries, 372 moderate injuries, and 80 serious injuries.² The patient safety rate is still high, to overcome this, WHO through the World Alliance for Patient Safety has determined surgical safety checklist (SSC) as a medium to increase safety during surgery and reduce the death rate.

SSC in the operating room has 3 stages, namely sign in (before induction of anesthesia), time out (before surgery), and sign out (before the patient is moved from the operating room).^{2,3} Patient safety is important in health services. SSC filling has not been fully completed due to lack of knowledge about SSC and excessive workload. This data shows that the lack of implementation SSC filling in hospitals still occurs. Several hospitals are taking steps to prevent risks to patient safety. Based on the results of interviews conducted with

anesthesiologists, it was found that hospital X had implemented injury prevention by implementing SSC filling. However, there were various obstacles in filling it out, due to the presence of CITO patients which made the health workers not fill it in according to the time in the sign in, time out, sign out phase and filling in the SSC sheet at the end of the procedure, namely in the recovery room (RR).

METHOD

This type of research uses descriptive quantitative with an observational study approach. The population in this study is the number of operations at Hospital X in 2022, there are 3,091 patients with an average of 257 patients/month. Sampling used purposive sampling with a sample size of 72 respondents. The inclusion criteria in this study were ASA 1-2 patients, while the exclusion criteria were CITO patients, one day surgery (ODS), and pediatric patients. Health workers who carry out SSC are anesthesiologists, surgical nurses, surgeons and anesthetists. The research instrument uses SSC sheets according to Hospital SOP which refer to WHO standards.

This research has received ethical approval number 070/17/Ethical Clearance/Hospital X/III/2023. Research was collected and obtained by making direct observations of health workers who filled out checklist sheets using an observational study approach, namely a study where the researcher only made observations and carried out a checklist after actions were taken in the sign in, time out and sign out phases.

The research instrument uses the SSC sheet which is carried out in the Sign In phase consisting of 12 components, time out consisting of 8 components, and sign out consisting of 5 components. The

checklist sheet consists of 3 answers, namely done, not done and not applicable.

Data collection was carried out by researchers and research assistants, namely anesthesia students who were practicing at the hospital. In addition, this data was also checked by the anesthesia management team before analysis. Data analysis uses univariate

analysis with the form of data presentation using categorical data, the results of which are frequency distributions and percentages using computer software.

RESULTS

The research subject is the implementation of surgical procedures at central surgical installation hospital X as follows:

Table 1. Characteristics of surgery

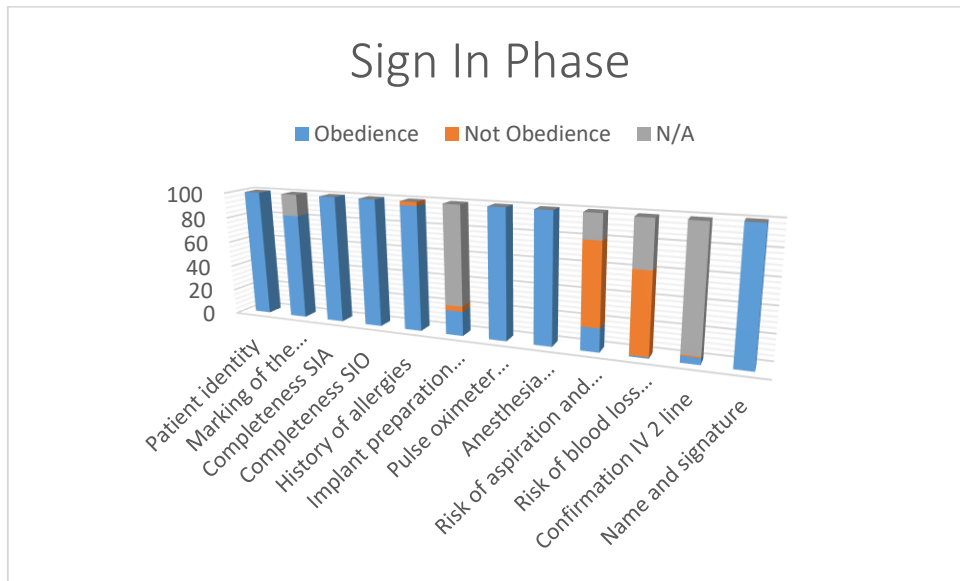
Characteristics	Total	%
Genders		
Male	33	46
Female	39	54
Type of operation		
Obsgyn	3	4
General surgery	18	25
Orthopedi	15	21
Neurosurgery	5	7
Digestif	6	8
Oncological surgery	10	14
Urological surgery	12	21
Length of operation		
Mild (\leq 60 minute)	21	29
Intermediate (60-120 minute)	33	46
Major ($>$ 120 minute)	18	25
Types of anesthesia		
General	47	65
Regional	25	35

The completeness of procedures for implementing Patient Safety can be assessed from the level of compliance in

implementing SSC which is carried out in 3 phases, namely: fase sign in, time out, dan sign out.

Table 2. SSC filing phase sign in

Number	Sign in Component	Sign in Obedience					
		action		not action		N/A	
		n	%	n	%	n	%
1	Patient identity	72	100	0	0	0	0
2	Marking of the operating area	60	83	0	0	12	17
3	Completeness SIA	72	100	0	0	0	0
4	Completeness SIO	72	100	0	0	0	0
5	History of allergies	70	97	2	3	0	0
6	Implant preparation readiness	13	19	3	4	56	77
7	Pulse oximeter equipment	72	100	0	0	0	0
8	Anesthesia equipment, tools and drugs	72	100	0	0	0	0
9	Risk of aspiration and complicating	13	18	45	63	14	19
10	Risk of blood loss $>$ 500 ml	1	1	45	62	26	36
11	Confirmation IV 2 line	4	5	1	1	67	93
12	Name and signature Anesthetist Doctor, time	72	100	0	0	0	0



Graphic 1. Sign in phase

Table 2 shows that of the 72 respondents used as research samples, the highest amount of compliance was seen in filling in the patient's identity, completeness of

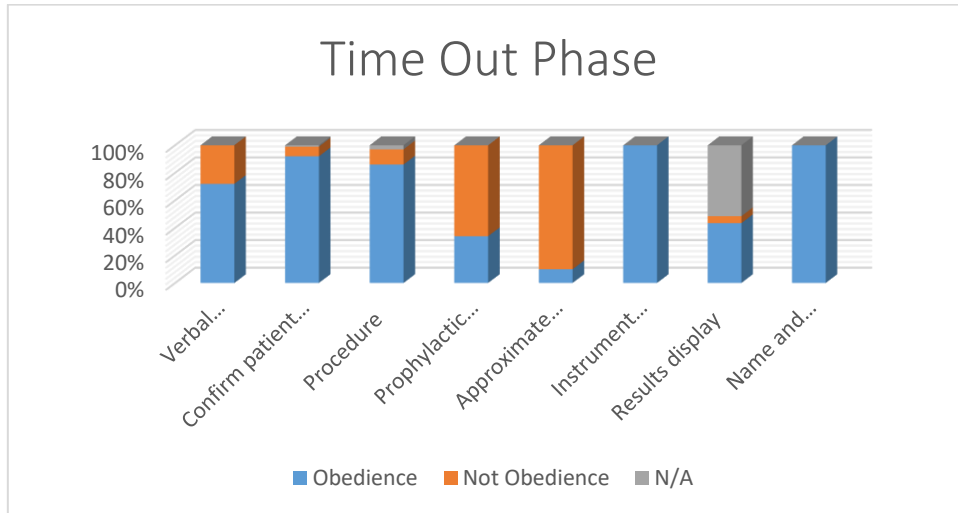
the anesthesia permit and surgery permit (100%). Meanwhile, the lowest compliance was in the blood loss risk anticipation component (1%).

Tabel 3. SSC phase time out filing

Number	Time Out Component	Time Out Obedience					
		action		not action		N/A	
		n	%	n	%	n	%
1	Verbal communication between team members	52	72	20	28	0	0
2	Confirm patient identity	66	92	5	7	1	1
3	Procedure	62	86	8	11	2	3
4	Prophylactic antibiotics 60 minutes before surgery	24	34	48	66	0	0
5	Approximate length of op (time)	7	10	65	90	0	0
6	Instrument readiness & equipment sterilization	72	100	0	0	0	0
7	Results display	31	43	4	5	37	51
8	Name and signature, circulating nurse, time	72	100	0	0	0	0

The research results showed that documentation of the nurse's name and signature was very good (100%), instrument readiness (98%), and confirmation of patient identity (91%).

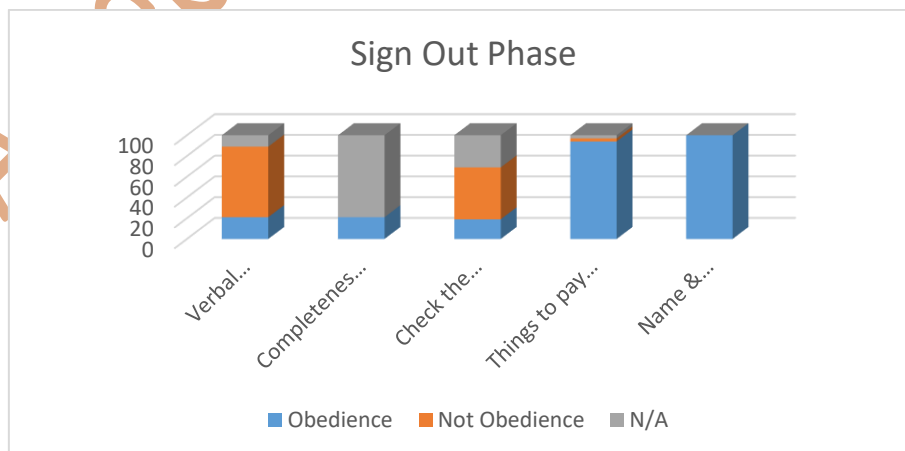
However, there are several components that are not carried out, for example the administration of antibiotics before surgery (66%) and the estimated duration of surgery (90%).



Graphic 2. Time out phase

Tabel 4. SSC filing sign out phase

Number	Time Out Component	Time Out Obedience					
		D		TD		N/A	
		n	%	n	%	N	%
1	Verbal communication of completeness of instruments, number of gauze/sponges, number of needles or sharp tools	15	21	49	68	8	11
2	Completeness of the specimen examined	15	21	0	0	57	79
3	Check the related instruments for possible problems during the operation	14	19	36	50	22	31
4	Things to pay attention to in the recovery phase after surgery	68	94	2	3	2	3
5	Name & signature, operator, anesthetist, assistant, scrub nurse, circulating nurse, date, time	72	100	0	0	0	0



Graphic 3. Sign out phase

The results of research in the sign out phase showed that documentation of the name and signature of the team (100%), and administration of post-operative analgesics (94%). Apart from that, the lowest percentage was checking instruments during the operation (19%), verbally confirming the completeness of the instruments, counting the number of gauze/sponges and other sharp tools (21%).

DISCUSSION

Compliance in implementing SSC at IBS Hospital SSC in the operating room has 3 phases, namely sign in, time out, and sign out.

The sign in phase is carried out in the pre-anesthesia room or transit room. In this phase, there are 2 health workers on duty, namely the general nurse and the anesthetist. General nurses only carry out anamnesis at a maximum of 14.00 WIB or after elective patients have been anamnesis. Meanwhile, the anesthetist checks the anesthesia machine, prepares the equipment and anesthetic drugs.

The component that has the highest compliance with a percentage (100%) can be seen in Table 2. Based on the results of observations that have been made, nurses on duty during the sign in phase have a high level of knowledge and awareness about the importance of filling in the SSC. There is a relationship between knowledge and the implementation of SSC.⁴

The operational area marking component has a level of compliance with not applicable (17%). Marking the surgical area is important to prevent surgical errors, however there are some operations that do not require marking, for example in mouth area operations such as impactions.⁵ Registration was

performed and read in 65.2% and 13% of cases, respectively. The majority of errors (90.4%) during surgical procedures involved 4.444 surgeons who "failed to make position markings." It was found that 62.7% reported being aware of the medical error reporting system at their facility, but the majority (91.8%) did not report surgical errors.^{6,7,8}

The operating room consists of several multidisciplinary sciences that have different knowledge and skills among anesthetists, surgical nurses, specialist doctors and technical staff. The entire team is fully responsible for achieving optimal nursing outcomes during the perioperative period. Some surgical services require a long time in certain cases, which can cause excessive workload. Apart from that, the lack of health personnel in the perioperative room can be a factor in documentation not being carried out properly.^{9,10,11}

When the history of allergies was carried out, there was a non-compliance rate (3%) because the red bracelet was seen being used. This can save time because a conducive atmosphere will have an impact on service quality and patient satisfaction. Hospitals with good service will be recommended if satisfaction with the service received is commensurate with the costs incurred.^{8,12,13}

In the willingness/readiness component, implants had a non-compliance rate of (4%) and in not applicable it reached (77%). Implant placement is not carried out in all types of surgery, but only for orthopedic surgery and patients with implant removal do not require implant provision. The risk of aspiration and complicating factors of components not being carried out is (18%) because patients with regional anesthesia do not have a risk of aspiration, whereas in not

applicable (19%) it is carried out in patients with total intravenous anesthesia (TIVA) procedures, for example negative pressure wound therapy (NPWT) installation which should be able to use local anesthesia due to request to reduce fear and anxiety, TIVA is carried out for patients.

The lowest filling compliance in the sign in phase was anticipating the risk of bleeding (1%) because patients with normal hemoglobin levels would not cause bleeding so there was no need to provide blood transfusions. Normal hemoglobin levels in adult men are 13-17 grams/dL, while in adult women it is around 12-15 grams/dL. Fluid therapy is very important to use to treat shock and bleeding during surgery. IV line placement is only performed on major surgery patients, for example fracture patients. In addition, an IV line is installed as a place to insert medication and for fluid therapy.¹⁴⁻¹⁶

Based on the results of interviews conducted with nurses on duty in the transit room, it was found that the obstacle in filling out the SSC during the sign in phase was the large number of patients arriving at the same time and only one nurse on duty. Nurse performance can be influenced by available resources. To overcome this, additional labor resources and changes to the organization of work can be made so that the workload can be distributed evenly.¹⁷⁻¹⁹

The time out phase is carried out in the operating room by observing the anesthetist and circulating nurse. The highest level of compliance in the time out phase with a percentage (100%) (Table 3). In the verbal communication component between team members there

was compliance (30%) because the team members is the same person.

Confirmation of patient identity has a non-compliance rate (7%). Health workers are still found who do not confirm the patient's identity correctly because it is already in the medical record. Meanwhile, confirmation of action or procedure is not applicable (3%) because the patient who will undergo surgery is the same person with different procedures, but the distance between the next operation is only 2 days.²⁰

Administration of antibiotics before surgery has a compliance rate (66%) due to lack of communication between room nurses and nurses in the transit room. The most common use of antibiotics in orthopedic surgery patients is to prevent surgical wound infections.²¹

The estimated duration of surgery has a non-compliance rate (90%), it is important to anticipate the occurrence of shivering disorders caused by room temperature or anesthetic drugs.

The sign out phase is the last stage carried out in the operating room before closing the wound and before the patient is moved from the operating room. The research results showed that when verbally confirming the completeness of the instrument, the number of gauze/sponges had a non-compliance rate (68%). This was actually done by grouping the number of gauze bags that had been used but in writing, such as writing on the wall and not confirmed verbally.

In checking specimen completeness, the number of procedures not applicable (79%) was because only certain operations required specimen examination, for example in mammary biopsy patients. The purpose of examining the specimen is to shorten the duration of contact of the specimen with local anesthesia and to diagnose the patient accurately.^{22,23}

When examining instruments that are not applicable (31%) this is due to time efficiency and these tools will be reused. Lowest compliance in the sign out phase is considered less important even though the emergency period has passed during the surgical procedure.^{2,7}

In terms of components, things to pay attention to in the recovery phase are not applicable (3%), for example in patients transferred to the intensive care unit (ICU) and patients undergoing TIVA procedures. This is important because in patients under general anesthesia the head must be extended to free the airway and post-operative analgesics are given to reduce the pain felt.

When observing SSC, a team of observers is needed who monitors clinically so that it can be used as a basis for accountable observations. There are several skills that must be present, namely critical thinking, conceptual skills and knowledge of SSC. Observations were made based on 121 minutes of observation activity with a value of ($q \frac{1}{4} 0.868, P < 0.005$).^{10,24}

Filling in the SSC during the sign out phase is documented. For example, the doctor in charge makes an operation report. The anesthetist and anesthetist fill out the intraoperative monitoring sheet, and the surgical nurse fills out the SSC sheet. This is done as a form of

documentation that the actions that have been taken are correct and in accordance with the hospital's SOP.²⁵

Obstacles when carrying out this research were that when observing data, it was found that several respondents whose type of operation lasted more than 2 hours, some even up to 3 hours, which caused boredom for researchers and could reduce effectiveness when carrying out observations.

CONCLUSION

Based on the objectives, research results and discussion, conclusions can be drawn regarding filling out the SSC during the sign in, time out and sign out phases as a whole has not been completed 100%. There are several components that have been completely filled in, but there are still many that have not been filled in due to the high workload, lack of human resources and many operational actions being carried out. This can certainly have an impact on the quality of service in the IBS room.

REFERENCES

1. Hamdani. Faktor-Faktor yang Berhubungan dengan Tingkat Kecemasan pada Pasien Preoperasi di Ruang OK RSUD Pelabuhan Ratu Kabupaten Sukabumi. *J. Heal. Soc.* 11, 54–66 (2022).
2. Saputra, C. et al. Faktor Penerapan Surgical Safety Checklist di Kamar Operasi. *J. Keperawatan* 14, 291–300 (2022).
3. Tan, J. et al. Attitudes and compliance with the WHO surgical safety checklist: a survey among surgeons and operating room staff in 138 hospitals in China. *Patient Saf. Surg.* 15, 1–12 (2021).

4. Yuliati, E., Malini, H. & Muharni, S. Analisis Faktor Yang Berhubungan Dengan Penerapan Surgical Safety Checklist Di Kamar Operasi Rumah Sakit Kota Batam. *J. Endur.* 4, 456 (2019).
5. WHO. New checklist to help make surgery safer. (2019).
6. Oznur Gurlek Kisacik & Cigerci, Y. Use of the surgical safety checklist in the operating room: Operating room nurses' perspectives. *Pak J Med Sci* 35, 614–619 (2019).
7. Gul, F. et al. Surgical safety checklist compliance: The clinical audit. *Ann. Med. Surg.* 81, 104397 (2022).
8. Noprianty, R. Buku Ajar Manajemen dan Kepemimpinan dikembangkan Berdasarkan Teori Keperawatan dan Dilengkapi Dengan Studi Kasus, Daftar Tilik Dan Soal-Soal. (Deepublish, 2023).
9. Noviyanti, S. & Noprianty, R. Pelaksanaan Discharge Planning oleh Profesional Pemberi Asuhan (PPA) di Ruang Rawat Inap. 4, 139–146 (2019).
10. Amir, H. et al. Enhancing skill conceptualization, critical thinking, and nursing knowledge through reflective case discussions: a systematic review. *J. Med. Life* 16, 851–855 (2023).
11. Noprianty, R. Manajemen dan Kepemimpinan. (Deepublish, 2023).
12. Noprianty, R., Wahyudi, F. M., Wahdana, W. & Juarta, T. Quality Assurance in The Surgical Ward of Hospital X in Bandung During the Covid- 19 Pandemic. 4, 37–42 (2023).
13. Noprianty, R. & Mourly, F. Quality Of Work Life Of Nurse Anesthetist During Covid-19 In Indonesia. *J. Medicoeticolegal dan Manaj.* 10, 271–281 (2021).
14. Ramesh, G. H., Uma, J. C. & Farhath, S. Fluid resuscitation in trauma: What are the best strategies and fluids? *Int. J. Emerg. Med.* 12, 10–15 (2019).
15. Aaen, A. A. et al. Goal-directed fluid therapy in emergency abdominal surgery: a randomised multicentre trial. *Br. J. Anaesth.* 127, 521–531 (2021).
16. Wrzosek, A. et al. The volume of infusion fluids correlates with treatment outcomes in critically ill trauma patients. *Front. Med.* 9, 1–9 (2023).
17. Noprianty, R., Wahdana, W. & Suryanah, A. Dampak Beban Kerja terhadap Produktifitas Kerja di Ruang Perioperasi. *J. Kepemimp. dan Manaj. Keperawatan* 5, (2022).
18. Noprianty, R. et al. Perencanaan Sumber Daya Manusia Kesehatan Rumah Sakit Melalui Pelatihan Aplikasi Software Workload Indicators of Staffing Need. *PengabdianMu J. Ilm. Pengabd. Kpd. Masy.* 8, (2023).
19. Noprianty, R., Febianti, S. A. & Fikri, J. Analysis of Nurses Staff Needs Using Workload Indicate Staff Need in Pediatric Ward With Time Motion Study. *J. Medicoeticolegal dan Manaj. Rumah Sakit* 9, 13–22 (2020).
20. Murtiningtyas, R. A. & Dhamanti, I. Analisis Implementasi Identifikasi Pasien di Rumah Sakit Untuk Meningkatkan Keselamatan Pasien di Indonesia. *Media Gizi Kesmas* 11, 313–317 (2022).
21. Situmorang, E. M. S., Silalahi, P. A. R. & Silalahi, P. A. R. Penggunaan Antibiotik Profilaksis Dalam Bedah Ortopedi. *PREPOTIF J. Kesehat. Masy.* 6, 1293–1300 (2022).

22. Bick, U. et al. Image-guided breast biopsy and localisation: recommendations for information to women and referring physicians by the European Society of Breast Imaging. *Insights Imaging* 11, (2020).
23. Sun, T., Zhang, H., Gao, W. & Yang, Q. The appropriate number of preoperative core needle biopsy specimens for analysis in breast cancer. *Med. (United States)* 100, E25400 (2021).
24. Tully, P. A. et al. Improving the WHO Surgical Safety Checklist sign-out. *BJS Open* 5, (2021).
25. Noprianty, R., Nafiz, M. H. & Herawan, R. The Completeness of Filling in the Anesthesia Card Form in West Java , Indonesia. *Int. J. Sci. Res.* 13, 1122–1127 (2024).

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