

A risk-factor analysis of medical litigation judgments related to fall injuries in Korea

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**Insook Kim¹, Seonae Won², Mijin Lee³ and Won Lee⁴**

Abstract

The aim of this study was to find out the risk factors through analysis of seven medical malpractice judgments related to fall injuries. The risk factors were analysed by using the framework that approaches falls from a systems perspective and comprised people, organisational or environmental factors, with each factor being comprised of subfactors. The risk factors found in each of the seven judgments were aggregated into one framework. The risk factors related to patients (i.e. the people factor) were age, pain, related disease, activities and functional status, urination state, cognitive function impairment, past history of fall, blood transfusion, sleep endoscopy state and uncooperative attitude. The risk factors related to the medical staff and caregivers (i.e. people factor) were observation negligence, no fall prevention activities and negligence in managing high-risk group for fall. Organisational risk factors were a lack of workforce, a lack of training, neglecting the management of the high-risk group, neglecting the management of caregivers and the absence of a fall prevention procedure. Regarding the environment, the risk factors were found to be the emergency room, chairs without a backrest and the examination table. Identifying risk factors is essential for preventing fall accidents, since falls are preventable patient-safety incidents. Falls do not happen as a result of a single risk factor. Therefore, a systems approach is effective to identify risk factors, especially organisational and environmental factors.

Keywords

Falls, malpractice, patient safety

Introduction

The Joint Commission, which is in charge of strict, global international standard medical services, warned that one of the most prevalent unexpected sentinel events in 2015 was fall injuries.¹ Patient falls are indicative of nursing quality at a department and institutional level as well as an international level.^{2,3} The aftermath of falls may include a reduction in survival time, fractures, pain, haemarthrosis or subdural hematoma, muscle injury, dislocation, bedsores, depression and physical malformation.⁴ Falls can frequently result in temporary or permanent disabilities, and may even lead to death.⁵ In addition, falls may cause a financial burden.⁶ Falls not only increase the burden of patients and patients' guardians (e.g. medical burden, medico-legal disputes), they also threaten the quality of medical care and the patient safety system.^{6,7}

There are internal and external factors relating to falls,⁸ and it has been reported that internal factors such as age, weight and sex are strongly related to fall injuries.⁹ The results of an investigation on predictive factors of falls based on the medical records of elderly adults admitted to a nursing home revealed the importance of individual-related factors such as

weakness, appetite and age; disease-related factors such as admission route and activity level; environment-related factors such as installation of an auxiliary handrail; and fall-risk factors such as fall history, balance and total fall-risk score.¹⁰

Since falls are preventable,¹¹ identifying their risk factors in order to prevent them is important. In particular, a systems approach is required to understand and prevent risk factors, since patient safety is related to environmental factors such as organisation, manpower and design.¹

¹Department of Nursing Environments and Systems, College of Nursing, Yonsei University, Mo-Im Kim Nursing Research Institute, Korea

²College of Nursing, Yonsei University, Korea

³Department of Medical Humanities and Social Medicine, Ajou University School of Medicine, Korea

⁴Department of Medical Law and Ethics, College of Medicine, Yonsei University, Asian Institute for Bioethics and Health Law, Korea

Corresponding author:

Won Lee, #410 Administration B/D Yonsei University Health System 50-1, Yonsei-ro, Seodaemun-gu, Seoul 03722 Korea.

Email: oness38@hanmail.net

Unfortunately, little research has analysed the risk factors of falls that occur in medical institutions through a preventive or a systems approach. In addition, fall accidents that have happened in institutions are not available for analysis, since the information is considered confidential in Korea. However, in medical litigation cases, the facts of the accident are recorded. Therefore, determining what type of medical practice is most frequently related to medical accidents is possible.¹² Therefore, this study analysed fall-risk factors from the perspectives of patients, medical personnel and organisational environmental factors by using the judgments made on fall cases that occurred in medical institutions that led to medical civil litigations.

Methods

Research design and material

This study determined risk factors of fall injuries through analysis of seven medical malpractice judgments related to fall injuries.

Research procedures

The research procedure is shown in Figure 1.

Collection of judgments. The collection of judgments was conducted from March to May 2016. Judgments were searched by visiting the library of the Supreme Court. The search was conducted by using the keywords 'indemnification (medical malpractice suits)', 'plaintiff won', 'partially in favour of the plaintiff' and 'fall'. Forty-four cases were found. The cases were requested electronically, and the court provided the investigator with the judgments after it had deleted all personally identifiable information from the rulings. The research

team reviewed each case and excluded 30 cases that were not medical accidents, not related to falls within an institution, if the patient visited an emergency room due to a fall outside of an institution and repeated accidents. Among the remaining 14 cases, seven cases that had insufficient fall information were excluded. Therefore, seven cases that were awarded in favour of the plaintiff were analysed.

Creation of a flow chart addressing the courts' key decision/points. A flow chart was created by organising the course of the accident presented in the judgment. While creating the flow chart, key information such as fall type, measures taken after the fall and reasons for the courts' final decision were determined. Through this process, it was possible to identify the facts of the event, what the most important issue was in the court's judgment and what ramifications existed for the health-care provider if they had violated their responsibilities.

Identification of the risk factors in an individual judgment. The risk factors of each accident were analysed by using the framework proposed by Taylor et al.¹ This framework was used, since it approaches fall-related risk factors from a systems perspective, and the risk factors were classified as people, organisational or environmental factors. Each factor also comprised subfactors. The people factors comprised patient-related, health-care provider and care-worker elements. The organisational factors related to regulations or procedures such as monitoring and patient evaluation. The environmental factors related to the physical environment surrounding the patient. The risk factors were analysed by considering the type of medical institution, time of fall and place of fall by using people, institutional and environmental categories. The risk factors were identified by

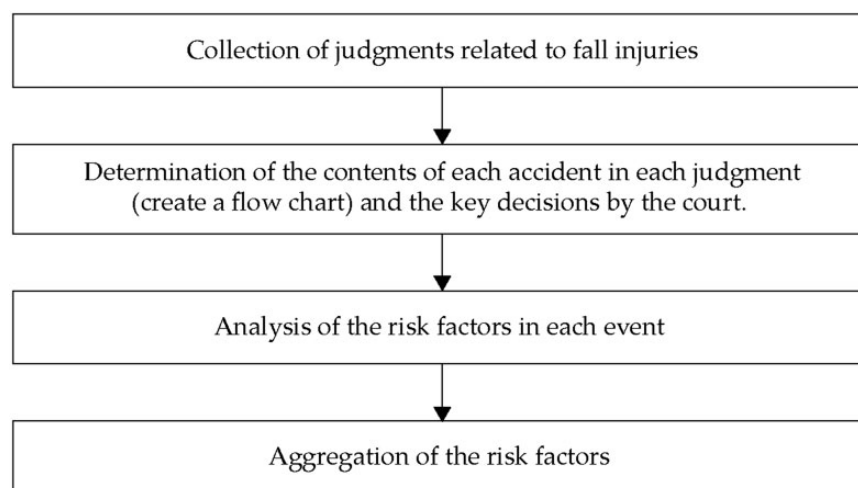


Figure 1. Research procedures.

including all the elements of the case, even though they may not have been clearly stated in the judgment. To increase this study's reliability, counsel was received from a nurse working at the patient safety department of a tertiary general hospital after the research team analysed the risk factors.

Aggregation of the risk factors. The risk factors found in the seven judgments were constructed into one framework. Because of the limitations in the amount of information available to construct the risk factors into subfactors as proposed by Taylor et al.¹ due to the nature of litigation cases, the research team composed subfactors by reviewing 11 domestic studies^{10,13–22} and 16 international studies^{23–36} related to falls. If the subfactor identified in the individual judgment did not correspond to a subfactor found in the literature review, then a new subfactor was composed.

Ethical considerations

Before beginning the study, a review was requested by the Institutional Review Board of a nursing college located in Seoul. Since the study used judgments without personally identifiable information, the review was waived (2016-0007).

Results

Judgment nature

The overall nature of the judgments is shown in Table 1.

The average age of the patients at the time of fall was 59.6 years. The type and size of the institutions where the falls occurred were diverse, and patients died in four of the seven accidents.

Main contents of judgments and the courts' key judgment points

To understand and analyse the contents of the judgments, a flow chart was created for each judgment (see Figure 2 for an example).

The main contents of the judgments and the key points from the courts' rulings are as follows.

In the first judgment, the patient fell getting out of bed to go to the bathroom. The patient was of advanced age and suffering from osteoporosis at the time of the fall. He/she was having difficulties with daily life without the help of his/her caregiver, and frequently wandered in and out of his/her room alone. Accordingly, the court judged that despite that, the caregivers neglected to observe the patient properly, which resulted in the patient falling.

In the second judgment, the patient fell while trying to get out of bed and move to a wheelchair. The patient was prone to sudden falls when moving alone without an assistive device. Even though it was necessary for the caregiver to report to the manager and transport the patient after the fall, the caregiver put a medicated patch on the patient and reported the incident the following day. A bedsore developed on the area of fall, and the bedsore was exacerbated because no proper measures were taken. It was judged that the caregiver and the nursing home operator did not sufficiently perform their duties to assist and protect the patient from the fall or the bedsore. However, the court did not accept the causal relationship between the fall/bedsore and the patient's subsequent death.

In the third judgment, the patient was of advanced age and suffering from mild dementia. The patient fell while getting out of bed after knee surgery. The court ruled that the hospital staff were responsible because they did not sufficiently perform the duty of care required to prevent the patient from falling, since the patient was at high risk for a fall, and no separate efforts were made to prevent the fall such as providing the patient with instructions or education on how to avoid falling.

In the fourth judgment, the patient came to the hospital on suspicion of acute myelogenous leukaemia. She was admitted to the emergency room because no hospital bed was available. Various examinations and transfusions were completed, and the guardian went home at dawn with the nurse's permission. After the guardian left, the patient fell. The court classified the patient in the high-risk group for falls and ruled that the medical staff did not take appropriate measures to prevent the fall such as educating the patient and guardian on the dangers of fall, how to prevent falls and warning the guardian not to leave the patient alone just in case.

In the fifth judgment, the patient fell twice after being admitted to a closed ward to treat alcoholism. The first accident was a sudden fall in the patient room, and the second fall involved falling backwards and hitting his head on the concrete floor while sitting on a plastic chair without a backrest in the lounge. The nurse had a duty of care to determine the patient's condition accurately when the patient showed abnormal symptoms, report this to the doctor and take emergency measures accordingly. However, the nurse involved in the accident was at fault for not reporting the accident and for judging the patient's symptoms as simple alcohol-withdrawal symptoms after the first fall occurred. The court judged that the nurse was at fault for not accurately reporting the exact condition of the patient or the seriousness of the symptoms, even after the second fall. Moreover, the doctor was at fault for

Table 1. Judgment nature.

Age (years)	Institution	Hospitalisation reason	Patient's history	Undesirable consequences	Place of fall	Fall type	
1	81	Long-term care hospital	Convalescence	Polyarthritis, degenerative spondylitis, dorsal spine and L2 vertebra compression fracture, dementia, osteoporosis, and hypertension	Femur fracture	Patient room	Getting out of bed
2	63	Nursing home	Convalescence	Left-sided hemiplegia due to diabetes, hypertension, cerebral apoplexy and mild dementia	Death	Patient room	Moving from bed to wheelchair
3	93	Long-term care hospital	Convalescence	Pseudo-gout in the left knee joint	Intertrochanteric fracture on the right femur	Patient room	Getting out of bed
4	40	University hospital	Acute myelogenous leukaemia	–	Death	Emergency room	From bed
5	45	Mental hospital	Alcoholism	–	Death	Patient room, lounge	Suddenly, backwards while sitting in a chair
6	30	University hospital	Acute haemorrhagic contusion by head trauma and small amount of acute subarachnoid haemorrhage	–	Death	Restroom	While urinating
7	65	Hospital	Sleep endoscopy	–	Unstable angina, acute myocardial infarction and facial fracture	Examination room	From bed while regaining consciousness after sleep endoscopy

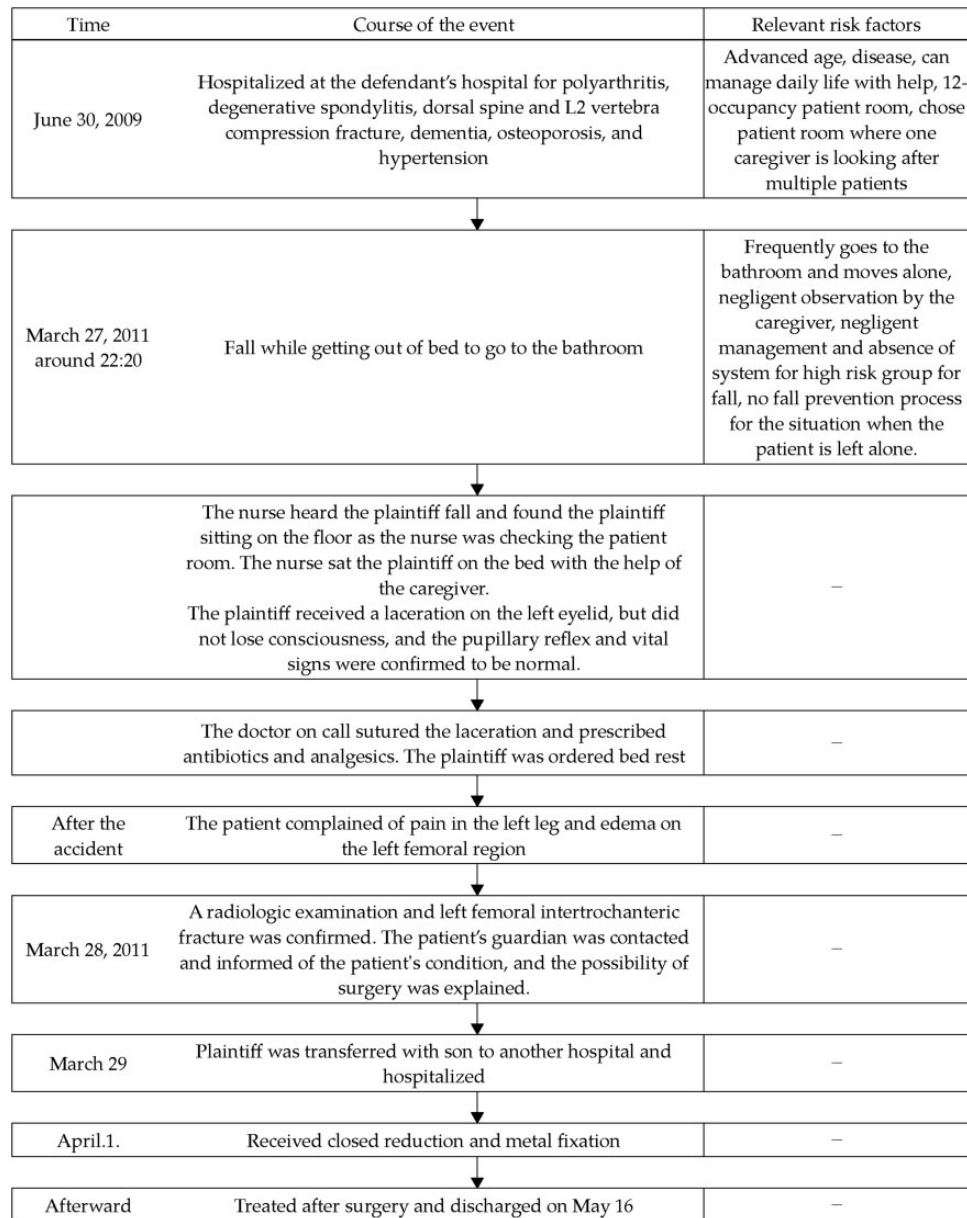


Figure 2. Flow chart of judgment 1.

not performing emergency care or providing a speedy diagnosis because the doctor failed to examine the patient directly, even after the second fall.

In the sixth judgment, the patient was hospitalised for an acute haemorrhagic contusion caused by head trauma and a small acute subarachnoid haemorrhage. When the patient was transferred from the intensive care unit to the general ward, the patient needed bed rest and caregiver's protection, as he was drifting in and out of consciousness and intermittently complaining of headaches. The court determined that the medical staff did not give the patient and guardian specific instructions or explanations on the patient's condition

or define a specific recuperation method other than saying the patient required a caregiver. Furthermore, the medical staff let the patient go to the bathroom alone, which resulted in the patient falling and caused a cerebral haemorrhage in a different location.

In the final judgment, the patient fell off the sleep endoscopy table after a sleep endoscopic examination. The court judged that the nurse should have exercised caution to prevent the patient from falling and observe the patient until she regained consciousness. However, the nurse neglected to do this.

In summary, the court acknowledged the negligence of medical staff in several areas, including patient

People Factors	Staff and caregivers	Caregiver's observation negligence
		Negligence in managing high risk group for fall
	Patients	Advanced age (83 years old)
		Diseases such as polyarthritis, degenerative spondylitis, dementia, and hypertension
		Can manage daily life only with caregiver's supervision or help
		Frequently wandered in and out of his/her room
		Use toilet more or less frequently
		Goes to the toilet alone despite telling the patient about the fall risk when moving without assistance
		Patient's family chose the patient room where one caregiver takes care of multiple patients
Organizational Factors	Two caregivers	
	Caregiver's lack of training (assumed)	
	No fall prevention process is in place for the situation when the patient is left alone because the caregiver or guardian left the room (assumed)	
	No management system for high risk group for fall is in place (assumed)	
Physical environmental Factors		12-occupancy patient room

Figure 3. Risk factor analysis of judgment 1.

observation duty of care needed for patient protection, duty of care needed to prevent falls and providing detailed instructions or explanations on the patient's condition and recuperation methods.

Analysis and aggregation of the risk factors in the judgments

The risk factors in each judgment were analysed using a risk-factor analysis framework. Figure 3 provides an example of the risk-factor analysis for judgment 1.

The classification and aggregation of the risk factors found in each judgment are shown in Figure 4.

People factors: patients. The risk factors related to disease were polyarthritis, degenerative spondylitis, dementia, hypertension and acute myelogenous leukaemia. Patients' risk factors included that the patient can manage daily life only with the supervision or help of the caregiver or others, hemiplegia, walking is possible only with an assistive device and help is needed when walking (e.g. after knee surgery). In addition,

frequently moving around the patient room or toilet, lack of orientation, complaining of pain and blood transfusion were also found to be patient risk factors. Symptoms of alcoholism, patients' special situations (e.g. after sleep endoscopy examination), fall history (e.g. first time) and uncooperative attitude of the patient or family who does not follow the doctor's instructions or recommendations were also risk factors.

People factors: staff and caregivers. In all cases, observation negligence was a risk factor, and appropriate help was not provided because a patient's ambulation was not discovered or did not find the situation that the fall risk was high. In addition, fall-prevention activities such as patient and guardian education and distribution of instructions were absent. Most patients were in the high-risk group for falls due to advanced age and because they were in need of assistive devices to walk. However, inadequate attention was paid to these patients such as classifying them into a high-risk group, providing fall-prevention methods or providing education on the matters that required attention.

			1	2	3	4	5	6	7
People Factors	Patients	Age	√	√	√				√
		Pain				√	√	√	
		Name of disease (related)	√	√	√	√	√	√	
		Activities and functions	√	√	√		√		
		Urination disorder	√						
		Cognitive function impairment	√	√	√		√	√	
		Fall history					√	√	
		Noncooperation of patient	√	√	√	√		√	
		Blood transfusion				√			
		Sleep endoscopy state							√
		Noncooperation of family	√		√	√		√	
	Staff and caregivers	Observation negligence	√	√	√	√	√	√	√
		No fall prevention activity			√	√	√	√	√
		Negligence in managing high risk group for fall	√	√	√	√		√	√
Organizational Factors			Lack of workforce	√	√	√			√
			Lack of training	√	√				
			Negligence in managing high risk group for fall	√	√	√	√	√	√
			Caregiver management negligence	√		√			
			Absence of fall prevention procedure	√	√	√	√	√	
Physical environmental Factors			Emergency room			√			
			Chair without the backrest				√		
			Examination table in the examination room						√

Figure 4. Aggregation of the risk factors.

Organisational factors. The lack of a caregiving workforce allocated to the patient room was a risk factor. Neglecting the management of caregivers such as 24-hour shift work and hiring through an employment agency were also found to be risk factors. In addition, having no institutional procedure in place for when a patient is left alone because the caregiver or guardian had to leave the patient, and absence of training related to falls for health-care providers and the employees of health and medical institutions were assumed to be risk factors. Neglecting the management of the high fall-risk group such as absence of guidelines on the management of the group at the medical institution level and insufficient actions for the group were also risk factors.

Environmental factors. Location characteristics such as the emergency room where observation for fall prevention is generally more difficult was also a risk factor. In addition, a plastic chair without the backrest and the

examination table in the sleep endoscopic examination room were risk factors.

Discussion

This study aimed to determine risk factors from the perspective of a systems approach through malpractice litigation cases related to fall injuries in Korea.

Patient safety incidents are mostly hidden or are resolved internally by the institution because of the burden of administrative procedures, reduced number of patients and social stigma when medical disputes or patient safety incidents are disclosed. Some medical disputes are resolved through a third party such as the Korea Consumer Agency, Korea Medical Dispute Mediation and Arbitration Agency and courts. Currently, the settled medical civil lawsuit judgments among these organisations are the only disclosed information on individual accidents. Of course, even though the current state of affairs according to the medical

department and kind of medical practice are presented among the material provided through the yearbook by the Korea Consumer Agency and the Korea Medical Dispute Mediation and Arbitration Agency, it is difficult to approach this research from the perspective of accident prevention with such limited information.

In addition, the judgment of a medical civil litigation may be the only available material, which contains a record of the court's decision, thus elucidating the cause of the accident and the culpability of the defendant. In particular, if the judgments against a certain medical department or medical practice are analysed after a certain amount of time has passed, it is possible to determine trends in the causes of fall injuries, which are helpful in creating new policies.¹² However, this study was limited because the actual reasons the falls happened depend on the testimony of the parties involved. To complement this, research analysing the cause of falls by using material collected by the Korea Consumer Agency, the Korea Medical Dispute Mediation and Arbitration Agency and the System for Reporting and Learning of Patient Safety Accidents is needed in the future.

Patients fell most frequently in their own room. The average age of the patients was 59.6 years, and four out of the seven incidents happened to patients aged 60 years or older. Five of the patients had a cognitive functioning impairment. These findings are consistent with past literature. One study on the fall-risk factor of patients hospitalised at a general hospital also showed that the patient room was where most fall accidents occur.³⁶ Another study on the elderly admitted to community welfare centres found that age, cognitive functioning impairment, general weakness, dysbasia and drug use were risk factors for falls.¹³ However, this study found that non-cooperation of patients and families, which was not mentioned in previous studies, was a risk factor for falls. This needs to be examined at the institutional and environmental level in the future.

Previous studies have typically focused on intrinsic factors of falls, and have determined that risk factors were mostly patient related. In particular, environmental factors and their subcomponents have been studied less both quantitatively and qualitatively compared to patient-related factors. To reduce such limitations, this study examined environmental and institutional factors through a judgment analysis using a systems approach. Consequently, sublevel causes such as lack of workforce, lack of training, neglecting the management of high fall-risk patients, neglecting the management of caregivers and the absence of a fall-prevention procedure were identified as risk factors at the institutional level. For environmental factors, sublevel causes such as an ineffective emergency room, a chair without a back rest and an examination table with no fall-

prevention devices in the examination room were identified. These institutional and environmental factors should be addressed by policy changes such as employee recruitment and strengthening the standards for medical institution facilities in the future.

As noted above, several measures can improve patient safety, lead to higher-quality medical services and increase patient satisfaction. These include open and clear communication,²⁵ continuous education and training of organisational members,^{25,34} allocation of a sufficient number of qualified people, promoting a cooperative relationship between departments and improving the level of patient-safety recognition.

This study investigated the risk factors of falls by using a framework composed of human, institutional and environmental factors that appeared in medical malpractice judgments. Consequently, it appears that falls do not occur as a result of a single risk factor. Therefore, a systems approach is more effective than a human-resources approach to prevent fall accidents.

Conclusion

The significance of this study lies in analysing the fall-risk factors not only from the perspective of patients and medical staff, but also from both an organisational and environmental perspective. This included addressing intrinsic and extrinsic factors that existed in medical civil litigation judgments. To prevent fall accidents, institutional policy that can systemically help avoid human errors should be prepared rather than taking a human resource-centred approach that puts too much reliance on patients and medical staff to avoid accident occurrence.

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Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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