

PERIPHERAL VENIPUNCTURE PRACTICES PERFORMED BY NURSING PROFESSIONALS IN A UNIVERSITY HOSPITAL

Práticas de venopunção periférica dos profissionais de enfermagem em um hospital universitário

Prácticas de venopunción periférica de profesionales de enfermería en un hospital universitario

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ABSTRACT

Objective: The study's main purpose has been to characterize the peripheral venipuncture practices performed by nursing professionals providing care to pediatric and geriatric patients in a Brazilian Southern university hospital. **Methods:** It is a descriptive and observational study with a quantitative approach, which was performed in a Brazilian Southern university hospital over the period from December 2015 to June 2016, counting with 14 nursing professionals who were performing peripheral venipuncture in children and elderly people at the study's data collection time. **Results:** A total of 20 observations were made for the elderly group and 5 for the pediatric group. During all observations there was some divergence with the theoretical orientation that could result in harm to the patient and/or professional. **Conclusion:** By carrying out this study, it was noticed a variation of the technique and divergences between the practiced actions, therefore, underlining the importance of defining standard procedures and techniques based on scientific reasoning to promote patient safety.

Descriptors: Nursing, Patient safety, Peripheral venous catheterization, Pediatrics, Geriatrics.

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RESUMO

Objetivo: Caracterizar as práticas de punção venosa periférica executadas pelos profissionais de enfermagem no cuidado aos pacientes pediátricos e geriátricos em um hospital universitário do sul do país. **Método:** Quantitativo, observacional descritivo. Realizado em um hospital universitário da região sul do país, de dezembro de 2015 a junho de 2016, com 14 profissionais da equipe de enfermagem durante a realização da prática de punção venosa periférica em crianças e idosos. **Resultados:** Realizou-se 20 observações para o grupo de idosos e 5 para o grupo pediátrico, e em todas as observações houveram alguma divergência com a orientação teórica que poderia resultar em um dano ao paciente e/ou profissional. **Conclusão:** Ao realizar esse estudo, percebeu-se uma variação da técnica e divergências entre as ações praticadas, destacando a importância da padronização e desenvolvimento de técnicas a partir de fundamentação científica para promoção da segurança do paciente.

Descritores: Enfermagem, Segurança do paciente, Cateterismo Venoso Periférico, Pediatria, Geriatria.

RESUMEN

Objetivo: Caracterizar las prácticas de punción venosa periférica que realizan los profesionales de enfermería en la atención de pacientes pediátricos y geriátricos en un hospital universitario del sur del país. **Método:** cuantitativo, observacional, descriptivo. Realizado en un hospital universitario de la región sur del país, de diciembre de 2015 a junio de 2016, con 14 profesionales del equipo de enfermería durante la práctica de venopunción periférica en niños y ancianos. **Resultados:** se realizaron 20 observaciones para el grupo de ancianos y 5 para el grupo de pediatría, y en todas las observaciones hubo alguna divergencia con la orientación teórica que podría resultar en daño al paciente y / o profesional. **Conclusión:** Al realizar este estudio se observó una variación de la técnica y divergencias entre las acciones realizadas, destacando la importancia de la estandarización y el desarrollo de técnicas con fundamento científico para promover la seguridad del paciente.

Descriptor: Enfermería, Seguridad del paciente, Cateterismo venoso periférico, Pediatria, Geriatria.

INTRODUCTION

Nursing, as both art and science, consists of theories and research aimed at evidence-based practice, defining justifications for actions and offering a focus on nursing care.¹

Science is understood as knowledge and art as a skill, we have nursing that combines technical capacity with dignity, ethics, and the singularity of care. In addition to art, nursing as science calls for reflection, uniting knowledge and doing, based on theories. So, aiming patient-oriented assistance, aimed at health promotion, prevention and recovery.²

The World Health Organization (WHO) has proposed the International Classification of Patient Safety (ICPS) which defines patient safety as reducing the risk of unnecessary damage or injury to which the individual under care is exposed. It is known that, in a hospital environment, the patient is subject to several situations that threaten their safety.³

In the care of hospitalized patients, several invasive procedures necessary for the performance of exams,

administration of medication, identification of diagnosis, and treatment are present daily. Among these is peripheral venipuncture, which, when performed according to the recommended technique, is related to the patient's clinical improvement.⁴

Regarding the peripheral venipuncture, the elderly and children populations stand out as the age groups at risk of procedure failure. Given the anatomical and physiological conditions, such as skin and venous fragility, reduced subcutaneous tissue, dryness, flaccidity, and reduced skin thickness, as for the vascular structure of elderly people, there is still hardening and thickening of the vascular system. Thus, the exhaustion of the possibilities of peripheral venous access during hospitalization is alarming to health professionals.⁵⁻⁷

Most of the time the care service is successfully provided. Nonetheless, a work team well prepared and trained can still make mistakes, because it is part of human nature. Considering that the nurse stays most of the time in the inpatient unit and contact with the patient, therefore, he is one of the main professionals engaged in risk management. The risks increase when practices, procedures, protocols, routines, techniques and/or equipment used by workers are inadequate, complex and unsafe in their very nature.⁸

Bearing in mind the aforementioned, safe caring practices are the most significant initiative in preventing and/or reducing trauma, being the focus of attention in hospital care in general. Nursing needs to transform the discourse of research on existing safety today, into a solid path towards safer care tomorrow, adopting practices that generate reliable results that make a difference in patient safety, minimizing risks and alternating the current situation of undesirable events.¹

A resource that can be used to minimize risks when dealing with venipuncture practices is the application of a protocol that assists to safe, fast, and effective execution.

Considering the importance of peripheral venipuncture and the need to assess the execution of such procedure, aiming to improve the quality of care and ensure the safety of patients and professionals, this study meant to characterize the peripheral venipuncture practices performed by nursing professionals providing care to pediatric and geriatric patients in a Brazilian Southern university hospital.

METHODS

It is a descriptive and observational study with a quantitative approach. The study field were the Pediatric Inpatient, Pediatric Emergency, and Adult Emergency Units from a Brazilian Southern university hospital. Data collection took place from December 2015 to June 2016. Participants were observed for 3 hours and in all periods, morning, afternoon and night, according to the scale and shift change of nursing professionals, so that everyone who

agreed to participate had the opportunity to be observed.

The study followed the precepts addressed by the Resolution No. 466/2012 from the National Health Council and was evaluated and approved by the Ethics Committee in Research with Human Beings through submission to *Plataforma Brasil* under the *Certificado de Apresentação para Apreciação Ética* (CAAE) [Certificate of Presentation for Ethical Appreciation] No. 45049515.0.0000.0121 and the legal opinion No. 1.226.619. All participants expressed their acceptance of participation by signing the Informed Consent Form (ICF).

The study population was 32 nursing professionals, including registered nurses and nurse technicians, of whom 14 constituted the final sample due to the following inclusion criteria: availability during the data collection period and performing the puncture technique in children within the age group from 0 to 14 years old and/or elderly people over 65 years old during this period, and as an exclusion criterion, not having signed the Free and Informed Consent Form prior to the technique. The collection was concluded according to the pre-established time for this and observation of all professionals available for the study.

Preceding the data collection, a bibliographic review was carried out, searching the following databases: the *Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS)* [Latin-American and Caribbean Literature in Health Sciences]; Scientific Electronic Library Online (SciELO); Medical Literature Analysis and Retrieval System Online (MEDLINE) and bibliography addressing peripheral venipuncture,^{9,10} in order to provide theoretical support for the construction of the instrument for observing peripheral venipuncture practices, taking as an orientation the performance of the procedure according to the reasoned technique. So, a guiding material was developed to lead data collection, which is shown in **Figure 1**.

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| 23. Orienting the patient regarding the care procedure with peripheral venipuncture; |
| 24. Recording the procedure performed in the patient's medical record. |

Figure 1: The guiding material to perform the peripheral venipuncture procedure, which was made according to the bibliography and publications available in the databases.

The data collection instrument consisted of two parts, the first sought to characterize the profile of the subjects by gender, age, professional category, time since graduation, length of experience in health care services, daily working hours, and length of service at the institution. The second part was intended to the researchers, so they could follow the step by step of each item performed by each nurse and/or nurse technician during the procedure.

Data collection took place by placing the researcher in the field and was conceived in two stages: observation of the procedures authorized by the participant; and collecting profile information later.

Data analysis occurred based on the researcher's observation of whether or not the professional had performed the step-by-step procedure for carrying out the procedure indicated in the referral literature and then made a comparative and descriptive analysis of the results.

RESULTS

In total, 25 observations were made, 20 for the elderly group, and 5 for children, then totaling 14 professionals.

Initially, the data related to the participants' profiles were descriptively analyzed and demonstrated by averages of the absolute number and percentage represented in

Table 1.

Table 1 – Profile of professionals working with peripheral venipuncture in a Brazilian Southern university hospital – December 2015 to June 1016.

ACTIONS
01. Checking the medical prescription;
02. Performing hand washing before the procedure;
03. Preparing all the material to be used in the peripheral venipuncture;
04. Explaining to the patient the procedure to be performed;
05. Preparing the intravenous device to be used;
06. Selecting the location to be punctured;
07. Positioning the selected limb for puncture and supporting it in surface;
08. Positioning the tourniquet approximately 15 cm of distance from the desired location;
09. Wearing procedure gloves at the time of venipuncture;
10. Performing antisepsis with alcoholic chlorhexidine or 70% alcohol in the backward direction;
11. Distending the skin at the time of puncture;
12. Introduce the needle with bevel upwards, with an angle of 15° or parallel to the skin surface;
13. Observing venous reflux through the intravenous device chamber;
14. Releasing the tourniquet;
15. Performing system closure, connecting to the equipment by aseptic technique;
16. Fixing the intravenous device;
17. Infusing the prescribed solution;
18. Observing the patient's complaints and reactions;
19. Discarding the material;
20. Removing procedure gloves and dispose of them in suitable waste;
21. Performing hand washing;
22. Adding the date on the device fixation and labeling the 0.9% saline solution;

Variable	N (14)	%	
Gender	Female	11	78.5
	Male	03	21.5
	Total	14	100
Age	18 to 25 years old	01	7.2
	26 to 35 years old	10	71.4
	36 to 45 years old	02	14.2
	≥46 years old	01	7.2
	Total	14	100
Professional category	Nurse	01	7.2
	Nurse technician	13	92.8
	Total	14	100
Time since graduation	1 to 5 years	04	28.5
	6 to 10 years	05	35.8
	11 to 15 years	04	28.5
	≥16 years	01	7.2
	Total	14	100

Length of experience in health care services	1 to 5 years	05	35.7
	6 to 10 years	05	35.7
	11 to 15 years	03	21.5
	≥16 years	01	7.1
	Total	14	100
Daily working hours	6 hours	10	71.4
	12 hours	04	28.6
	Total	14	100
Length of service at the institution	1 to 4 years	06	42.8
	5 to 9 years	07	50
	≥10 years	01	7.2
	Total	14	100

In order to analyze the practices carried out by these professionals, a survey was performed addressing the actions that either corresponded or not to the various observed actions, these being compared to the pre-established script. The numbers analyzed here are no longer relevant to the number of observed professionals (14), but to the number of observed venipuncture practices (25). Such data are listed by absolute numbers and percentages in **Table 2**.

Table 2 – Actions derived from the performance of professionals working with peripheral venipuncture in a Brazilian Southern university hospital –

ACTIONS	N (25)	%
01. Checked the medical prescription	25	100
02. Performed hand washing before practice	12	48
03. Applied alcohol gel before practice	05	20
04. Prepared all the material to be used for peripheral venipuncture	22	88
05. Explained to the patient the procedure to be performed	17	68
06. Prepared the intravenous device to be used	25	100
07. Selected the location to be punctured	25	100
08. Positioned the member selected for puncture and supported it on the surface	23	92
09. Asked the patient to keep the arm extended to be punctured	02	08
10. Positioned the tourniquet suitable for peripheral venipuncture approximately 15 cm away from the desired location	18	72
11. Used procedure glove as a tourniquet for peripheral venipuncture	06	24
12. Did not use tourniquet	01	04
13. Put on procedure gloves at the time of venipuncture	22	88
14. Performed asepsis with alcoholic chlorhexidine or alcohol 70	25	100
15. Stretched the skin at the time of puncture	23	92
16. Introduced the needle with bevel upwards, parallel to the skin surface	25	100
17. Observed venous reflux through the intravenous device chamber	25	100
18. Loosened tourniquet/glove	24	96
19. Closing the system, connecting to the equipment, using aseptic technique	25	100
20. Fixed intravenous device	25	100
21. Infused the prescribed solution	25	100
22. Observed patient's complaints or reactions	12	48
23. Discarded the material	25	100

24. Removed procedure gloves and disposed them in an adequate trash	22	88
25. Performed hand washing	25	100
26. Added the date when fixing the device and labeled the 0.9% saline solution	13	52
27. Oriented the patient regarding the care procedure with peripheral venipuncture	19	76
28. Recorded the procedure performed in the patient's medical record	25	100

DISCUSSION

The predominant professional profile of women is in line with the historical participation of women in nursing, which demonstrates that feminization is a strong characteristic of the health sector, since the majority of the workforce is composed of women over 85.1% of the entire contingent. Nevertheless, there is a growing presence of men (14.4%) in such category, thus affirming the appearance of a new trend.¹¹

The nursing team is mostly made up of nursing technicians and assistants, representing 77% of the nursing staff in the team, a characteristic related to accessibility to higher education in Brazil, which is still limited to the minority, strengthening the education at the high school level.¹¹

From the perspective of the time elapsed since professional training, those who declare between six and ten years of training were more notorious. The period of service also stands out in terms of bond stability, since 50% of professionals remain in the same institution for 5 to 10 years. Therefore, it is inferred that the time since graduation and professional experience offers the patient a safe nurse with greater knowledge, maturity and professional experience.¹²

Considering the observed peripheral venipuncture practices, the non-conformity regarding hand hygiene can be emphasized as one of the alarming data, as this was performed before practice in only 48% (12) of the cases, and the alcoholic antiseptics performed in only 20% (5) procedures. The practice of hand hygiene is recognized as the most effective measure in preventing infections related to health care, a fact demonstrated by studies that show a reduction in the transmission of pathogens in parallel with the increase in professionals' adherence to the procedure.¹³

This makes us reflect on the number of care procedures performed on different patients, without proper hand hygiene. In 2005, the World Alliance for Patient Safety, from the WHO, proposed the first Global Patient Safety Challenge, called 'Clean care is safer care', having as one of its main objectives the improvement of Hand Hygiene practices, aiming at preventing infections and promoting the safety of patients and professionals.¹⁴

Another issue identified by this study is related to the preparation of the material and use of the appropriate material, pointing out that the necessary materials were properly separated for 88% (22) of the observed venous

punctures. This preparation avoids comings and goings during the procedure, due to the forgetfulness of some material in the tray, since this creates insecurity for the customer, creating an image of disorganized service. In addition, it contributes to the professional's physical wear and prolongs the time to perform the procedure.¹⁵

It was also identified in this study that 96% (24) of the venipunctures performed had the use of a tourniquet method, but in 24% (06) situations the specific material was not used, but a glove to perform the tourniquet and 72% (18) did not position in the appropriate place.

The use of a tourniquet is indicated at the position of approximately 15 centimeters from the catheter insertion site, to improve engorgement of the vein and provide a better view. After the puncture, it is necessary to release the tourniquet, since it decreases the circulating blood volume, which can cause the loss of the punctured access. And, before releasing the tourniquet, the presence of blood return in the body of the catheter should be observed as a sign of correct introduction. So that the appropriate material (tourniquet) is ergonomic, facilitating the visualization of the site and the performance of the procedure correctly, especially when it is released, also avoiding possible injuries to the patient's skin or discomfort and anxiety.¹⁶

In the puncture procedure, there are also steps that aim to protect professionals, one of them is the use of procedure gloves, the research identified that not all procedures were performed using them. The use of gloves is recommended whenever there is a risk of contact with contaminating residues such as body fluids, which in the situation of the puncture procedure there is a risk of direct contact with blood, which can generate contamination of professionals with pathogens.¹⁷

Among the main divergences found in the literature is the insertion angle of the peripheral catheter. Some studies claim that the catheter insertion angle should be 10 to 30°. In contrast, other studies report that the insertion angle must be between 5 and 30°, depending on the depth of the vein, in other words, the more superficial the vein, the smaller the insertion angle, requiring the professional's critical knowledge for the correct execution of this step. And all corroborate with the position of the bevel that must be positioned upwards.¹⁸

Another point is the education of the patient, in which only 76% (19) carried out the orientations which are important to collaborate in the therapeutic process, so that when explaining the procedure, the objective and the subsequent care, the patient is empowered to be active in your care, helping to prevent possible complications that, if diagnosed in advance, can prevent infections, medication errors or an unnecessary new puncture. Health professionals have an ethical and technical obligation to request authorization and verbalize the procedures that will be performed on patients.¹⁸

The lack of identification in the puncture is another

data evidenced in this study, where in 48% (12) of the procedures, the identification and labeling of the 0.9% saline solution to be infused and of the puncture was not performed. This aspect is part of the patient identification requirements, which is one of the priorities and goals of the WHO for patient safety and one of the main reasons for the occurrence of errors, dating and identifying the puncture allows to check the validity of the same and in case of any complication, identify the professional who performed the procedure to identify the reasons and act quickly to avoid complications.¹⁹

CONCLUSIONS

Bearing in mind the aforesaid, by comparing the techniques performed in practice with the defined standards according to the referral protocols on quality of care and patient safety or among the professionals of the same sector and institution, divergences were identified in the execution of peripheral venipuncture.

Such divergences show the lack of standard procedures interfering with the evaluation of the actions that are being carried out and even of their quality standard. Thus, there is a need to create strategies that allow directing practices following a standard procedure that enables safe development and conscious assessment.

Educational activities and periodic professional training are valuable and are the guideline for the formation of a critical health team, aware of their role in the face of peripheral venipuncture. Consequently, it is necessary to intensify educational activities that promote reflection, updating, and behavior change with a view to the quality of performance of health professionals.

Therefore, it was understood that other studies are necessary in order to assist professionals with the decision-making process and support the implementation of new care technologies.

It is worth underlining the impact of patient safety on the quality of nursing care. The reduction of risks and damages and the incorporation of good practices favor the effectiveness of nursing care and its safe management.

It also highlights the importance of awakening professional awareness to improve health care safety with a global commitment from the entire team.

So, in order to avoid the occurrence of either errors or complications within the process of intravenous therapy as much as possible, it is essential to create a protocol that supports this practice.

Hence, it is required for nurses to combine theoretical knowledge and technical skills to develop protocols for nursing care aimed at patient safety.

REFERENCES

1. Arruda LP, Gomes EB, Diogo JL, Freitas CHA. Evidências Científicas do Cuidado de Enfermagem acerca da Segurança do Paciente: Revisão Integrativa. *Rev enferm UFPE online* 2014; 8(7):2107-14 DOI: 10.5205/reuol.5963-51246-1-RV.0807201436
2. Silva MJP. Nursing science. *Acta paul. Enferm.* [Internet]; 2012 [cited 2017 Dez 19]; 25(4). Available from: <http://dx.doi.org/10.1590/S0103-21002012000400001>
3. Siman AG, Brito MJM. Changes in nursing practice to improve patient safety. *Rev Gaucha Enferm* [Internet]; 2016 [cited 2017 Dez 19]; 37(esp):1-9. Available from: <http://dx.doi.org/10.1590/1983-1447.2016.esp.68271>
4. Cunha GL, Silva LF. Lúdico como recurso para o cuidado de enfermagem pediátrica na punção venosa. *Rev Rene* [Internet]; [cited 2017 dez 19]; 13(5): 1056-65. Available from: <http://www.revistarene.ufc.br/revista/index.php/revista/article/view/49/pdf>
5. Sena EMAB, Lúcio IML, Costa LC, Mascarenhas MLVC, Souza MG, Moreira RTF. Peripheralvenipuncture in premature newborns: procedure management and patients safety. *RevEnfermUfpe* [Internet]; 2015 [cited 2017 dez 19]; 9(10):9431-9. Available from: 10.5205/reuol.7944-69460-1-SM.0910201502
6. Negri DC, Avelar AFM, Andreoni S, Pedreira MLG. Predisposing factors for peripheral intravenous puncture failure in children. *Rev. Latino-am. Enfermagem* [Internet]; 2012 [cited 2017 dez 19]; 20(6). Available from: <http://dx.doi.org/10.1590/S0104-11692012000600009>
7. Oliveira DFL, Azevedo RCS, Gaiva MAM. Guidelines for intravenous therapy in elderly: a bibliographic research. *J. Res.: Fundam. Care. Online* [Internet]; 2014 [cited 2017 dez 19]; 6(1):86-100. Available from: 10.9789/2175-5361.2014v6n1p86
8. Fassini P, Hahn GV. Riscos à segurança do paciente em unidade de internação hospitalar: concepções da equipe de enfermagem. *RevEnferm UFSM*. 2012; 2(2): 290 - 9.
9. Hinkle, Janice L.; Cheever, Kerry H. *Brunner&Suddarth: tratado de enfermagem médico-cirúrgica*. In: *Brunner&Suddarth: tratado de enfermagem médico-cirúrgica*. 2016.
10. Potter, P. A; Perry, A. G. *Fundamentos de Enfermagem*. Traduzido por Maryza Ritomyet al. Rio de Janeiro. Elsevier, 2013.
11. Machado MH, Filho WA, Lacerda WF, Oliveira E, Lemos W, Wermelinger M, et. al.. General characteristics of nursing: the partner profile demographic. *Enferm. Foco* [Internet]. 2016 [cited 2017 Dez 19]; 7(esp):9-14. Available from: <https://doi.org/10.21675/2357-707X.2016.v7.nESP.686>
12. Rossaneis MA, Gabriel CS, Haddad MCFL, Melo MRAC, Bernardes A. Quality indicators used in the nursing services of teaching hospitals. *Rev. Eletr. Enf.* [Internet]; 2016 [cited 2017 Dez 19]; 16(4):769-776. Available from: 10.5216/ree.v16i4.22956
13. Sakihama T, et al. Hand Hygiene Adherence Among Health Care Workers at Japanese Hospitals: A Multicenter Observational Study in Japan. *Journal of Patient Safety*; March 2016; 12 (1): 11-7. doi: 10.1097/PTS.0000000000000108
14. Belela-Anacleto ASC, Sousa BEC, Yoshikawa JM, Avelar AFM, Pedreira MLG. Higienização das mãos e a segurança do paciente: perspectiva de docentes e universitários. *Texto contexto - enferm.* [Internet]. 2013 Dec [cited 2017 Dec 20]; 22(4): 901-8. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072013000400005&lng=en <http://dx.doi.org/10.1590/S0104-07072013000400005>.
15. Prates DO, Silva AEBC. Interruptions of activities experienced by nursing professionals in an intensive care unit. *Rev. Latino-Am. Enfermagem*. 2016; 24:2802. [Access 20 dez 2017]; Available in: <http://www.redalyc.org/pdf/2814/281449727031.pdf>. DOI: <http://dx.doi.org/10.1590/1518-8345.0997.2802>
16. Alves LT, Machado PRF, Martins ERC. O acadêmico de enfermagem e a prática de punção venosa periférica. *RevSaúde CorpAmbiCuid* [periódico na Internet]. 2013 [cited 2017 Dec 20]; 1(1): 1-18. Available from: <http://www.rescac.com.br/rescac/index.php/ojs/article/view/19/23>
17. Chen S, Yao J, Chen J, Liu L, Miu A, Yulan J, et. al.. Knowledge of "Guidelines for the prevention of intravascular catheter-related infections (2011)": A survey of intensive care unit nursing staffs in China. *International Journal of Nursing Sciences* [Internet]. 2015 [cited 2017 Dez 19]; 2(4):383-8. Available from: <https://doi.org/10.1016/j.ijnss.2015.10.002>
18. Oliveira RM, Leitão IMTA, Silva LMS, Figueiredo SV, Sampaio RL, Gondim M. Estratégias para promover segurança do paciente: da identificação dos riscos às práticas baseadas em evidências. *Esc Anna Nery* 2014; 18(1):122-9.
19. Tres DP, Oliveira JLC, Vitun DW, Alves SR, Rigo DFH, Nicola AL. Qualidade da assistência e segurança do paciente: avaliação por indicadores. *Cogitare Enferm*. 2016; 21 (esp): 1-8

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