




Direct cost of procedures for phlebitis treatment in an Inpatient Unit*

Custo direto dos procedimentos para o tratamento do evento adverso flebite em Unidade de Internação Clínica

Costo directo de los procedimientos para el tratamiento del evento adverso de flebitis en una Unidad de Hospitalización Clínica

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ABSTRACT

Objective: To identify the average direct cost of the procedures performed for phlebitis treatment in patients in an Inpatient Unit and estimate the costs of the procedures performed to treat phlebitis in this unit. **Method:** A quantitative, exploratory-descriptive, single-case study. Initially, records of the procedures performed for phlebitis management were identified. Then, the cost was calculated by multiplying the execution time (timed using a chronometer) spent by nursing technicians by the unit cost of direct labor, added to the cost of materials in 2017. **Results:** 107 phlebitis referring to 96 patients were reported. To treat the different grades of phlebitis, three procedures were carried out "application of ointment of chamomile flower extract"; "Compress application"; "Peripheral venous access installation". "Peripheral venous access installation with *Íntima*[®] catheter" corresponded to the most expensive procedure (US\$ 8.90-SD=0.06). Considering the record of the execution of 656 (100%) procedures, the total average direct cost estimate corresponded to US\$ 866.18/year. **Conclusion:** Knowledge about the costs of procedures can support decision making that increase allocation efficiency of consumed resources.

DESCRIPTORS

Inpatients; Catheterization, Peripheral; Phlebitis; Nursing Care; Cost Control; Costs and Cost Analysis.

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INTRODUCTION

The publication *To err is human* made a great impact in 1999, when it released the estimate that around 44,000 to 98,000 deaths occurred annually in the United States of America due to failures in health services⁽¹⁾. In 2004, the World Health Organization (WHO), through the World Alliance for Patient Safety⁽²⁾, identified priorities in the field of patient safety and proposed measures to reduce risks and occurrence of adverse events (AE)⁽³⁻⁴⁾. AE are a major concern for health organizations as they result in damage to patients and, consequently, high morbidity and mortality⁽³⁾. The Brazilian National Patient Safety Program⁽³⁾ (PNSP – *Programa Nacional de Segurança do Paciente*) was established in order to contribute to the quality of health care in all services nationwide.

The financial impact due to security breaches is significant. It is estimated that approximately 15% of total hospital expenditure is due to AEs, many of which are preventable. AE incidence, particularly preventable ones, underestimate the true extent of the damage to patients. The real financial impact and harm to patients is believed to be considerably greater⁽⁵⁾. In 2017, hospital health care AEs consumed between R\$ (BRL – Brazilian *Reais*) 5.2 billion and R\$ 15.6 billion of private health in Brazil⁽⁶⁾.

Health services are expensive⁽⁷⁾ and the increase in costs has received attention from health managers and services⁽⁸⁾. In hospital organizations, nurses are responsible for making decisions related to structures and processes; therefore, it is necessary to have knowledge in several areas. Thus, knowing about cost management will assist in decision making⁽⁹⁾.

Among preventable AEs, phlebitis occurs between 20 and 70% of patients undergoing intravenous therapy (IVT)⁽¹⁰⁾, with the Infusion Nursing Society⁽¹¹⁾ declaring an acceptable rate for AE occurrence of 5% or less. Phlebitis, in its different grades, is associated with a longer hospital stay and a greater number of venous accesses per patient⁽¹²⁾, increasing the expenditure of human and material resources whose costs are generally unknown by health organizations.

It is emphasized that knowledge of the costs arising from nursing care provided in health services contributes to redefining institutional priorities and allocating resources efficiently⁽¹³⁾.

In Brazil, studies on the costs of AE for health services are scarce, so knowing the financial impact associated with phlebitis occurrence can contribute to improve care and management processes, enabling safe care and financial balance. In this regard, the objective of this study was to identify, in 2017, the average direct cost of all procedures performed for phlebitis treatment AE in inpatients and to estimate the cost of the procedures performed for phlebitis treatment in this unit.

METHOD

TYPE OF STUDY

This is a quantitative, exploratory-descriptive, retrospective, documentary and single-case study⁽¹⁴⁾.

SETTING

Study field hospital (SFH) is a special general hospital, private, located in the city of São Paulo. SFH has 512 hospital beds, 38 of which are destined for the Inpatient Unit (IU), which is the study setting.

All electronic forms related to notification of phlebitis occurrence in inpatients, from January to December 2017, included in the SFH information system, were selected.

SAMPLE DEFINITION

Analysis of the aforementioned electronic forms indicated that “Chamomile flower extract ointment application”, “compress application” and “peripheral venous access installation (PVA)” were performed, mostly, by nursing technicians, for the treatment of different grades of notified phlebitis.

Noting that these three procedures were properly standardized in SFH and verifying that the nursing technicians performed them exactly as recommended in the institutional care protocol, with no variations, a number of five observations from each procedure was established by a statistical professional for Grades 1, 2, 3 and 4 phlebitis, which would total 20 observations per procedure. However, as Grade 4 phlebitis did not occur, during the data collection period, 15 observations were obtained per procedure.

Included in the sample of this study were all IU patients with phlebitis notified or observed, during the nurses’ daily clinical assessment, and informed to the data collector, between April and September 2018.

DATA COLLECTION

Data collection was conducted by a nurse from IU, one of the authors of the present study, upon invitation to participate and accepted by all nursing technicians and inpatients in that unit who were submitted to the “Chamomile flower extract ointment application”, “Compress application” and “PVA installation”, by signing of the Informed Consent Form (ICF).

To support the average direct cost (ADC) calculation, an instrument was developed to record the time spent carrying out procedures and the consumption of materials, medicines, and solutions. From the moment the nursing technician gathered the material to carry out the procedure until the moment of disposal of the inputs used was timed using a chronometer.

This micro-costing study was based on direct cost use, considered as all those that can be identified and clearly quantified⁽¹³⁾. Direct labor (DL), from the perspective of this framework, refers to personnel who work directly on a product or service provided, as long as it is possible to measure the time spent and the identification of who performed the work. It is composed of wages, social charges, holiday provisions, and Christmas bonus (thirteenth salary)⁽¹³⁾.

The SFH People Management provided the average wages of IU's nursing technicians to calculate the unit cost of DL for this professional category, whose professionals performed a workload of 180 hours/month. The unit costs of materials, medicines and solutions related to replacement of the last three acquisitions and/or of the last year were made available by the Hospital's Purchasing, Pharmacy, and Warehouse Sectors.

Therefore, the direct cost of "Chamomile flower extract ointment application", "compress application", and "PVA installation" was calculated by multiplying the execution time (timed using a chronometer) spent by nursing technicians by the unit cost of direct labor, added to the cost of materials, solutions, and medicines.

The performance of a given procedure entails the consumption of varying quantities of inputs, making it possible to establish the value of the ADC [$\overline{C(P)}$] by adding the ADC of the materials [$\overline{C(P)_{mat}}$], the ADC of the solutions/medicines [$\overline{C(P)_{sol}}$] and the DL ADC [$\overline{C(P)_{mob}}$] (equation 1)⁽¹⁵⁾:

$$\overline{C(P)} = \overline{C(P)_{mat}} + \overline{C(P)_{sol}} + \overline{C(P)_{mob}} \quad (1)$$

$\overline{C(P)_{mat}}$ is obtained by the sum of the average costs [$\overline{Cm_k}$] of each of the materials [k] used in the procedure (equation 2)⁽¹⁵⁾:

$$\overline{C(P)_{mat}} = \sum_{k=1}^n \overline{Cm_k} \quad (2)$$

According to equation 3, the ADC of each material is obtained by the product of the average quantity of this material [$\overline{qm_k}$] by its average unit price [$\overline{Pmu_k}$]:

$$\overline{Cm_k} = \overline{qm_k} \cdot \overline{Pmu_k} \quad (3)$$

Replacing equation (3) in equation (2), a more detailed equation is obtained for $\overline{C(P)_{mat}}$ (equation 4)⁽¹⁵⁾:

$$\overline{C(P)_{mat}} = \sum_{k=1}^n (\overline{qm_k} \cdot \overline{Pmu_k}) \quad (4)$$

$\overline{C(P)_{sol}}$ is obtained by the sum of the average costs [$\overline{Cs_k}$] of each of the solutions/medicines consumed in the procedure (equation 5)⁽¹⁵⁾:

$$\overline{C(P)_{sol}} = \sum_{k=1}^n \overline{Cs_k} \quad (5)$$

According to equation 6, the ADC of each solution/medicine is obtained by the product of the average quantity of this solution/medicine [$\overline{qs_k}$] by its average unit price [$\overline{Psu_k}$]:

$$\overline{Cs_k} = \overline{qs_k} \cdot \overline{Psu_k} \quad (6)$$

Replacing equation (6) in equation (5), a more detailed equation is obtained for $\overline{C(P)_{sol}}$ (equation 7)⁽¹⁵⁾:

$$\overline{C(P)_{sol}} = \sum_{k=1}^n (\overline{qs_k} \cdot \overline{Psu_k}) \quad (7)$$

$\overline{C(P)_{mob}}$ is obtained by the sum of the average costs [$\overline{Ch_c}$] of each professional category involved in the procedure (equation 8):

$$\overline{C(P)_{mob}} = \sum_{c=1}^n \overline{Ch_c} \quad (8)$$

The average cost of each professional category is obtained by the product of the average time dedicated by the category [c] in the procedure [t_c] by the average unit cost of labor [Su_c] of each professional category (equation 9)⁽¹⁵⁾:

$$\overline{Ch_c} = \overline{t_c} \cdot \overline{Su_c} \quad (9)$$

Replacing equation (9) in equation (8), a more detailed equation is obtained for $\overline{C(P)_{mob}}$ (equation 10)⁽¹⁵⁾:

$$\overline{C(P)_{mob}} = \sum_{c=1}^n (\overline{t_c} \cdot \overline{Su_c}) \quad (10)$$

Finally, replacing equations (4), (7) and (10) in equation (1), the following equation 11 is obtained, which allows to determine the $\overline{C(P)}$ ⁽¹⁵⁾:

$$\overline{C(P)} = \sum_{k=1}^n (\overline{qm_k} \cdot \overline{Pmu_k}) + \sum_{k=1}^n (\overline{qs_k} \cdot \overline{Psu_k}) + \sum_{c=1}^n (\overline{t_c} \cdot \overline{Su_c}) \quad (11)$$

Therefore, for the calculation of $\overline{C(P)}$, the average quantity of materials [$\overline{qm_k}$]; the average unit price of each material [$\overline{Pmu_k}$]; the average quantity of solutions/medicines [$\overline{qs_k}$]; the average unit price of each solution/medicine [$\overline{Psu_k}$]; the average time of dedication of each professional category [$\overline{t_c}$]; and the average unit salary of the DL of each professional category [$\overline{Su_c}$]⁽¹⁵⁾.

ANALYSIS AND TREATMENT OF DATA

The collected data were entered into electronic spreadsheets and the variables "DL cost", "cost with material", and "total ADC" were analyzed using position (mean, minimum, maximum) and scale (standard deviation - SD) statistics. To calculate the ADC of procedures, the Brazilian currency (R\$, *reais*) was converted to the US dollar (US\$) at the rate of US\$ 0.26/R\$, based on the quotation of June 8, 2018, provided by the Central Bank of Brazil.

ETHICAL ASPECTS

The research was approved by the Research Ethics Committee of Sociedade Beneficente de Senhoras Hospital-Sírio Libanês, under Opinion 2.500.262, of 2018. According to Resolution 466/12 of the Brazilian National Health Council, one proceeded to data collection in electronic forms of notification of phlebitis occurrence. IU nursing technicians and patients were invited to participate in the study by signing the ICF.

RESULTS

In 2017, 107 phlebitis were reported, referring to 96 inpatients, and most (53.1%) were male; 23% in the 60 to 69

age group; 15.6% in the range of 30 to 39 years; and 15.6% in the 40 to 49 age group.

From April to September 2018, five non-participant observations were made for each of the three procedures, standardized in SFH, for phlebitis treatment: “Chamomile flower extract ointment application”; “Compress application”; “PVA installation”. During this period, Grade 4 phlebitis did not occur, so five observations were made of each procedure for the management of Grade 1 phlebitis; five observations for Grade 2 phlebitis; five observations for Grade 3 phlebitis, totaling 15 observations/procedure. All procedures were performed exclusively by nursing technicians.

Concerning “Chamomile flower extract ointment application”, the duration ranged from 3.00 to 4.00 minutes, with an average of 3.33 (SD=0.49) minutes. Cost with material was US\$ 0.15 (SD=0.00), and DL cost of a nursing technician was US\$ 0.40 (SD=0.06), accounting for 72.7% of the total ADC (US\$ 0.55 - SD=0.06).

The minimum and maximum duration of “compress application” was 3.00 minutes, with an average of 3.00 (SD=0.00) minutes. The ADC with material was US\$ 0.15 (SD=0.00) and DL cost of a nursing technician (US\$ 0.36 - SD=0.00) also prevailed in the composition of the total ADC US\$ 0.51 (SD=0.00), corresponding to 70.6%.

As “PVA installation” was performed using two types of intravascular devices, *Jelco*[®] brand catheter and *Íntima*[®] brand catheter, it was decided to present the respective ADC, separately. “PVA installation with *Jelco*[®] catheter” took from 7.00 to 9.00 minutes, with an average of 7.86 (SD=0.69) minutes. Cost with material represented

US\$ 2.91 (SD=0.00), equivalent to 75.6% of the total ADC (US\$ 3.85 - SD=0.08) and cost with DL of a nursing technician US\$ 0.94 (SD=0.08).

“PVA installation with *Íntima*[®] catheter” presented a time variation between 7.00 and 9.00 minutes, with an average of 8.00 (SD=0.53) minutes. The cost with material impact of US\$ 7.94 (SD=0.00) for the composition of the total ADC was US\$ 8.90 (SD=0.06), accounting for 89.2%.

In the “PVA installation with *Jelco*[®] catheter”, the materials with the highest unit cost were transparent film with slit (7 cm x 7 cm) (US\$ 1.01), closed system connector (US\$ 0.53) and *Jelco*[®] catheter (US\$ 0.32); in “PVA installation with *Íntima*[®] catheter” were *Íntima*[®] catheter (US\$ 4.82), transparent slotted film (7 cm x 7 cm) (US\$ 1.01), and closed system connector (US\$ 0.53).

After analyzing 96 (100%) medical records, it was found that 62 (64.6%) did not contain “compress application” record; 17 (17.7%) were not registered with the “Chamomile flower extract ointment application”; 17 (17.7%) had no record of the procedure for phlebitis treatment, indicating non-conformity between the performance of the procedures recommended in SFH for phlebitis management and the respective documentation.

Table 1 shows that 656 (100%) procedures were recorded, the majority (326 - 49.7%) to treat Grade 2 phlebitis and Grade 3 phlebitis (172 - 26.2%). The most frequently performed procedures in phlebitis treatment were “Chamomile flower extract ointment application” (473 - 72.1%) and “compress application” (93 - 14.2%).

Table 1 – Distribution of procedures for phlebitis treatment in inpatients, in 2017, according to phlebitis grade, type of procedure and quantitative – São Paulo, SP, Brazil, 2019.

Phlebitis grade	Chamomile flower extract ointment application	Compress application	Peripheral venous access installation with <i>Jelco</i> [®] catheter	Peripheral venous access installation with <i>Íntima</i> [®] catheter	Total %
1	94	16	15	16	141 - 21.5%
2	243	43	23	17	326 - 49.7%
3	124	32	8	8	172 - 26.2%
4	12	2	2	1	17 - 2.6%
Total	473	93	48	42	656 - 100.00%

Table 2 shows that the total ADC estimate of the 656 procedures corresponded to US\$ 866.18 in 2017, with emphasis on the impact of the “PVA installation with *Íntima*[®] catheter” ADC (42 procedures - 6.4%), with ADC estimated at US\$ 373.80, and “Chamomile flower extract ointment application” (473 procedures - 72.1%), with ADC estimated at US\$ 260.15.

“PVA installation”, added to two types of catheters used (48 installations with *Jelco*[®] catheter (US\$ 184.80) and 42 with *Íntima*[®] catheter (US\$ 373.80)), had the highest ADC estimate (US\$ 558.60 - 90 procedures), corresponding to 64.5% of the total ADC. Grade 2 phlebitis management had the highest number of registered procedures (326/year) and the highest total ADC (US\$ 395.43 - 45.7%).

Table 2 – Distribution of procedures for phlebitis treatment in inpatients, in 2017, according to phlebitis grade, type of procedure and quantitative and estimate of the average direct cost – São Paulo, SP, 2019.

Phlebitis grade	Chamomile flower extract ointment application	ADC US\$	Compress application	ADC US\$	Peripheral venous access installation with Jelco® catheter	ADC US\$	Peripheral venous access installation with Íntima® catheter	ADC US\$	Total ADC - % US\$
1	94	51.70	16	8.16	15	57.75	16	142.40	260.01 - 30.0%
2	243	133.65	43	21.93	23	88.55	17	151.30	395.43 - 45.7%
3	124	68.20	32	16.32	8	30.80	8	71.20	186.52 - 21.5%
4	12	6.60	2	1.02	2	7.70	1	8.90	24.22 - 2.8%
Total	473	260.15	93	47.43	48	184.80	42	373.80	866.18 - 100.00%

DISCUSSION

In 2017, 96 inpatients were affected by phlebitis, most of them male, a result similar to those found in the literature^(16,17-20). A research carried out in Porto Alegre, Rio Grande do Sul state, investigated the incidence of phlebitis and the associated risk factors, pointing out that 51.5% of these patients were men⁽¹⁷⁾. A general hospital in the Paraíba Valley, São Paulo state identified phlebitis and the main causes for the development of complications, and 54.2% were male⁽¹⁸⁾. In northwestern São Paulo, of the total 176 phlebitis notifications, 70.4% of the affected patients were also male⁽¹⁶⁾.

In this study, most (23%) of patients were aged 60-69 years, followed by 15.6% in the 30-39 years age group and 15.6% in the 40-49 year age group. In Zimbabwe, a research conducted at a medical-surgical clinic unit studied factors related to vascular device and patient for the development of phlebitis. The age of patients ranged from 23 to 80 years old; 28.2% were between 30 and 39 years old; 26.0% were between 40 and 49 years old; 23.9% were older than 60 years old⁽²⁰⁾. A public hospital of the Federal District analyzed all incidents reported between January 2011 and September 2014. Among the patients who had phlebitis, 23.4% were older than 60 years old⁽²¹⁾.

Concerning the conduct described in a phlebitis notification form, in 2017, 48.86% referred to device removal; 16.65% referred to the performance of a new puncture; 17.04% referred to the adoption of other standardized procedures in SFH for phlebitis treatment (“Chamomile flower extract ointment application” and “compress application”). However, 20.45% of the notifications had no records about the procedures adopted.

During the data collection period for the aforementioned procedures costing, there was no occurrence of Grade 4 phlebitis, indicating an improvement in quality of care to patients which avoided the progress of phlebitis to a most advanced stage.

In relation to costs, the ADC composition of “Chamomile flower extract ointment application” and “compress application” was significantly influenced by the DL cost of a nursing technician. In “PVA installation

with Jelco® catheter” and “PVA installation with Íntima® catheter”, the ADC was impacted by the cost with material, with emphasis on the items “transparent film with 7 cm x 7 cm slit (US\$ 1.01)”, “closed system connector (US\$ 0.53)”, “Jelco® catheter (US\$ 0.32)” and “Íntima® catheter (US\$ 4.82)”.

These procedures were performed only by nursing technicians. Mid-level nursing professionals provide direct care to patients. This practice is appropriate, since they are experienced and able to perform these procedures, especially because this category presents a lower value of DL in relation to the nurses’ DL.

It was verified that the total ADC can be more impacted both by the value of the DL of executing professionals, due to time to perform the procedure as well as by material consumption. There was variation according to the procedure object of costing, which was also observed in studies on the direct cost of different nursing procedures^(13,22-24).

The strong influence of material costs on “PVA installation with Íntima® catheter” and “PVA installation with Jelco® catheter” was demonstrated, since the items used in these procedures are more costly. However, it is understood that this cost is a necessary financial investment and the materials of these intravenous devices reduce the risk of phlebitis due to technologies that minimize exposure to blood during puncture, protecting the executing professional from risks associated with contact with biological material.

A study conducted at a 29-bed IU compared the routine change (72-96 hours) of PVA versus replacement, when clinically indicated. After 3 months of the change of practice, the amount of catheter consumed decreased by 14.2% and the impact on costs was US\$ 2,100.00, related to the establishment of PVA. In the same period, the estimated savings on the time expenditure of nursing professionals corresponded to 70 hours⁽²⁵⁾.

In England, a study analyzed the cost-effectiveness of routine catheter replacement (72-96 hours) versus when clinically indicated from the perspective of the National Health Service (NHS). PVA exchange, when clinically indicated, reduced by 21.0% the consumption of material

resources and the execution time (4 minutes) spent by nursing per patient. In the group that replaced PVA every 72-96 hours, the average cost with materials was £ 12.26 (SD= 7.75) and with labor was £ 7.00 (SD=4.87); in the group that performed catheter replacement, when clinically indicated, the average cost with material was £ 10.86 (SD= 6.98) and £ 6.15 (SD= 4.39) with labor. In both groups there was no statistical significance in phlebitis rate and bloodstream infections. The estimated savings with PVA exchange, when clinically indicated in 5 years, would be approximately £40 million for the NHS⁽²⁶⁾.

A study conducted in the pediatric ward of Hospital Universitário Antônio Pedro studied the costs of the Jelco®-type peripheral intravascular device during the hospitalization period and found that infusion failures (phlebitis, extravasation and infiltration) increased the expense with devices due to frequent exchange. The hospital consumed 460 Jelco® catheters, in which, in 52% of cases, between R\$ 25.00 and R\$ 100.00 were spent with PVA; in 21%, an amount greater than R\$ 200.00 was spent; in 16%, the amount spent was less than R\$ 25.00; in 11%, it was spent between R\$ 100.00 and R\$ 200.00⁽²⁷⁾.

Health professionals increasingly need to obtain knowledge about the rational allocation of material resources, to ensure availability, in quantity and quality, to meet the demands of health services without compromising patient care integrity. It is also necessary to know the profile of the unit they manage and which materials and medicines are most consumed, in order to realize adequate provision and promote rational use of available inputs and optimization of resources⁽²⁸⁾.

Considering that some patients underwent more than one procedure of establishment of PVA for continuity of IVT, costs related to the consumption of materials and DL were higher. SFH adopts strategies and makes investments to prevent patients from suffering multiple puncture attempts to establish IVT. It provides using technologies that assist in peripheral venous puncture, recommends joint actions involving patient, family and interdisciplinary team in care and prevention of phlebitis occurrence, having groups highly qualified to perform this procedure in cases of greater complexity.

A study assessed the complications and failures (phlebitis, infection, infiltration, extravasation, occlusion) resulting from infusion therapy, demonstrating the cost of poor quality associated with PVA use in 6,490 patients. There were 3,510 unsuccessful PVA puncture attempts, totaling US\$ 122,850. As there were 566 phlebitis in the period of one month and 396 new punctures were required, the estimated cost of puncturing a new PVA in the analyzed period was US\$ 13,860.00; among the 566 phlebitis, hot compresses were performed for the majority (80%), with an estimated total monthly cost of US\$ 18,080.00⁽²⁹⁾.

A research showed that the high number of devices consumed (460 Jelco® catheters) for PVA establishment in a pediatric hospitalization unit represented 31% of the value transferred by the Brazilian Health System (*Sistema Único*

de Saúde). This number was justified due to the patients' vascular fragility, phlebitis occurrence, infiltration and lack of qualified professionals to perform the procedure, increasing material consumption⁽²⁷⁾.

In a medium-sized hospital, an economic analysis of unsuccessful punctures was performed in a period of one month. Three thousand and five hundred ten punctures were performed without success and each PVA installation procedure had an estimated cost of US\$ 35.00, so the total cost corresponded to US\$ 122,850.00⁽²⁹⁾.

Incomplete records, in most (82.3%) of the medical records analyzed, as well as lack of records (17.7%) compromised the ADC estimate of the procedures performed for phlebitis treatment in inpatients in 2017, configuring itself as a limitation of the present study. SFH is a private hospital and absence and/or failure of records of the procedures performed causes health insurance companies (HIC) to suffer losses.

The lack of records of nursing professionals is one of the main causes of glosses by HIC. If there is no record, it is assumed that there was no performance, compromising the billing of the costs related to the treatment performed⁽³⁰⁾.

The results obtained indicate that investments in best practices to prevent phlebitis in IU contribute to the reduction of costs with this AE treatment in SFH. However, these results also show aspects indicative of documentary fragility causing risks in relation to compliance with ethical-legal aspects and losses in SFH's care revenues.

Finally, with regard to the implications of this study for clinical practice and research, it is understood that knowledge about the costs of the procedures performed in phlebitis treatment will contribute to support decision making, management and care, with quality and safety care for inpatients. Furthermore, the method used can be reproduced in different care contexts, promoting verticalization of scientific production on this theme.

CONCLUSION

The total ADC of "Chamomile flower extract ointment application" corresponded to US\$ 0.55 (SD=0.06) and the ADC total of "compress application", to US\$ 0.51 (SD=0.00). In these procedures, costs with DL of nursing technician of US\$ 0.40 (SD=0.06) and US\$ 0.36 (SD=0.00), respectively, prevailed. The ADC total of "PVA installation with Jelco® catheter" was US\$ 3.85 (SD=0.08) and "PVA installation with Íntima® catheter", US\$ 8.90 (SD=0.06), with predominance of material costs US\$ 7.94 (SD=0.00) and US\$ 2.91 (SD=0.00), following this order.

A total of 656 (100%) procedure records, with the majority (326 - 49.7%) for Grade 2 and Grade 3 phlebitis treatment (172 - 26.2%), have been analyzed. The most commonly performed procedures were "Chamomile flower extract ointment application" (473 - 72.1%) and "compress application" (93 - 14.1%). The ADC total of 656 (100%) procedures for phlebitis treatment corresponded to US\$ 866.18.

RESUMO

Objetivo: Identificar o custo direto médio dos procedimentos realizados para o tratamento do evento adverso flebite em pacientes de uma Unidade de Internação Clínica e estimar o custo dos procedimentos realizados para o tratamento das flebitis nesta unidade. **Método:** Pesquisa quantitativa, exploratório-descritiva, do tipo estudo de caso único. Inicialmente, identificaram-se os registros dos procedimentos realizados para o manejo das flebitis em 2017. Em seguida, o custo foi calculado multiplicando o tempo (cronometrado) despendido por técnicos de enfermagem pelo custo unitário da mão de obra direta, somando-o ao custo dos materiais. **Resultados:** Foram notificadas 107 flebitis referentes a 96 pacientes. No tratamento dos diferentes graus de flebite, realizaram-se três procedimentos: “aplicação de pomada de extrato de flor de camomila”; “aplicação de compressas”; “instalação de acesso venoso periférico”. A “instalação de acesso venoso periférico com cateter Íntima[®]” correspondeu ao procedimento mais oneroso (US\$ 8,90-DP=0,06). Considerando o registro da execução de 656 (100%) procedimentos, a estimativa do custo direto médio total correspondeu a US\$ 866,18/ano. **Conclusão:** O conhecimento sobre os custos dos procedimentos pode subsidiar tomadas de decisão que incrementem a alocação eficiente dos recursos consumidos.

DESCRIPTORIOS

Pacientes Internados; Cateterismo Periférico; Flebite; Cuidados de Enfermagem; Controle de Custos; Custos e Análise de Custo.

RESUMEN

Objetivo: Identificar el costo directo promedio de los procedimientos realizados para el tratamiento del evento adverso de flebitis en pacientes de una Unidad de Hospitalización Clínica y estimar el costo de los procedimientos realizados para el tratamiento de flebitis en esta unidad. **Método:** Cuantitativo, exploratorio-descriptivo, tipo de estudio de caso único. Inicialmente, en 2017, se identificaron los registros de los procedimientos realizados para el tratamiento de la flebitis. Luego, el costo se calculó multiplicando el tiempo (cronometrado) gastado por los técnicos de enfermería por el costo unitario de la mano de obra directa, agregándolo al costo de los materiales. **Resultados:** Se informaron 107 flebitis referidas a 96 pacientes. En el tratamiento de los diferentes grados de flebitis, se llevaron a cabo tres procedimientos: “aplicación de ungüento de extracto de flor de manzanilla”; “Aplicación de compresas”; “Instalación de acceso venoso periférico”. La “instalación de acceso venoso periférico con un catéter Íntima[®]” correspondió al procedimiento más costoso (US\$ 8.90-SD=0.06). Considerando el registro de la ejecución de 656 (100%) procedimientos, la estimación del costo directo promedio total correspondió a US\$ 866.18/año. **Conclusión:** El conocimiento sobre los costos de los procedimientos puede respaldar la toma de decisiones que aumenta la asignación eficiente de los recursos consumidos.

DESCRIPTORIOS

Pacientes Internos; Cateterismo Periférico; Flebitis; Atención de Enfermería; Control de Costos; Costos y Análisis de Costo.

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