Inadvertent intravenous infusion of glycerol solution: clinical, ethical and legal repercussions

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Abstract

The objective of this study is to evaluate the clinical and legal repercussions of a case in which a health professional injected glycerol solution intravenously in an elderly patient with comorbidities. On that occasion, the Court requested a technical opinion from which an analysis was carried out in three phases: examination of the facts and repercussions; review of scientific literature; study of the outcome and conclusions. The error was caused by inadequate professional training and generated the following clinical repercussions: worsening renal function and a drop in hematocrit, but no occurrence of fat embolism was confirmed. Therefore, it is clear that the adequate training of health professionals is fundamental for health quality, since errors due to poor qualification and poor working conditions directly affect the clinical status of the patient, both from the legal and economic aspects as well as from the family aspect. In light of this, the actions of the Ministry of Education and professional councils become key to inhibit such situations.

Keywords: Glycerol. Infusions, intravenous. Enema. Iatrogenic disease. Health personnel.

Resumo

Infusão venosa inadvertida de solução glicerinada: repercussões clínicas, éticas e legais

O objetivo deste trabalho é avaliar as repercussões clínicas e legais de um caso em que um profissional de saúde injetou solução glicerinada por via endovenosa em paciente idoso com comorbidades. Na ocasião, a Justiça solicitou parecer técnico a partir do qual foi feita análise em três fases: exame do fato e repercussões; revisão de literatura científica; estudo do desfecho e conclusões. O erro decorreu da formação precária do profissional e gerou as seguintes repercussões clínicas: piora da função renal e queda do hematócrito, mas não foi confirmada ocorrência de embolia gordurosa. Depreende-se, portanto, que a adequada formação de profissionais é fundamental para a qualidade em saúde, visto que erros decorrentes de qualificação deficiente e más condições de trabalho afetam diretamente o estado clínico do paciente, tanto em aspectos legais e econômicos como familiares. Diante disso, a atuação do Ministério da Educação e dos conselhos profissionais torna-se decisiva para inibir situações como essa.

Palavras-chave: Glicerol. Infusões intravenosas. Enema. Doença iatrogênica. Pessoal de saúde.

Resumen

Infusión intravenosa inadvertida de solución de glicerina: repercusiones clínicas, éticas y legales

El objetivo de este trabajo es evaluar las repercusiones clínicas y legales de un caso en que un profesional de la salud inyecta solución de glicerina por vía intravenosa a un paciente anciano con comorbilidades. En tal ocasión, la Justicia solicitó una evaluación técnica, a partir de la cual se realizó un análisis en tres fases: examen del hecho y repercusiones; revisión de la literatura científica; estudio del desenlace y conclusiones. El error fue la resultante de una deficiente formación profesional y generó las siguientes repercusiones clínicas: empeoramiento de la función renal y caída del hematocrito; no obstante, no se confirmó la ocurrencia de embolia grasa. Se concluye, por lo tanto, que la adecuada formación de profesionales es fundamental para la calidad en salud, dado que los errores derivados de una cualificación deficiente y de malas condiciones de trabajo afectan directamente el estado clínico del paciente, tanto en los aspectos legales y económicos como familiares. Frente a esto, la actuación del Ministerio de Educación y de los consejos profesionales se torna decisiva para inhibir situaciones como la descripta.

Palabras clave: Glicerol. Infusiones intravenosas. Enema. Enfermedad iatrogénica. Personal de salud.

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Declara não haver conflito de interesse.

Research

The preparation of future healthcare professionals requires rigorous technical, vocational training, which starts off with solid elementary education. The Ministry of Education, through specific curricular guidelines, sufficiency tests and other measures, must intervene in a more incisive way to ensure academic technical quality to new students.

On the other hand, councils, as supervisory bodies, and other representative bodies must improve the quality of technical training and future performance of health professionals by implementing the right measures so that disqualified professionals are unable to reach the labor market. This search for quality is fundamental to protect the integrity of public health.

Schimith [1] *et al* conducted an important review on the relationship among health professionals and users, proving this experience to be transformative and intense. Humanizing health services by introducing relational and scientific knowledge and competence is challenging. In addition to the aspects inherent to health care, health professionals must have effective knowledge of the techniques and procedures required to provide the best care possible.

It is important to consider that health teams consist of several classes of professionals, including medical and nursing specialties, which are assisted by nursing technicians to execute daily operational tasks. The practice of medicine requires a higher level degree, whereas nursing can be practiced either by nurses who have completed an academic degree, or by nursing assistants/technicians with a medium level education. Nurses are able to perform tasks of great complexity related to the diagnosis and treatment of patients. Nursing assistants/technicians are essential to the provision of care but they are not always well prepared.

Naturally, all levels lack proper training and present different gap in practical experience. The supervision of the course quality and professional performance is much lower among technical courses as compared to university-level institutions. The organization of categories and specific legislation is far more demanding when it comes to higher education courses.

Aizenstein and Tomassi [2] warn of the need for greater control in the preparation, dispensing and correct administration of drugs due to problems related to medications (PRM), mostly preventable, as many researches conducted in Brazil and abroad indicate [3-5]. Volpe [6] *et al* verified the profile of the errors reported by the media, considering that not everyone has seen the news. The results showed that the "most serious" errors are most likely to be disclosed; and 64% of all reports were related to wrongful administration of medication.

Cassiani [7] estimated that each patient will be exposed to an average of 1.4 medication errors during hospitalization. Most errors, or medication-related issues, do not lead to serious consequences, but the need to address this issue is fundamental, considering that serious errors may compromise the professional integrity of health professionals and the overall health of patients.

Prest and Pazó [8] published a discussion on the civil liability of nursing professionals responsible for drug therapy. According to the authors, the Consumer Protection Code, Law 8.078/1990, whose line of responsibility is objective and based on results, is used as a general rule, except for professionals, in accordance with Article 14, paragraph 4, of the code: *the personal professional responsibility will be ruled based on the verification of fault* [9].

Much of the routine care of patients – many of them seriously ill, is performed without proper supervision, especially by professionals with little experience, paid at a relatively low labor rates. This situation does not comply with Decree 94.406/1987 [3], which regulates the Nursing Process and the Law of Professional Exercise [10], according to which nursing duties performed by nursing technicians or assistants require direct supervision. Moreover, the care for patients seriously ill or terminally ill are the sole responsibility of registered nurses. In addition, intense training on intense care and effective supervision significantly improve patient safety.

The critical circumstances mentioned may lead to medical conduct errors (iatrogenics), since nursing assistants and technicians with poor professional training enter the labor market without the training required for the completion of tasks. The case of a nurse technician who mistakenly injected a seriously ill patient with a intravenous glycerol solution will be used as an example.

It is well known that a glycerol solutions must be administered rectally, usually to treat severely constipated patients. Lewis [11] *et al* also describe the procedure and the responsibilities of the nursing team within this context.

The subject has not been discussed enough and the scientific literature on the subject is very scarce, which justifies the relevance of the present study to substantiate the scientific support required for the decision-making process

within the ethical, legal and professional spheres. The review of the literature used to substantiate this work found only one article directly related to the accidental venous infusion of glycerol. It is a topic that deserves to be studied further, since reports on accidents of this kind exposed though non-specialized press are not uncommon.

This research aims to analyze the clinical and legal repercussions of the aforementioned case in order to evaluate and understand possible explanations for the event, as well as to make brief considerations about the negative impact on the relationship among users and health service providers after the event.

Method

This study was based on a report requested by the Court of Justice to the author. The report itself, and the case to which it refers, is a non-confidential public document, and the author was able to use the information freely. The parties involved were kept anonymous to prevent embarrassment. Article 1 of Resolution CNS 510/2016 states that ethics committees will neither register nor evaluate *any research involving the theoretical deepening of situations that emerge spontaneously and contingently in the exercise of professional practice, provided they do not disclose data that may identify the subject* [12]. The Resolution also includes information that is publicly accessible, which may or may not be processed, according to the adequacy of the medium through which it will be disclosed/published.

An initial analysis was carried out to evaluate the context of the occurrence (wrongful infusion of glycerol solution) and its repercussions (clinical consequences and legal repercussions). The second analysis presented the facts, including pertinent technical information, followed by the review of the updated scientific literature (discussion). In the final phase, all the elements found were taken into consideration and concatenated to reach the conclusion.

The literature review was based on scientific databases, such as PubMed, SciELO, Cochrane, Bireme, ISI, Scopus – in addition to searches on other sites in order to gather the maximum amount of information on the topic. The following terms were used in various combinations and variations: "glycerol enema"; "glycerol"; "Intestinal lavage"; "enema"; "rectal medication"; "intravenous"; "Inadvertent injection"; "greasy embolism"; "thromboembolism"; "toxicity"; "pharmacological properties"; "venous"; "glycerol"; "rectal"; "intravenous"; "enema"; "embolism"; "embolic"; "inadvertent infusion"; "toxicological and pharmacological".

Given the shortage of articles, it was not possible to systematize the information, since none of the combinations brought up articles directly related to the topic. Ten articles were used in the discussion with some reference to the use of intravenous glycerol (only one occurred accidentally; the others, for other reasons) and to reports and reviews on greasy embolism. However, none was related to the administration of glycerol via any other route.

Description of the law suit

The plaintiff's version

The plaintiffs accuse the hospital, a *home care* and health plan provider, of being responsible for the wrongful death of their 72-year-old father, bedridden, suffering from several comorbidities, who will be addressed herein by the fictitious name of José.

Mr. José is described as someone who had several health problems caused by a stroke and was taken care of by his daughters and wife. He was covered by a particular health insurance plan (defendant # 1). According to his daughters, the patient was hospitalized in one particular hospital (defendant # 2) in separate instances. Each hospitalization lasted approximately thirty days, with a 14-day interval between the two. Urinary tract infection, in addition to poor treatment and allegedly misuse of medications, were the reason behind the first hospitalization.

However, the main complaint lies on the second hospitalization. They said that a nursing technician representing a particular *home care* (defendant 3) mistakenly injected Mr. José with a 12% glycerol intravenous solution, which lead to a 30-day hospitalization period. They also mentioned as resulting diagnosis: greasy embolism, seizures and cardiorespiratory changes. They also said that there had been injuries due to pressure, necrosis resulting from bandages not replaced in the hospital, bruises all over Mr. José's body, and bruises on the nose caused by the poor care provided by the nursing team.

In face of these allegations, the plaintiffs seek compensation for moral and material damages based on a lawsuit filed against the hospital, the home care and health plan provider, claiming that Mr. José's right can be lawfully passed on to his heirs.

The defendant's version

- Defendant 1 (health plan): claims no responsibility over services, because the company only covers costs; and no obligations, since it covered the home care service cost based on liberality principles. Furthermore, it denies the causal link between the medical and nursing procedures described;
- Defendant 2 (hospital): claims that Mr. José already had a lateral malleolus fracture and grade II sacral legion, according to the nursing report issued on the date of the first hospitalization, followed by the placement of dressings and bandages. It states that a urine culture revealed *Klebsiella pneumoniae* (producing carbapenemase), which confirmed an urinary infection, and that, upon the second hospitalization, the lesions worsened as compared to the first, but showed improvement during hospitalizations. It denies the incidence of greasy embolism;
- Defendant 3 (home care): It states that the professional responsible for injecting the substance was a sub-hired from another company, and did not represent the home care company at all; and that the infusion was administered in very small doses, being unrelated to the death itself, which occurred two months after the infusion. It declares that Mr. José did not have a greasy embolism but suffered from several comorbidities, which were the main cause of his death.

Summary of the most relevant documents to the case

- *Patient's record during the first hospitalization*

  Clinical assessment upon admission: hypertensive, diabetic patient suffering from chronic renal failure, conservative treatment, carotid stent, gastroesophageal reflux, gastritis, sleep apnea, peripheral vascular insufficiency, sequelae of previous cerebrovascular accident (2 episodes), paralyzed on the left side, restricted to bed, torpor, non-responsive, using foley catheters for gastrostomy, with a history of repeated hospitalizations due to infection caused by multiresistant bacteria, acquired during home care stay. Patient presented emesis, abdominal distension and difficulty to evacuate upon admission. Reason for hospitalization: urinary sepsis.

  Medical evolution: antibiotics: meropenem, ciprofloxacin, polymyxin D, vancomycin, fluconazole; devices: *permcath*, gastrostomy, cystostomy, central venous access. Extremities described as well perfused during this period of hospitalization. Cardiorespiratory arrest reversed on the 18th day of hospitalization. The patient's relatives signed a term prohibiting another cardiopulmonary resuscitation after the previous episode.

  Evolution during nursing care: presence of eschar in the sacral region, description of decubitus changes every two hours, and daily changes of dressings.

- *Patient's record during the second hospitalization*

  Admission: patient brought by relatives alleging accidental administration of glycerol solution via central access, presenting stroke sequelae, chronic obstructive pulmonary disease, diabetes, tracheostomy with continuous mechanical ventilation, gastrostomy. Admitted to an intensive care unit (ICU) with adequate changes, mechanical ventilation with FiO_2 at 34%, chest radiography kept the same pattern shown during the last hospitalization. Presenting anasarca, with good perfusion, distended abdomen. Diagnostic hypothesis: stroke, hypertension, diabetes mellitus, venous insufficiency, greasy embolism, decubitus ulcer, moderate caloric malnutrition.

  Medical evolution: vomiting, hydroelectrolytic disorders, hemodynamic instability, worsening of renal function, and anemia. Diagnosis of intensive care unit (ICU): moderate dehydration and acute chronic renal failure. Approach: heparin, corrections of metabolic disorders, clinical support, meropenem, polymyxin B, levofloxacin. Discharged on the 12th day of hospitalization, stable, awaiting home care.

  Evolution during nursing care: upon admission, serious condition; anasarca; cardiac monitoring; right and left calcaneal necrosis, left measuring 8 × 4 cm, with necrosis throughout; pressure ulcer of the sacral region stage II, with granulation tissue, measuring 12 × 8cm; worsening of the lesion in the sacral region as compared to the last hospitalization; penis presenting uretero-cutaneous fistula in the distal portion with ulcerated border. The following descriptions include daily dressings and decubitus changes every two hours throughout the hospital stay.

  20th day of hospitalization: left calcaneus presents 4 × 4cm lesion with necrotic tissue and borders; right calcaneus with approximately 8 × 8cm lesion 30% necrosed; left malleolus with fibrous lesion on its entire length, rounded, dry, with serous secretion; grade II lesion in the sacral region, penile lesion. Surgical debridement in

calcaneus eschar performed by the medical team on the 21st day of hospitalization.

- *Police documents*

  The plaintiffs report the glycerol solution injection administered by the nursing technician and subsequent hospitalization. In her statement, the technician confirmed having injected Mr. José with the glycerol solution and reported that she believed that it was the correct way to administer the medication, since she had only accompanied another nursing professional performing the intestinal lavage procedure two days earlier. The preliminary findings of the investigation determines that the offender *violated the bodily integrity and the health of others* [13], described in Article 129 of the Brazilian Penal Code, revised in 1984 [14].

Discussion

It is a lawsuit filed by the heirs of an elderly patient suffering from serious clinical diseases and limitations of daily life, who was also subject to wrongful medication administration. The authors of the lawsuit alleged that error caused pulmonary embolism and the consequent death of the patient; and that, during hospitalization, pressure lesions appeared and developed, resulting from poor patient care.

Firstly, it is important to note that it is a serious mistake to perform intravenous injection of a solution prescribed for rectal use in a routine nursing procedure (intestinal lavage), especially when the health practitioner did not confuse or changed the bottle. Instead, she demonstrated lack of professional experience and knowledge, performing a procedure believed to be correct, according to her testimony.

The Code of Ethics of Nursing Professionals defines that errors due to malpractice are punishable, ranging from verbal warning to suspension of professional practice [15]. In Article 51, the Code holds both the professional who carried out the procedure and his/her immediate supervisor responsible, whether or not present at the time of the error. From a legal and ethical standpoint, the accountability and performance of mid-level and higher-level professionals are safeguarded and well defined, but, unfortunately, there are situations frequently overlooked according to an ethical and legal framework.

Volpe [6] et al. observed that the most serious errors are the often reported by the media, generating repercussions, and doubts about patient safety and the workload imposed upon professionals from different health areas. In addition, it is important to note that there are errors arising not only from the malpractice of nursing, but also from wrongful medical prescriptions [16]. This was not the case covered by this article, but it is important to note that there are cases reporting wrongful dosage prescriptions.

Questions often arise regarding the supervision of nursing professionals and, mainly, what exactly the Ministry of Education and state education councils do to control the quality of the courses and disqualify those rated low quality. The Ministry of Health must participate more actively in issues related to the training of health professionals.

In this line of reasoning, discussions on patient safety become fundamental for the proper exercise of health-related professions, regardless of the category involved. The National Patient Safety Program was only implemented by the Ministry of Health in 2013 [17], and its reference documents were published in 2014 [18]. The Program is still very recent, despite the facts narrated in this study. This document is very important because it exposes the need for protocols and the inclusion of the subject in graduation and post-graduation programs; technical level professional training; continuing education and the routine of all health services across Brazil.

From the point of view of care and humanization, the implementation of a clear protocol adopted by health services, together with the inclusion of the theme in medical training and continuing education, would significantly improve the current scenario. The extreme precariousness of contracting and even subcontracting health professionals, as observed in the present case, represent real barriers to the promotion of quality health that complies with policies, especially those that favor patient safety, still incipient under institutionalized form.

Other highly relevant measures include the correct reporting through PMR adverse event reports and the classification of the type of error, especially of errors related to prescriptions, dispensing and administration, as described by Aizenstein and Tomassi [2]. These measures would quickly identify the critical point that led to the error resulting from the use of the drug so that appropriate corrective actions could be taken.

Hence, it is essential to study and discuss the possible repercussions of the venous injection of glycerol solution, according to the updated scientific

literature, as well as to understand greasy embolism and its management.

The study prepared by Oliveira[19] *et al* on an official expert's report showed that the expert must be rigorous, unbiased and judicious, diverging from medical documentation and opinions already registered, as long as the arguments are well founded. Sometimes, disagreements do emerge[2].

Okano *et al*[20] studied the venous infusion of glycerol to evaluate the effects on the body and found a significant reduction of hematocrits and hemoglobin, in addition to an increase in plasma volume, which, in excess, could cause renal overload.

Van Rosendal *et al*[21] studied the effect of glycerol solutions administered orally or intravenously on the performance of cyclists in a specific circuit, noting greater fluid retention and restoration of plasma volume, which consist of effects associated with the decrease of aldosterone and serum cortisol levels, substances involved in the worsening of renal function when out of balance.

Kim *et al*[22], in an experimental study with rats, found that the administration of glycerol leads to renal injury. Several other studies[23-25] also found metabolic variations associated with these changes in plasma, hematocrits, and/or renal damage, as well as mild reduction of cerebral edema, but not statistically significant in patients who suffered strokes.

The only similar case ever reported in the medical literature was described by Capitani *et al*[26]. A 56-year-old male was admitted to the medical service in Campinas due to an accidental infusion of a 12% glycerol solution, similar to the case discussed in the case file. The clinical evolution was considered favorable, with alterations in renal function (increase of urea and creatinine), discrete reduction of hemoglobin and leukocytosis levels without deviation (increase of white blood cells, without significant repercussions).

Greasy embolism is a mechanical blockage of vascular lumen by fat droplets usually retained in the capillary network. More often, it reaches the lungs first, since the process usually starts in the venous system. Its most common manifestations include respiratory insufficiency and neurological alterations, with mortality rates ranging between 10 and 36%. Orthopedic patients, followed by those who suffered fractures or had to undergo surgeries such as arthroplasties make up for most of the deaths. Such cases require rigorous clinical support, with close monitoring of vital functions, especially respiratory and neurological[27-29].

There are no studies correlating greasy embolism and the use of glycerol solution (or glycerol), although it is understood that the medical team must pay close attention to patients suffering from diverse comorbidities at high cardiovascular risk, since it is an infusion of oily solution into the bloodstream.

Considering the present case, despite the scarcity of specific literature, it is possible to attribute the worsening of renal function and anemia to the infusion of a glycerol solution, as observed in the case of the studies aforementioned and the legal case presented in this study, according to medical descriptions and laboratory tests. When the patient received the right treatment, these changes were reverted to baseline levels after discharge. It is not possible to establish a diagnosis of embolism, or to relate death to accidental infusion just based on the information currently available.

Another point of discussion and subject of expert analysis were the pressure injuries presented by the patient and described by the team in the medical records. The sacral region and the tibia already presented lesions at the time of the first hospital admission, with daily dressing and positioning changes every two hours during the entire hospitalization.

In the second admission, there is an extensive description of bilateral calcaneal lesions, with necrosis; sacral ulcer; penile lesions; and worsening of the health of the patient as compared to the previous hospitalization. Daily dressings and changes of decubitus took place every two hours. After almost three weeks of hospitalization, some of the lesions are described as being smaller than the initial ones; while others presented no more necrosis, followed by dressings and debridement.

Based on what the expert described, it was concluded that the bedsores did not arise during hospitalizations, but they worsened during the period during which the patient was out of the hospital, according to the documentation analyzed. The expert analysis also found that Mr. José had complications, especially the worsening of renal function and anemia, due to the wrongful intravenous administration of glycerol solution. However, this situation was reversed upon hospital admission, with no relation between death and such infusion, nor with the occurrence of greasy embolism. In addition, the study of the documents revealed that none of the pressure lesions occurred in the hospital environment, being identified and treated according to medical and nursing protocols.

The diagnostic hypothesis was questioned and discussed in the expert report, which means all the possible diagnoses or changes that explain clinical manifestations or risks to which the patient was exposed. It is extremely important to describe the main diagnostic hypothesis of a patient in order to take the relevant measurements so that they can be treated or prevented, avoiding serious or irreversible damages. This explains why the greasy embolism hypothesis was posed by the assisting medical staff who took the appropriate steps to avoid possible complications, although not confirmed.

The relatives of the deceased wanted to blame the*home care* teams representing the companies responsible for Mr. José 's care because they felt frustrated with the error committed by the home care service, filing a lawsuit that could expose possible slips and blame those involved in the death of the patient and worsening of his health. Even though they were aware of the seriousness of the patient's condition to the point of even signing a term so that Mr. José could no longer be resuscitated in the event of a new cardiorespiratory arrest, they did not fail to seek the necessary remedial measures.

This is not wrong or surprising, considering the fact that Mr. José had a health problem that was promptly addressed. It is worth noting that the lawsuit filed by his family members also questioned the treatment proposed for the first urinary infection; the use of antifungal medication by a severely ill person; the hypothesis of greasy embolism in the second hospitalization; and the supposed onset of pressure injuries during admissions; even without evidence that could substantiate their allegations. The situation demonstrates the notorious split with the health team, whose major pitfall was the wrongful intravenous infusion of glycerol.

One of Mr. José's daughters is also a health care provider. According to the literature available [29,30], these health professionals seldom have the chance to express grief in the work environment, which can decrease their resilience and acceptance, especially when a beloved one suffers an injury due to professional malpractice. Psychodynamic mechanisms may also have interfered in the process of mourning, but any discussion on this topic would be rather inappropriate due to the lack of data on the psychic process of those involved.

For diverse and complex reasons, of political, social and cultural nature, education in Brazil is not treated as a priority. If this situation represents an obstacle to citizenship, preventing the population from seeking the common good, it proves to be harmful when it comes to health training, which is directly responsible for actions that can determine the life and death of people. Unfortunately, the deficiency of the training of mid-level health professionals in Brazil is no exception, which contributes to the repeated occurrence of errors and failures that compromise the well-being, health and lives of patients.

In addition to the problems arising from poor quality training, the defense of defendant 3 revealed the precariousness of work relations in health care: home care claimed that the wrongful procedure had nothing to do with the personnel they provided, since the employee responsible for the error had been sub-hired from another service provider.

The blame is transferred onto another small company that subcontracts the professional, which results in a cascade that reduces pay and labor benefits to almost nothing. In addition to the precariousness of the labor situation, the control over activities is also minimal, being different from the service provided at a hospital, where technicians work under the direct supervision of the nurse. In most cases, home care supervision is incipient.

As far as the labor sphere is concerned, the "theory of appearance" has happily prevailed in court [31,32] according to which an employee who works daily on behalf of a company (in this case, the*home care* company), generates joint liability in the event of problems, even if it has a formal bond with a third, as reported in the case presented herein. This important legal theory prevents a company from using legal loopholes to subcontract and disclaim liability for services provided by third parties. However, it is necessary to find a more adequate and effective solution to restrain subcontracting, perhaps with a specific prohibitive legislation, even tough this seems to be of no interest at all to the legislative power.

The legal exemption from joint liability to reduce the impact of the precariousness of labor relations does not solve the issue of precarious professional training. If nursing and medical councils advert against the proliferation of nursing and medical training courses that do not meet minimum requirements, what can we expect from mid-level courses, whose requirements lack essential technical knowledge?

In order to provide comprehensive and quality assistance, professional training is an aspect that can no longer be overlooked. Pertinent discussions continue to arise regarding the online education modality, considering the practical nature inherent to the nursing profession.

 http://dx.doi.org/10.1590/1983-80422019271299

Final considerations

This article aimed to discuss and reveal repercussions of professional error caused by malpractice resulting from poor technical and practical qualification in clinical, ethical and legal issues. Clinical aspects have shown that the renal function got worse and the hematocrit levels decreased, both reverted after admission to an intensive care unit where the patient received adequate hospital support. There was no greasy embolism or death resulting directly from technical error. The ethical aspect revealed that the error was caused by the lack of professional skills/experience. The health care provider was not aware of the procedure, despite being a routine treatment for home care patients. Legal issues have shifted to the legal liability of the health care provider and all employers involved, directly or indirectly (the company that hired her, home care and health plan).

Improving the training of health professionals, in the qualitative scope more than in the quantitative scope, is essential for the well-being of the population, the improvement of Brazilian public health indicators, and adequate management of cases involving elderly patients suffering from multiple comorbidities.

The Ministry of Education and state education councils must supervise and evaluate the quality of professional training. The active participation of professional councils could inhibit, or at least reduce the number of medical errors, such as the one discussed in this study.

It is essential to emphasize that facing situations that directly affect the health services and the life of patients is a bioethical issue. It is fundamental to discuss bioethical issues in view of the epidemiological transition due to population aging, which will make the adequate training of health professionals and nursing technicians even more important and urgent.

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Recebido: 1º.8.2017
Revisado: 31.7.2018
Aprovado: 2.8.2018

Research