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Forensic medical and legal analysis of cases of improper performance of professional duties by medical employees, including incorrect prescription of medical products

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ABSTRACT

Aim: To conduct a forensic medical and legal analysis of cases of improper performance of professional duties by medical employees, including incorrect prescription of medical products.

Materials and Methods: The article is based on the analysis of defects in the performance of professional duties by medical employees, particularly according to data from commission forensic medical examinations, as well as an analysis of international and national legal acts and national judicial practices of Ukraine. Dialectical, hermeneutic, comparative, analytical, synthetic, and system analysis research methods were used.

Results: Although the total number of forensic medical examinations tends to decrease, these examinations remain the focus of attention in cases of improper performance of professional duties by medical employees. A more detailed analysis of cases involving violations of treatment strategies revealed instances of incorrect treatment method selection (whether conservative or surgical), along with cases of improper or unjustified prescription of medicinal products. Incorrect prescription of medical products is one significant way medical employees fail in their professional duties.

Conclusions: Understanding the general dynamics of forensic medical examinations is important, as it helps establish practical cause-and-effect relationships between the performance of professional duties by medical employees and adverse consequences for patients (including cases involving incorrect prescription of medical products).

KEY WORDS: medical products, forensic medical examination, criminal liability, prescription, expert

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INTRODUCTION

Proper performance of professional duties by medical employees involves treating patients conscientiously and efficiently. The activities of medical employees should primarily focus on prevention, diagnosis, and treatment of diseases, injuries, poisoning, and pathological conditions, as well as matters related to pregnancy and childbirth. However, the execution of such professional activities is associated with heightened risks of negative consequences. These consequences may include harm to a patient's life and health, deterioration of bodily functions, hindrance to the patient's physical and spiritual development, reduced work capacity, or a shortened active lifespan. Such adverse outcomes may arise from the incorrect prescription of medical products.

AIM

The aim of this article is to conduct a forensic medical and legal analysis of cases of improper performance of professional duties by medical employees, including the incorrect prescription of medical products.

MATERIALS AND METHODS

The article is based on the analysis of defects in the provision of improper performance of professional duties by medical employees, in particular according to the data

of commission forensic medical examinations by the State Institution «Main Bureau of Forensic Medical Examination of the Ministry of Health of Ukraine» (hereinafter – SI) and all regional bureaus of Forensic Medical Examination in Ukraine from 2020 to 2023 (from the total number of 11195 examinations, we selected 1765 on the improper performance of professional duties by medical employees), as well as analyses of international and national legal acts, national judicial practice of Ukraine. When characterizing qualitative indicators, the share of variants possessing the studied features (n) was expressed as a percentage (P) of their total number and the error of percentage (m_p). The confidence interval (CI) was 95%. Data processing and analysis were carried out in OpenOffice software packages (Base, Calc, Writer, Draw, Math), GNU Octave, with original documents saved in *.doc, *.xls formats. This software is open source and its use is governed by the GPL (GNU General Public License). Research methods included dialectical, hermeneutic, comparative, analytical, synthetic, and system analysis techniques.

RESULTS

The analysis of cases of improper performance of professional duties by medical employees was conducted from a legal and forensic point of view.

Legal responsibility under the criminal legislation of Ukraine arises for non-performance or improper performance of professional duties by medical employees as a result of negligent or dishonest attitude towards them, if this has caused serious consequences for the patient. According to Art. 140 of the Criminal Code of Ukraine, such an act is punishable by deprivation of the right to hold certain positions or engage in certain activities for a period of up to five years, or by correctional labor for a period of up to two years, or by restriction of liberty for a period of up to two years, or by deprivation of liberty for the same period [1]. If such an act is committed against a minor, the punishment is more severe.

One of the ways of improper performance of professional duties by medical employees is the incorrect prescription of medical products. Judicial practice in Ukraine has similar cases. For example, by the verdict of Nemyriv District Court of Vinnytsia Region (Case No. 1-kp/930/29/22 dated 17.03.2022) the pediatrician of the Department of Emergency Medical Care was convicted under Part 2 of Art. 140 of the Criminal Code of Ukraine for improper performance of professional duties by a medical employee as a result of a dishonest attitude towards it, which caused serious consequences for a minor. The overview of the case is as follows: a woman and her son came to the emergency department with complaints of stomach pain, nausea and vomiting in a minor. After examining the patient, the doctor diagnosed "Acetonemic syndrome" and injected the medical products with the active ingredient papaverine hydrochloride and platyphylline. Then the doctor washed the stomach by drinking water. After that, the doctor gave the minor patient the medicinal product with the active ingredient of highly dispersed silicon dioxide to drink and, assuring the parents

that there was no danger to the minor's health, sent him home together with his parents. The patient died at home. Later, the Court (with the involvement of experts and the conduct of a forensic medical examination) found that the doctor, improperly performing her professional duties as a medical employee, as a result of her dishonest attitude towards it, did not take appropriate measures to establish the correct diagnosis, namely if there were grounds for this did not initiate a meeting of the doctors' council with the participation of the surgeon, did not initiate the patient's X-ray examination, ultrasound, and blood tests, which led to the failure to provide the patient with the necessary medical care, affected the course of his illness and caused serious consequences – the death of a minor patient due to a combination of pain and intoxication syndrome, blood loss as a result of entrapment and subsequent necrosis of a large part of the small intestine (according to the conclusion of the comprehensive forensic medical examination of the regional bureau of forensic medical examination of the Zhytomyr Regional Council dated 22.08.2018 No. 65). As a result, the Court sentenced the doctor to 1 year of imprisonment with deprivation of the right to practice medicine for a period of 2 years, and also satisfied the claims of the minor's parents for compensation for moral (non-property) damage caused as a result of the commission of a criminal offense, provided for in Part 2 of Article 140 of the Criminal Code of Ukraine and ordered to recover moral damages in the amount of 1 000 000 hryvnias from the doctor in favor of the parents [2]. But such cases are not isolated. The dynamics of the number of commission forensic medical examinations in Ukraine, as well as the share of examinations related to medical cases, show different trends during 2020-2022 (Table 1).

Table 1. The dynamics of the number of commissioned forensic medical examinations in Ukraine, including SI data, for 2020-2022

Indicator	2020	2021	2022	In total
Commission examinations (total number) in SI	428	259	358	1045
n	169	166	117	452
P, %	39,5	64,1	32,7	43,3
Among them for medical cases				
m _p	2,4	3,0	2,5	1,5
CI, %	4,6	5,8	4,9	3,0
Total number in Ukraine	3628	3476	2846	9950
Commission examinations in Ukraine (total number)	3278	3106	2586	8970
n	540	457	316	1313
P, %	16,5	14,7	12,2	14,6
Among them for medical cases				
m _p	0,6	0,6	0,6	0,4
CI, %	1,3	1,2	1,3	0,7
Together in Ukraine with SI (total number)	4056	3935	3204	11195
n	709	623	433	1765
Among them for medical cases (in Ukraine with SI)				
P, %	17,5	15,8	13,5	15,8
m _p	0,6	0,6	0,6	0,3
CI, %	1,2	1,1	1,2	0,7

Thus, in 2020, the number of commission examinations by SI amounted to 428 cases, of which $39,5\% \pm 2,4\%$ (169) were related to medical cases.

In 2021, the total number of expert examinations decreased to 259, yet the proportion of commission examinations involving medical cases significantly increased to $64,1\% \pm 3,0\%$ (166). This indicates increased attention to medical errors and offenses by medical employees. Such dynamics may result from stricter oversight of medical institutions or an increase in patient complaints and the number of criminal investigations opened. In 2022, the situation changed somewhat: the total number of commission examinations increased to 358 cases, but the share of cases related to medical errors decreased to $32,7\% \pm 2,5\%$ (117). This decline may be associated with the impact of wartime when healthcare system resources were reallocated to more urgent and critical tasks.

When examining data across Ukraine as a whole, in 2020, a total of 3,628 forensic medical examinations were conducted, of which 3,278 were commission examinations. Of these, $16,5\% \pm 0,6\%$ (540) were related to medical cases.

In 2021, the total number of examinations decreased to 3,476, and the proportion of medical cases dropped to $14,7\% \pm 0,6\%$ (457). This data indicates a gradual decline in the share of medical cases within the total volume of forensic medical examinations, even though the number of such cases within the State Institution (SI) increased (Figure 1).

In 2020, the highest number of commission examinations was conducted concerning obstetricians-gynecologists (121) and surgeons (97). This indicates a significant frequency of cases related to improper medical care in these critical specialties. Specifically, obstetricians-gynecologists often encounter complications during childbirth, and surgeons deal with postoperative outcomes, which may explain the high number of examinations. In 2021, there was a general decline in the number of examinations across all specialties. The number of examinations for surgeons decreased to 70, and for obstetricians-gynecologists – to 80. In 2022, the downward trend continued, with the number of examinations for surgeons dropping to 63 and for obstetricians-gynecologists – to 45. A significant decrease was also observed for dentists (6) and other specialists (178). Although the overall number of examinations decreased,

specialties associated with urgent situations still had the highest number of cases, confirming their high risk of improper medical care.

Thus, while the total number of examinations across all specialties has decreased, specialists frequently dealing with critical or complex cases remain the focus of forensic commission examinations regarding improper medical care.

When evaluating the treatment provided to patients at the State Institution (SI), analysis of 452 commission examinations involving medical cases over three years revealed that in 368 cases ($81,4\% \pm 5,2\%$), defects in medical care were identified. These defects primarily concerned the treatment strategy, completeness of treatment, and timeliness of treatment.

Violations of the treatment method (strategy) were noted by commissions in $13,3 \pm 1,8\%$ (49 cases), violations of the completeness of treatment were noted in $10,1 \pm 1,6\%$ (37 cases), untimely treatment in $26,1 \pm 2,3\%$ (96 cases), and a combination of defects was found in $50,5 \pm 2,6\%$ (186 cases) (Fig. 2).

A more detailed analysis of cases involving violations of treatment strategy revealed that they included instances of incorrect treatment method selection (whether conservative or surgical), but another portion consisted of cases of improper or unjustified prescription of medications.

Improper selection of medication may occur due to:

1. **Incorrect diagnosis** (potentially caused by a lack of knowledge about new or rare diseases and modern therapeutic approaches, failure to consider the patient's individual characteristics such as age, gender, body weight, the presence of other diseases, or allergic reactions);
2. **Inappropriate dosage of medication**: overdosing, which can lead to life-threatening toxic effects, especially with potent medical products; underdosing, resulting in inadequate treatment of the disease, which can complicate the condition; failure to consider metabolic factors that affect the drug's efficacy or toxicity;
3. **Ignoring medical products interactions**: simultaneous use of certain medical products may enhance or weaken their therapeutic effects, which can lead to complications;

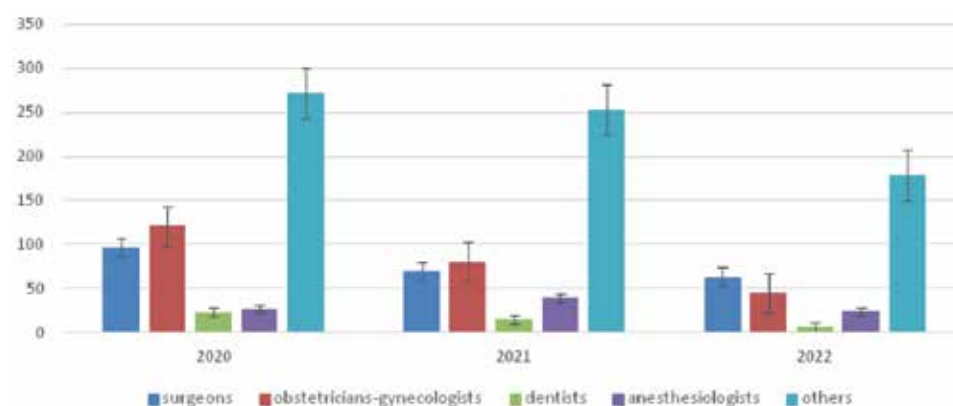


Fig. 1. Data on the number of commission examinations in Ukraine regarding the improper provision of medical care by doctors in specialties in 2020, 2021 and 2022 according to the regional bureaus of forensic medical examination of Ukraine.

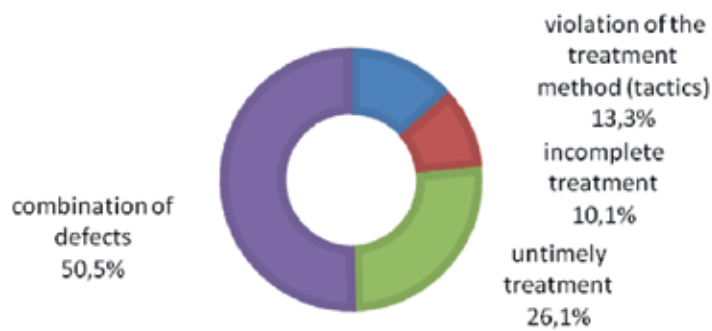


Fig. 2. Percentage distribution of treatment defects based on commission forensic medical examinations in medical cases for 2020-2022 according to the SI.

4. **Incorrect route of administration** (oral, injectable, topical), affecting the medical products effectiveness;
5. **Disregarding contraindications** (chronic diseases, pregnancy, or allergic reactions), which can lead to serious complications such as allergic shock or exacerbation of chronic conditions;
6. **Failure to consider side effects**, which can be critical for high-risk patients (e.g., the elderly or children);
7. **Insufficient patient education** regarding the correct use of the drug, including when and how much to take;
8. **Neglecting pharmacogenetics**;
9. **Prescribing medication without clear need**, which not only increases the risk of side effects but also contributes to the development of antibiotic resistance, particularly with antibacterial medical products;
10. **Prescribing unregistered medications** in Ukraine (which accounted for only 0,3% of cases across the country).

For example, an expert examination conducted at one of the regional bureaus in Ukraine investigated a case of improper medical care. The patient received an eye injection that resulted in blindness. The examination revealed that the prescribed drug was not registered in Ukraine. Despite this, the physician administered the medication without considering its potential side effects. Furthermore, the drug had not undergone complete clinical trials, even internationally.

The commission identified a significant defect in medical care, which included a violation of the treatment method and the prescription of an unregistered and unverified drug. A direct causal relationship was established between the defect in medical care and the severe outcome – blindness in one eye, classified as a severe injury due to the associated loss of work capacity. As a result, a criminal investigation was initiated, and a forensic medical examination was ordered.

However, even a small number of such cases highlight the possible consequences of unregistered medical products entering Ukraine, namely: 1) use of medical products during martial law or emergency situations; 2) by receiving humanitarian aid; 3) use of medical products from clinical trials; 4) independent ordering of medical products by patients via the Internet or buying them abroad; 5) use of falsified medical products.

DISCUSSION

Cases involving the improper performance of professional duties by medical employees, including the incorrect prescription of medical products, typically require an evaluation of the treatment provided, diagnostic procedures, prescriptions, and other medical actions. This assessment should be conducted by a person competent in the relevant medical specialty, with sufficient experience to carry out a qualified examination of the quality of medical care [3, 4].

In different countries, this expert function may be assigned to various individuals. In European Union countries, the evaluation of medical care provided to a patient is generally conducted by clinicians from the corresponding medical specialties. For example, in the United Kingdom, a specialist physician in the relevant field is typically involved in assessing medical care in cases involving patient complaints about improper care [5]. However, there are no strict criteria regarding the expert's experience or any special training required to conduct such evaluations. This lack of standardization may lead to varying or even contradictory conclusions, particularly in complex or ambiguous cases. Scientific literature has reported instances of falsified or false expert opinions [6].

In some European Union countries, such as Germany and certain regions of Italy, the evaluation of improper medical care is more centralized. In Germany, the assessment of defects in medical care is the responsibility of specialized bodies: the advisory committee (Gutachterkommissionen) and the arbitration board (Schlichtungsstellen). The advisory committee directly evaluates the quality of medical care, while the arbitration board handles legal matters and communication with insurance companies in cases of proven improper care [7, 8].

In Ukraine, similar to some former Warsaw Pact countries and most post-Soviet states, the evaluation of medical care in criminal and civil proceedings is primarily conducted through forensic medical examination. These types of examinations are exclusively performed by a commission of experts with mandatory consultations from physicians specializing in the specific field relevant to the case [9].

We can agree that non-performance of professional duties means that medical or pharmaceutical employees does not perform a set of actions, the performance of which

is mandatory for them. Non-performance of professional duties should be distinguished from improper performance of professional duties; here we are talking about situations when employees still perform their duties, but not fully, carelessly, both once and systematically. For example, untimely and/or incorrect doctor's diagnosis; violation by the pharmacist of the temperature regime for the storage of medicinal products; leaving foreign objects in the patient's body, etc. It is necessary to take into account that the choice of treatment methods, which are preceded by the establishment of a diagnosis or work with medical products, prescriptions, also depends on other factors, such as the individual characteristics of the patient's body, the medical equipment available or absent in the hospital, etc [10].

The doctor's negligence has a very high price - a person's life or health, and therefore must receive an appropriate legal assessment, on the other hand - it is very important to distinguish a doctor's negligent or dishonest attitude to the performance of his professional duties from a situation where the doctor is not at fault, and on the basis of this, to avoid groundless criminal prosecution of the doctor [11].

CONCLUSIONS

1. It is important to understand the general dynamics of the appointment of forensic medical examinations, as it helps to find out on a practical level the cause-and-effect relationship between the result of the performance of the professional duties of the medical employees and the occurrence of adverse consequences for the patient. If it is not possible to establish such a connection (including based on the results of forensic medical examinations), then at the stage of the pre-trial investigation or during the trial, it can be established that there are no grounds for bringing the doctor to criminal liability.
2. In general, the dynamics show a decrease in the number of forensic examinations and the share of "medical cases" in Ukraine during 2020-2022, especially in 2022, which was probably caused by external factors, such as war and crisis situations in the medical field. When analyzing data for Ukraine together with the MB FME, the total number of examinations in 2020 was 4056, of which $17,5\% \pm 0,6\%$ (709) related to medical cases. In 2021, this indicator decreased to $15,8\% \pm 0,6\%$ (623), and in 2022 to $13,5\% \pm 0,6\%$ (433). This indicates a steady tendency to decrease the share of medical cases in the total volume of forensic medical examinations, which can be connected with the transformation of the work of forensic medical institutions and a change in their priorities during the war. The year 2022 showed an even greater decrease in the number of examinations in Ukraine - to 2846 cases, and the share of medical cases decreased to $12,2\% \pm 0,6\%$ (316). This is a significant decrease, which highlights the general shift in focus of the wartime forensics system, when most of the work could be directed to solving cases related to the consequences of military action.
3. Improper performance of professional duties by medical employees consists, among other things, in the incorrect prescription of medical products, which can be carried out due to an incorrect diagnosis, an inappropriate dose of the medicinal product, failure to take into account the medicinal product interaction, prescribing the medicinal product with the wrong route of administration, ignoring contraindications, failure to take into account side effects, which can be critical for patients with an increased risk, insufficient informing the patient about the correctness of taking the medicinal product, when and in what amount, disregarding pharmacogenetics, prescribing medicinal product without a clear need, prescribing medicinal product not registered in Ukraine.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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