

Case Report

Forensic Analysis of a Dead-on-Arrival Case with Recent Hospital Discharge at Persahabatan Hospital

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Abstract

Background: This article explores a complex case involving a patient who was declared dead on arrival (DOA) at the Emergency Department of Persahabatan Hospital, having been discharged less than a day prior. The patient had a complex medical history, including pneumonia, a suspected lung tumor, type 2 diabetes, hypercoagulable state, electrolyte imbalance, and hypertension. This case highlights crucial aspects of forensic medicine, medicolegal responsibilities, and medical ethics, particularly in discharge decisions for patients with multifaceted health issues.

Methods: A forensic examination was conducted to determine the circumstances of death, focusing on the interplay of the patient's pre-existing conditions. The patient's medical record was reviewed to assess the clinical rationale for discharge. The ethico-medicolegal considerations surrounding the discharge process and the communication of risks to the patient and her family were evaluated.

Results: The forensic analysis suggested that the cause of death was likely linked to a thromboembolic event or severe electrolyte imbalance exacerbated by the patient's underlying conditions. The review of the discharge process revealed potential gaps in risk assessment and communication of the patient's post-discharge care plan.

Conclusion: The case underscores the need for adequate discharge planning and risk communication, particularly for patients with complex medical conditions. It highlights the importance of integrating ethical considerations into clinical decision-making to ensure patient safety and mitigate legal risks. This analysis provides valuable insights for improving clinical protocols and healthcare policies to prevent similar occurrences.

Keywords: Forensic medicine, medical ethics, hospital discharge, medicolegal, complex comorbidities.

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Dead on arrival (DOA) refers to a situation where an individual is found deceased upon arrival at a medical facility or when emergency services reach the scene.¹⁻³ This term is often used in both medical and legal contexts to describe cases where death has occurred before any medical intervention could be administered. The importance of forensic examination in DOA cases cannot be overstated, as it plays a critical role in determining the cause and manner of death, which is essential for both legal and public health purposes.⁴

Forensic examinations in DOA cases provide valuable insights that help differentiate between natural, accidental, suicidal, and homicidal deaths. This differentiation is crucial for legal proceedings, as it can guide forensic analysis and inform judicial outcomes.⁵ Comprehensive forensic analysis, including autopsies and toxicological studies, is fundamental in establishing accurate cause-of-death determinations, thereby facilitating justice and closure for affected families. Ethical considerations are equally important, as forensic professionals must balance the need for thorough analysis with respect for the deceased and their families.

From a public health perspective, forensic examinations in DOA cases can help identify disease outbreaks, track mortality trends, understand causes of sudden deaths, and reveal patterns that indicate emerging health threats.⁶ Moreover, they aid in assessing the effectiveness of health interventions, ultimately guiding policy decisions and resource allocation to improve community health outcomes. This role underscores the intersection of forensic science and public health in enhancing societal well-being.⁷

This study discusses the case of a patient discharged from Persahabatan Hospital who arrived DOA at the emergency department (ED) the following day.

METHODS

After the patient was declared DOA, the general physician in the ED of Persahabatan

Hospital consulted the forensic doctor on duty. Following this, a comprehensive forensic examination was conducted to evaluate the possibility of unnatural death and any potential medicolegal implications.

Simultaneously, a detailed review of the patient's medical records was performed. This review encompassed the patient's hospitalization records from the previous admission, including discharge summaries, medication administration records, and documented vital signs. Special attention was given to the clinical decisions made during the patient's hospital stay and the discharge planning process to identify any discrepancies or omissions that could be relevant to the patient's unexpected death.

The findings from the forensic examination and medical record review were synthesized to assess any medicolegal concerns, particularly concerning clinical care standards, potential medical negligence, and the adequacy of discharge planning.

RESULTS

A 68-year-old female was brought by her family to the ED one morning because she was found unresponsive and not breathing at home. According to her family, the patient suddenly became unconscious after having shortness of breath and difficulty breathing. She also had black stool. Other complaints were denied. Initial assessment showed a Glasgow Coma Scale score of 3, unmeasurable blood pressure, impalpable pulse, no breathing, unmeasurable oxygen saturation, mydriatic pupils unreactive to torchlight, and absent corneal reflex. The electrocardiogram showed true asystole, and the patient was consequently pronounced DOA.

Forensic examination revealed that her back already had purplish red livor mortis, which blanched upon light pressure (Figure 1).



Figure 1. *Livor Mortis*

No *rigor mortis* was found. There were also no wounds on the patient's body aside from puncture wounds consistent with signs of medical procedures (e.g., intravenous line access). There were no abnormal odors, such as the smell of alcohol or insecticides/pesticides. The only notable finding was that her face looked congested and slightly cyanotic (Figure 2).



Figure 2. Congested and Slightly Cyanotic Face

History taken from the family revealed that the patient was discharged from the same hospital the previous afternoon. Her medical records showed that a week prior, the patient came to the ED with complaints of severe generalized weakness since the day before, with decreased appetite and productive cough for a week, without any fever. Six months prior, the patient had a history of the same complaints and was hospitalized with a diagnosis of lung infection and high blood sugar. After discharge, the patient did not come for routine check-ups, and her response was slower. In the last five years, the patient has been unable to walk due to a herniated

disc. The patient spent most of her time in bed, sometimes sitting up, but mobilization was minimal. The patient also had a history of hypertension for five years and type 2 diabetes for five months.

Her medical records show that during her last hospital stay, she was assessed with general weakness, community-acquired pneumonia, suspected pulmonary tuberculosis, suspected lung tumor, herniated nucleus pulposus, hypertension, type 2 diabetes, dyslipidemia, dyspepsia, hypercoagulable state, hypoglycemia, hyponatremia, hypokalemia, and pressure ulcer. Her chest x-ray showed cardiomegaly (left ventricle), calcification and elongation of the aortic arc, and suspected pneumonia with a differential diagnosis of left lung mass with bilateral lung metastasis (Figure 3). The significant laboratory findings are shown in the table below. Doctors from the internal medicine, pulmonology, neurology, physical rehabilitation, and clinical nutrition departments treated her.



Figure 3. Chest X-Ray

After five days, the patient was fully aware and said that she felt better and her appetite improved, although she still had an intermittent cough and sometimes felt weak and nauseous. Her vital signs and laboratory values were normal, except for her blood pressure (160/99 mmHg) and blood sugar (70 mg/dL). She was discharged the next day with the advice to continue several medications, including three kinds of antibiotics, antiemetics, antipyretics, potassium supplementation, and insulin shots, and to mobilize according to her tolerance level actively. The patient was also scheduled for an outpatient visit

four days later for pulmonary evaluation, including a thoracic CT scan and microbiologic sputum examination.

Table 1. Significant Laboratory Findings

Test Parameter	07/10, 8 pm	07/10, 11 pm	08/10	09/10	10/10	11/10
Hemoglobin (g/dL)	14.1	-	-	-	-	12.0
White Blood Cells (/μL)	12,600	-	-	-	-	9,920
Platelets (/μL)	608,000	-	-	-	-	438,000
Sodium (Na) (mEq/L)	131	-	-	-	-	136
Potassium (K) (mEq/L)	3.36	-	-	-	-	3.25
Chloride (Cl) (mEq/L)	95.4	-	-	-	-	100.2
Blood sugar (mg/dL)	50	225	233–309	132–152	123–252	111
Blood urea (mg/dL)	17	-	-	-	-	-
HbA1c (%)	-	-	-	9.7	-	-
Albumin (g/dL)	-	-	-	3.18	-	-
d-Dimer (μg/L)	-	-	-	810	-	-
Total cholesterol (mg/dL)	-	-	-	220	-	-
Triglyceride (mg/dL)	-	-	-	171	-	-

DISCUSSION

When a patient is pronounced dead on arrival (DOA), specific examinations and protocols must be followed to confirm the death, understand the circumstances, and fulfill legal and medical obligations. The typical steps and examinations consist of the following:^{8,9}

1. Confirmation of death: Check for the absence of vital signs, such as pulse and respiration. Attach a cardiac monitor to confirm asystole (flatline) or no electrical activity. Check for fixed and dilated pupils and the absence of reflexes.
2. Physical examination: Look for signs of irreversible death, such as rigor mortis (post-mortem stiffness), livor mortis (post-mortem lividity), and algor mortis (body cooling).
3. Documentation: Record the time of arrival, the findings of the examination, and the pronouncement of death. Perform thorough documentation of the circumstances surrounding the arrival, including any information provided by emergency medical services (EMS) or witnesses. Document any visible injuries or marks that could indicate the cause of death or require further analysis.

4. Family communication: Communicate sensitively and respectfully with the deceased's family. Provide information about the next steps, such as autopsy procedures or funeral arrangements. Informing and supporting the family of a deceased patient who arrived dead on arrival (DOA) requires sensitivity, compassion, and clear communication.
5. Notification of authorities: Notify the appropriate authorities, such as the police, especially if the death is unexpected or foul play is suspected. Ensure compliance with local laws regarding reporting deaths and handling deceased individuals.
6. Post-mortem examination: Depending on the circumstances, a post-mortem examination or autopsy may be ordered to determine the cause of death, mainly if there are legal implications or if the cause is unknown in cases of unexplained or sudden deaths. If an autopsy is required, obtaining consent from the next of kin, when applicable, is essential unless mandated by law.
7. Death certification: Proper documentation and certification of death are crucial. This involves completing a death certificate with details about the cause and circumstances of death, adhering to the Health Ministry's protocols.
8. Cultural and religious considerations: Regulations also account for the diverse cultural and religious practices in Indonesia, ensuring that the handling of deceased individuals respects these customs. Specific guidelines are provided for transporting and handling deceased bodies, ensuring they are treated with dignity and respect throughout the process.

These steps aim to accurately confirm death, respect legal, religious, and cultural requirements, and provide closure and information for subsequent analysis. In this case, steps 5 and 6 were not performed because there were no signs of injury/trauma. The death was signed off as a natural, although unexpected, death.

Because the patient was discharged from the hospital less than a day before death, the

circumstances of her dismissal must be scrutinized. The dismissal of a patient can have significant implications for medical ethics and patient care. Some key aspects include:^{10,11}

1. Continuity of care: Dismissing a patient can disrupt continuity of care, a fundamental ethical obligation for healthcare providers. Patients may lose access to necessary medical supervision and treatment, which could lead to deterioration in their health.
2. Patient abandonment: Ethically, healthcare providers must avoid patient abandonment, which occurs when a physician terminates the doctor-patient relationship without providing adequate notice or a reasonable opportunity for the patient to find alternative care.
3. Informed consent and communication: Effective communication regarding the reasons for dismissal and ensuring the patient understands their health status and future care plans is crucial. Failure to do so can breach ethical standards of respect for patient autonomy.
4. Legal and ethical guidelines: Healthcare providers must adhere to legal and ethical policies when dismissing patients. This includes providing sufficient notice and assistance in transferring care to another provider.
5. Impact on patient trust: Dismissal can affect patients' confidence in the healthcare system. It may lead to feelings of rejection and anxiety, which can negatively impact their willingness to seek future medical care.

Addressing these issues involves balancing the physician's right to terminate the relationship with the ethical obligation to ensure patient safety and continuity of care.^{12,13} In this case, the patient was dismissed in stable condition and advised to continue medical care at the outpatient clinic for a few days. However, there were no instructions to seek immediate medical care if the patient experienced significant complaints, such as breathing difficulties, altered consciousness, or other medical emergency warning signs. This might be an oversight, especially considering the patient still had intermittent cough

and nausea.

The medicolegal implications of dismissing a patient from the hospital, especially one with complex medical conditions like this patient, can be significant. Some potential implications are:¹⁴

1. **Duty of care:** Hospitals and healthcare providers are legally obligated to provide a standard level of care. Suppose a patient is dismissed prematurely, leading to adverse outcomes such as death or deterioration in health. In that case, the hospital may be negligent in fulfilling its duty of care.
2. **Documentation and protocols:** Comprehensive documentation of the patient's condition, care provided, and rationale for discharge is essential. Any deviation from standard discharge protocols can be scrutinized in legal proceedings.
3. **Risk assessment:** Legal scrutiny may focus on whether appropriate risk assessments were conducted before discharge. This includes evaluating the patient's stability and the adequacy of post-discharge care plans.
4. **Potential litigation:** Families of patients who suffer harm due to perceived premature discharge may pursue litigation for wrongful death or medical malpractice, seeking compensation for negligence.
5. **Regulatory compliance:** Hospitals must adhere to healthcare regulations and standards set by health authorities. Non-compliance can result in penalties or loss of accreditation.

These implications highlight the need for hospitals to carefully evaluate discharge decisions, especially for patients with complex and severe health conditions. The patient's medical record was adequate and meticulous. The medical resume provided at the time of her discharge was also quite complete, including the progress of her condition during the hospital stay, relevant clinical findings, the medication to be continued at home, and the plan for outpatient visits. However, as mentioned above, no advice about medical emergencies was included. This might cause the patient and family to be

unaware of what to do in case of significant medical complaints and when to seek emergency services.

To minimize legal consequences and protect itself in the event of a health emergency related to a patient's dismissal, a hospital can take several proactive steps:^{10,14}

1. **Thorough documentation:** Ensure comprehensive documentation of the patient's medical condition, treatment provided, and the rationale for discharge. This includes recording all clinical assessments and communications with patients and their families.
2. **Risk assessment:** Conduct a thorough risk assessment before discharging patients, especially those with complex or multiple health issues. This includes evaluating their stability and any potential risks associated with discharge.
3. **Clear communication:** Communicate clearly and transparently with the patient and their family about their condition, the reasons for discharge, and any potential risks. Ensure they understand the discharge plan and post-discharge care instructions.
4. **Discharge planning:** Develop a robust discharge planning process that involves a multidisciplinary team. This should include follow-up care plans, medication management, and coordination with primary care providers or specialists.
5. **Informed consent:** Obtain informed consent, ensuring that the patient or their family is fully aware of the discharge decision and any associated risks. Provide written documentation to support this.
6. **Follow-up arrangements:** Arrange for appropriate follow-up care and provide patients with contact information for healthcare providers who can address post-discharge concerns or emergencies.
7. **Compliance with protocols:** Adhere to established hospital discharge protocols and guidelines to meet all legal and ethical standards.
8. **Training and education:** Continually educate healthcare staff about best practices in discharge

planning and the importance of legal and ethical considerations.

By implementing these measures, hospitals can better protect themselves legally while ensuring the safety and well-being of their patients. It might be essential to remind medical staff to include advice on medical emergencies after dismissing patients, especially in complex medical cases such as this one.

Based on the forensic and medicolegal findings, there are several clinical considerations relevant to this case:¹⁰

1. Comprehensive risk assessment: Given the patient's complex medical history, a thorough risk assessment should have been conducted before discharge. This includes evaluating the potential for acute events such as thromboembolism or cardiac complications due to electrolyte imbalance.
2. Integrated care approach: The management of comorbidities like pneumonia, a suspected lung tumor, diabetes, and hypertension requires an integrated care plan that involves multiple specialists. Coordination among these specialists ensures that all aspects of the patient's health are monitored and managed effectively.
3. Discharge planning: The discharge process should include a detailed plan considering the patient's overall stability and readiness for home care.¹⁵ This involves ensuring the patient understands medication management, follow-up appointments, and warning signs of potential complications.
4. Follow-up and monitoring: Post-discharge follow-up is crucial, especially for patients with a hypercoagulable state and electrolyte imbalance. Regular monitoring and timely interventions could potentially prevent adverse outcomes.
5. Patient and family education: Thorough education of the patient and family about the potential risks and necessary precautions post-discharge is essential. This includes information

on recognizing symptoms that warrant immediate medical attention.

6. Documentation and communication: Meticulous documentation of the patient's condition at discharge and clear communication among healthcare providers, the patient, and family members are vital to ensure continuity of care and mitigate medicolegal risks.

By focusing on these clinical considerations, healthcare providers can enhance patient safety and reduce the likelihood of adverse outcomes in complex cases like this. These efforts also help align clinical practices with forensic and medicolegal findings to ensure comprehensive and ethical patient care. In this case, the patient was pronounced DOA after having been discharged from the hospital just the day before. Logically, there must be some connection between the reason for her hospital stay and the deterioration of her condition at home unless there is a coincidental, non-consequential event, e.g., some external trauma. Thus, her complete medical record must be scrutinized to mitigate any possibility of medicolegal risks.

To further elucidate the complexities of this case, additional tests and examinations could be considered in the forensic and clinical context, mainly if an autopsy is performed:^{9,16,17}

1. Toxicology screening: Conduct a comprehensive toxicology screen to rule out any potential drug interactions or overdoses that might have contributed to the patient's sudden death.
2. Histopathological examination: Perform detailed tissue analysis to identify any pathological changes, especially in the lungs and heart, which could explain the patient's clinical deterioration.
3. Microbiological cultures: Obtain cultures from the lungs or other relevant tissues to identify any bacterial or viral infections that might have exacerbated the patient's pneumonia or contributed to her death.
4. Advanced imaging: Advanced imaging studies such as CT or MRI scans could provide more information on the suspected lung tumor and its potential impact on the patient's health.

5. Coagulation profile: A detailed assessment of the patient's coagulation status, including tests like fibrinogen levels and a full coagulation panel to evaluate the extent of the hypercoagulable state.
6. Electrolyte and metabolic panel: A comprehensive metabolic panel to assess electrolyte levels and any metabolic imbalances that could have contributed to cardiac events or other complications.
7. Cardiac evaluation: This involves examining cardiac tissues to identify underlying heart conditions or ischemic events, especially given the patient's hypertension and potential electrolyte disturbances.

These additional tests and examinations can provide a more comprehensive understanding of the case, offering insights into the interplay of the patient's various health conditions and the events leading to her death. They also assist in forming a more precise picture for forensic and clinical analyses.

Unfortunately, no autopsy was performed in this case, neither forensic nor clinical. Therefore, no additional postmortem data is available to determine the actual underlying cause of death and to provide feedback for clinical management. It might be beneficial to at least advocate for a minimally invasive autopsy or necropsy and additional non-invasive examinations if a conventional complete autopsy is not feasible. We can, however, theoretically establish a cause of death based on the patient's last condition as stated in her medical record and the family's account of her last moments. Because the patient was geriatric and had a complex condition consisting of diabetes, hypertension, hypercoagulable state, and probably also cancer, there are myriads of pathophysiologic mechanisms that could have contributed to her deterioration and sudden, although not entirely unexpected, demise. These include myocardial infarction, stroke, pulmonary embolism, and electrolyte imbalance. This is not to say that her death was completely acceptable from a clinical point of view, as she was deemed fit enough to be discharged just the day

before. However, the possibility of a decline in the patient's condition at home and any emergency symptoms should always be included in the discharge form and explained thoroughly to the patient and her family/caregiver.

CONCLUSION

The process for handling cases where a patient is dead on arrival (DOA) involves several key steps to confirm the death, understand the circumstances, and meet legal and ethical obligations. It is crucial to communicate sensitively with the deceased's family, providing information on the possible cause of death and the next steps, such as autopsy procedures and funeral arrangements. The medico-legal and ethical implications of patient dismissal from hospitals, particularly for those with complex medical conditions, include ensuring continuity of care, avoiding patient abandonment, adhering to legal and ethical guidelines for dismissal, and maintaining patient trust. Proper documentation and adherence to discharge protocols are essential, along with conducting risk assessments and maintaining clear communication with patients and families. Additional forensic and clinical tests can provide deeper insights into complex cases, enhancing patient safety and aligning clinical practices with ethical standards.

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