A Journal Kiara Nursing and Midwifery (JKNM)
ISSN (Online): 3063-7600 Volume 3, Issue 1 , August 2026

SAHAR Model-Based Nursing Care for Peritonitis and Acute Kidney Injury: A Critical Care Case Study

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ARTICLE INFO

Article history :
Submit: June, 03rd 2026
Received : July, 10th 2026
Accepted: August, 29th 2026

Keywords :
Acute Kidney Injury
Clinical Decision-Making
Critical Care Nursing
SAHAR Model
Peritonitis

Kata Kunci :
Cedera Ginjal Akut
Pengambilan Keputusan Klinis
Keperawatan Perawatan Kritis
Model SAHAR
Peritonitis

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ABSTRACT

Background: *Structured clinical decision making is critical in peritonitis with acute kidney injury (AKI), yet application of the SAHAR model in intensive care remains unreported.*

Objective: *To describe the application of the SAHAR model in nursing care for a patient with peritonitis and AKI*

Methods: *A qualitative case study was conducted in an Indonesian hospital. Data were collected through nursing assessment, monitoring, record review, and outcome evaluation, then analyzed using the six SAHAR themes.*

Results: *The SAHAR model guided cue recognition (hypoxemia, hyperkalemia, hemodynamic instability) and prioritization of three nursing diagnoses: impaired gas exchange, risk of shock, and acute pain. Interventions included oxygen therapy, strict fluid balance monitoring, fentanyl analgesia, and electrolyte correction. After 3×24 hours, the patient showed partial clinical improvement with stable hemodynamics, reduced respiratory rate, and decreased pain scale.*

Discussion: *The structured approach of the SAHAR model enabled systematic clinical judgment and timely prioritization of life threatening conditions. These findings align with previous research on decision making frameworks in emergency and critical care nursing, demonstrating the model's potential to enhance patient safety and care quality in complex cases such as peritonitis with AKI*

ABSTRAK

Latar Belakang: Pengambilan keputusan klinis yang terstruktur sangat penting dalam kasus peritonitis dengan cedera ginjal akut (AKI), namun penerapan model SAHAR dalam perawatan intensif belum pernah dilaporkan.

Tujuan: Mendeskripsikan penerapan model SAHAR dalam asuhan keperawatan pada pasien dengan peritonitis dan AKI.

Metode: Studi kasus kualitatif dilakukan di sebuah rumah sakit di Indonesia. Data dikumpulkan melalui pengkajian keperawatan, pemantauan, telaah rekam medis, dan evaluasi luaran, kemudian dianalisis menggunakan enam tema SAHAR.

Hasil: Model SAHAR memandu pengenalan tanda klinis (hipoksemia, hiperkalemia, ketidakstabilan hemodinamik) dan penentuan prioritas untuk tiga diagnosis keperawatan: gangguan pertukaran gas, risiko syok, dan nyeri akut. Intervensi yang dilakukan meliputi terapi oksigen, pemantauan ketat keseimbangan cairan, pemberian analgesik fentanyl, dan koreksi elektrolit. Setelah 3×24 jam, pasien menunjukkan perbaikan klinis parsial dengan hemodinamik stabil, penurunan frekuensi pernapasan, dan penurunan skala nyeri.

Pembahasan: Pendekatan terstruktur dari model SAHAR memungkinkan penilaian klinis yang sistematis dan penentuan prioritas yang tepat waktu terhadap kondisi yang mengancam jiwa. Temuan ini sejalan dengan penelitian sebelumnya mengenai kerangka kerja pengambilan keputusan dalam keperawatan gawat darurat dan kritis, serta menunjukkan potensi model ini dalam meningkatkan keselamatan pasien dan kualitas asuhan pada kasus kompleks seperti peritonitis dengan AKI.

INTRODUCTION

Peritonitis and acute kidney injury (AKI) are critical conditions frequently encountered in intensive care units (ICUs), often coexisting and significantly increasing morbidity and mortality.(Ostermann et al., 2025) Peritonitis, particularly generalized peritonitis, triggers a systemic inflammatory response that may lead to sepsis, hypovolemia, and nephrotoxic insults, all of which are common precursors of AKI.(Angtoni & Sucinta, 2025; Gofur et al., 2021) Despite advances in medical and surgical management, nursing care in such complex cases remains challenging due to rapidly changing clinical conditions, the need for precise clinical judgment, and the limitation of standardized decision-making frameworks in resource-constrained settings.

Clinical decision-making is a core competency in critical care nursing, especially in trauma and infection-related emergencies.(Saharuddin et al., 2025) However, most existing nursing models emphasize linear, retrospective care planning rather than adaptive, real-time decision-making. In Indonesia, emergency and critical care nurses often face high patient loads, limited resources, and insufficient structured guidance for managing concurrent life-threatening conditions such as peritonitis and AKI.(Saharuddin et al., 2025) A recent qualitative study by Saharuddin et al. introduced the SAHAR model (*Steps to Acquaintance of Hypothesis in Achieving Recovery*), which comprises six dynamic steps: recognize cues, analyze cues, prioritize hypothesis, generate solutions, take actions, and evaluate outcomes.(Saharuddin et al., 2025) This model was developed to enhance clinical judgment in emergency settings, yet its application in ICU nursing case studies, particularly for patients with combined peritonitis and AKI, has not been explored.

Therefore, a research gap exists in the availability of a structured, adaptive nursing framework that guides critical care nurses in managing the complexity of peritonitis complicated by AKI. Most existing case reports focus on medical or surgical management, with limited attention to the sequential, reflective, and collaborative nature of nursing decisions.

This study aims to apply the SAHAR model in documenting and analyzing nursing care provided to a patient with peritonitis and AKI in the ICU. The primary objective is to demonstrate how the SAHAR model can structure clinical reasoning, improve nursing documentation, and support adaptive interventions in critical care. The justification for this study lies in its potential to offer a replicable, evidence-based decision-making framework for nurses managing similar complex cases, thereby improving patient outcomes and nursing competency in critical settings.

METHODS

Study Design and Setting

This study employed a qualitative case study design using the SAHAR model (Steps to Acquaintance of Hypothesis in Achieving Recovery) as the analytical framework. The research was conducted at the Intensive Care Unit (ICU) of a regional hospital in Indonesia, from February 27 to March 1, 2026.

Participant

The participant was a 55-year-old male patient (initials Tn. K) diagnosed with peritonitis and acute kidney injury (AKI) who was admitted to the ICU following a decline in consciousness and intubation. The case was selected purposively as it represented a complex critical care scenario requiring sequential clinical decision-making.

Data Collection Techniques

Data were collected through three methods. First, an in-depth nursing assessment was performed using a standardized critical care assessment format covering airway, breathing, circulation, disability, elimination, and

laboratory findings. Second, continuous monitoring of hemodynamic status, respiratory parameters, neurological status, fluid balance, and pain scale (VAS and CPOT) was recorded on ICU monitoring sheets across three shifts (morning, afternoon, and night). Third, a medical record review included laboratory results (electrolytes, renal function, blood gas analysis), medication administration records, and physician's notes.

Data Presentation and Analysis

Data were analyzed using the six-step SAHAR model to map the nurse's clinical decision-making process.

1. Recognize cues, the nurse identified vital sign abnormalities, laboratory findings, and clinical signs.
2. Analyze cues, the nurse correlated symptoms with pathophysiological mechanisms.
3. Prioritize hypothesis, nursing diagnoses were ranked based on life-threatening potential.(TIM POKJA SDKI DPP PPNI, 2017)
4. Generate solutions, a nursing care plan was developed using the Indonesian Nursing Intervention Standards (SIKI) and Indonesian Nursing Outcome Standards (SLKI).(TIM POKJA SIKI DPP PPNI, 2018; TIM POKJA SLKI DPP PPNI, 2019)
5. Take actions, the nurse implemented interventions.
6. Evaluate outcomes, the nurse reassessed the patient's Glasgow Coma Scale score, oxygen saturation, pain scale, urine output, and hemodynamic parameters every one to two hours. All findings were documented in the ICU monitoring sheets.

Research Instrument

The instruments used included an ICU critical care assessment format (modified from the standard institutional form), an ICU monitoring sheet for hourly vital signs, fluid balance, and neurological status, the Visual Analog Scale and Critical-Care Pain Observation Tool for pain assessment, the Glasgow Coma Scale for consciousness level, and laboratory and blood gas analysis results from the hospital information system.

Ethical Considerations

This study was undertaken within the framework of a clinical nursing education program at STIKes Estu Utomo. To protect patient privacy, all data were anonymized using only the patient's initials. Written informed consent was obtained from the patient's legal representative prior to data collection, and confidentiality was maintained throughout the research process.

RESULTS

The application of the SAHAR clinical decision-making model in the critical care of a 55-year-old male patient (Tn. K) with peritonitis and acute kidney injury (AKI) is presented. The results are organized according to the six SAHAR themes: recognize cues, analyze cues, prioritize hypothesis, generate solutions, take actions, and evaluate outcomes. The SAHAR model was applied sequentially from the moment of ICU admission (February 27, 2026, 01:32) through the first 3×24 hours of critical care. Figure 1 provides a visual summary of the six-step clinical decision-making process, including time frames for each step, cue identification, hypothesis prioritization, key interventions, and outcome evaluation for this patient with peritonitis and AKI.

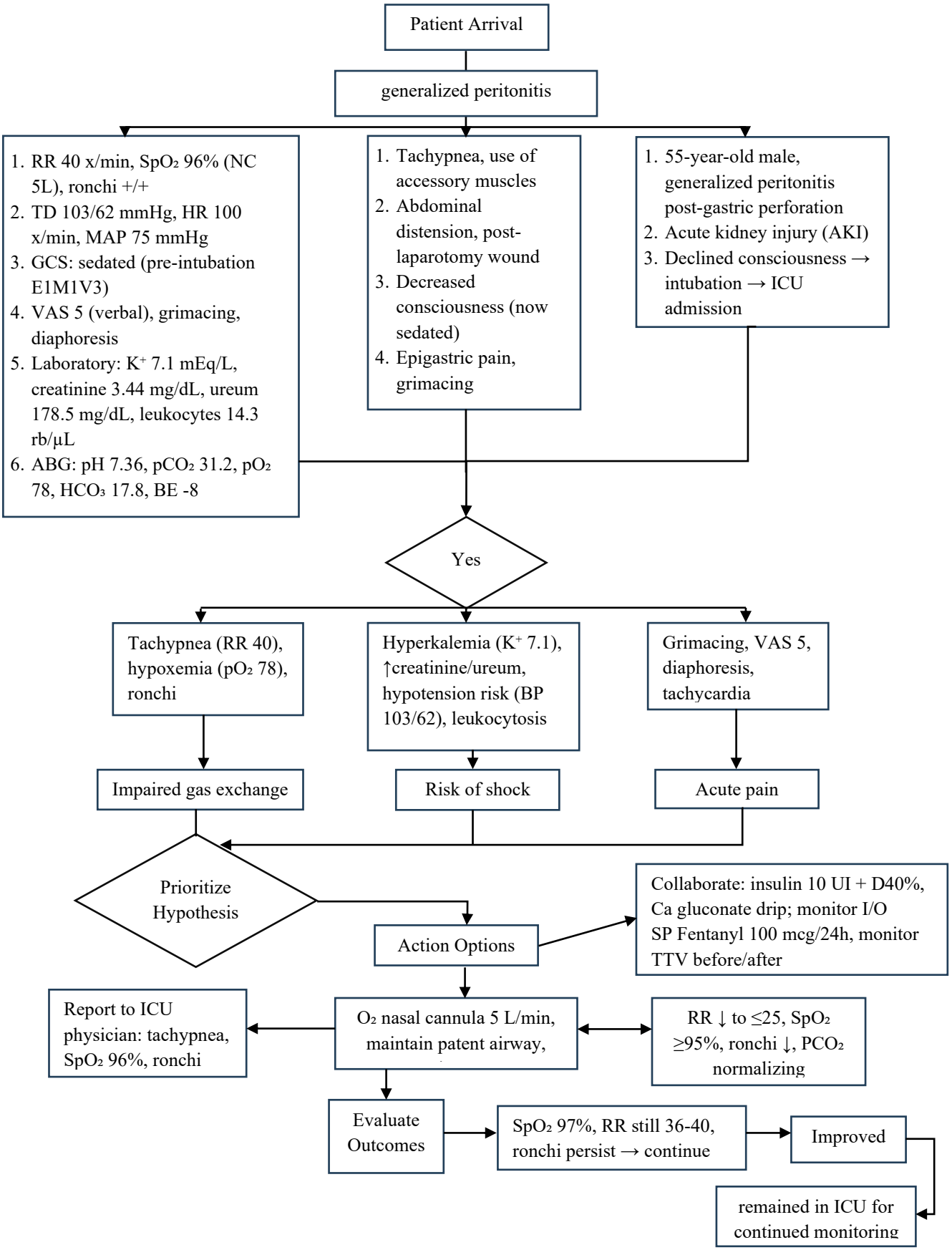

Figure 1 SAHAR Model Clinical Decision-Making Graphic for Tn. K

Recognize Cues

On admission to the ICU (February 27, 2026, at 01:32), the primary survey revealed the following critical cues:

1. Chief complaint: Epigastric pain and abdominal distension.
2. Airway: Patent, but the patient was intubated post-decline in consciousness (GCS E1M1V3).
3. Breathing: Tachypnea (RR 40 x/min), use of accessory muscles, SpO_2 96% on nasal cannula 5L/min, ronchi auscultated in both lung fields.
4. Circulation: Blood pressure 118/75 mmHg (MAP 88 mmHg), heart rate 99 x/min, CRT < 2 seconds, pale and dry mucous membranes.
5. Disability: Decreased consciousness (GCS E1M1V3 pre-intubation), then sedated (CM+sedation). Pain scale VAS 5 (verbal pre-intubation), patient grimacing.
6. Exposure: Abdominal distension, laparotomy wound with drain, no peripheral edema.
7. Laboratory findings (February 27, 2026):
   a. ABG: pH 7.36, pCO_2 31.2 mmHg, HCO_3 17.8 mEq/L, BE -8 (fully compensated metabolic acidosis).
   b. Renal function: Creatinine 3.44 mg/dL, Ureum 178.5 mg/dL.
   c. Electrolytes: K+ 7.1 mEq/L, Na+ 133 mEq/L.
   d. Inflammatory marker: Leukocytes 14.3 rb/µL.

Analyze Cues and Prioritize Hypothesis

The nurse correlated the collected cues with pathophysiological mechanisms. The patient had generalized peritonitis post-gastric perforation, complicated by AKI. Key analyses included:

1. Tachypnea, hypoxemia (pO_2 78 mmHg), and ronchi indicated impaired gas exchange due to ventilation-perfusion mismatch from sepsis and metabolic acidosis.
2. Hyperkalemia (K+ 7.1 mEq/L), increased creatinine and ureum, with hypotension risk (BP 103/62 mmHg) and leukocytosis indicated a risk of shock secondary to sepsis and AKI.
3. Grimacing, increased heart rate, and verbal pain scale (VAS 5) indicated acute pain from peritoneal inflammation and post-laparotomy incision.

Based on life-threatening potential, three primary nursing diagnoses were prioritized (Table 1).(TIM POKJA SDKI DPP PPNI, 2017)

Table 1 Prioritized Nursing Diagnoses (SDKI 2017)

Priority	Nursing Diagnosis (SDKI code)	Etiology
1	Impaired Gas Exchange (D.0003)	Ventilation-perfusion imbalance
2	Risk of Shock (D.0039)	Hypoxemia, hypotension, sepsis
3	Acute Pain (D.0077)	Physiological injury agent (peritoneal inflammation)

Generate Solutions and Take Actions

Evidence-based nursing interventions were generated according to SIKI (2018) and implemented over three days (February 27 - March 1, 2026).(TIM POKJA SIKI DPP PPNI, 2018) Key actions are summarized in Table 2.

Table 2 Summary of Nursing Actions Implemented

Domain	Intervention (SIKI Code)	Specific Actions
Impaired Gas Exchange	Oxygen Therapy (I.01026)	1. Administered O_2 via nasal cannula 5 L/min, then titrated to 4 L/min. 2. Maintained patent airway (suctioning if needed).

		3. Monitored SpO_2, ABG, and breath sounds every 1-2 hours.
Risk of Shock	Fluid Management (I.03121)	1. Monitored strict I/O every hour. 2. Assessed vital signs (BP, HR, MAP) and urine output. 3. Identified signs of hypovolemia (dry mucosa, poor turgor) and hypervolemia.
Acute Pain	Analgesic Administration (I.08243)	1. Assessed pain characteristics (PQRST) and VAS every 2 hours. 2. Collaborated for SP Fentanyl 100 mcg/24 hours. 3. Monitored vital signs before and after analgesic administration.

Evaluate Outcomes

Evaluation was performed after 3 x 24 hours of nursing care (March 1, 2026, at 20.00). The outcomes against SLKI (2019) criteria are presented in Table 3.(TIM POKJA SLKI DPP PPNI, 2019)

Table 3 Evaluation of Nursing Outcomes (Day 3)

Nursing Diagnosis (SLKI Outcome)	Outcome Criteria	Pre-Intervention (Feb 27)	Post-Intervention (Mar 1)	Status
Impaired Gas Exchange (L.01003)	Dyspnea (tachypnea)	RR 40 x/min	RR 24 x/min	Improved (partially)
	Ronchi	+/+ (both fields)	Still present but decreased	Partially resolved
	SpO_2	96% (on 5L NC)	97-98% (on 4L NC)	Improved
	PCO_2	31.2 mmHg	Not rechecked	-
	PO_2	78 mmHg	Not rechecked	-
	Airway patency	Patent	Patent (no secretions)	Maintained
Risk of Shock (L.03032)	Blood pressure	118/75 mmHg	124/73 mmHg	Improved (stable)
	Heart rate	99 x/min	116 x/min	Fluctuating
	Urine output	400 cc/24h	400-500 cc/24h	Improved (adequate)
	Skin turgor	>2 seconds	<2 seconds	Improved
	Leukocyte count	14.3 rb/µL	Not rechecked	-
Acute Pain (L.08066)	VAS (0-10)	5	3	Improved
	Grimacing	Present	Present (less frequent)	Partially resolved
	Diaphoresis	Present	Absent	Improved
	Restlessness	Present	Reduced	Improved
	Vital signs post-analgesic	TD 112/74, HR 112	TD 124/73, HR 111	Stable

Summary of Outcome Achievement:

1. Impaired Gas Exchange: Partially resolved. Tachypnea improved (RR from 40 to 24 x/min), SpO_2 maintained, but ronchi persisted.
2. Risk of Shock: Partially resolved. Hemodynamics relatively stable (MAP > 65 mmHg), urine output adequate, but mild tachycardia and risk of fluid imbalance remained.
3. Acute Pain: Partially resolved. Pain decreased from VAS 5 to 3, but the patient continued to grimace occasionally. SP Fentanyl 100 mcg/24 hours was effective.

The patient remained in the ICU for continued monitoring of renal function, fluid balance, and respiratory status. No intubation was required after the initial procedure, and the patient's level of consciousness improved (E4V5M6).

DISCUSSION

This case study demonstrates the application of the SAHAR clinical decision-making model (Steps to Acquaintance of Hypothesis in Achieving Recovery) in the critical care of a 55-year-old patient with generalized peritonitis complicated by acute kidney injury (AKI). The structured approach, encompassing recognizing cues, analyzing cues, prioritizing hypotheses, generating solutions, taking actions, and evaluating outcomes, guided the nurse in managing this complex, life-threatening condition effectively. The primary findings indicate that the patient's condition showed partial but significant improvement after 3x24 hours of nursing care, marked by stabilized hemodynamics, improved respiratory status, and reduced pain levels, despite persistent challenges like ronchi and mild tachycardia.

The recognition and analysis of cues in this case were critical. The patient presented with tachypnea (RR 40 x/min), hypoxemia (pO_2 78 mmHg), and ronchi, which the nurse correctly identified as impaired gas exchange due to ventilation-perfusion mismatch from sepsis and metabolic acidosis. This aligns with the pathophysiology of peritonitis, where systemic inflammation can lead to acute respiratory distress syndrome (ARDS) and impaired oxygenation.(Ostermann et al., 2025; Priya et al., 2024) Furthermore, the identification of hyperkalemia (K+ 7.1 mEq/L), increased creatinine (3.44 mg/dL), and hypotension risk (BP 103/62 mmHg) as indicators of risk of shock demonstrates effective clinical judgment, consistent with the SAHAR model's emphasis on correlating symptoms with clinical conditions.(Saharuddin et al., 2025)

The prioritization of hypotheses in this study placed impaired gas exchange as the top priority, followed by risk of shock and acute pain. This decision-making reflects the life-threatening potential of respiratory failure and sepsis, which is the standard of care in critical settings.(Ostermann et al., 2025; Priya et al., 2024) Studies have shown that sepsis-associated AKI occurs in up to 45% of patients with septic shock, and prioritizing airway, breathing, and circulation (ABC) is paramount.(Ostermann et al., 2025; Ziarah et al., 2024) The nurse's use of the Indonesian Nursing Diagnosis Standards (SDKI) to formulate these diagnoses demonstrates a structured, evidence-based approach, which is crucial for patient safety and outcome improvement.(TIM POKJA SDKI DPP PPNI, 2017)

The interventions generated and implemented were appropriate and evidence-based. For impaired gas exchange, the administration of oxygen therapy via nasal cannula (5 L/min, titrated to 4 L/min) and maintenance of a patent airway were fundamental. This is supported by guidelines for managing hypoxemic respiratory failure in sepsis.(Aljaloud et al., 2024) The monitoring of SpO_2 and ABG every 1-2 hours allowed for timely adjustments. For the risk of shock, strict fluid balance monitoring (intake and output every hour) and assessment of hemodynamic parameters (BP, HR, MAP) were key. The patient's fluid balance was meticulously calculated, showing a slight positive balance (+162.1 cc) on day 1, which was managed with furosemide to prevent fluid overload while avoiding hypovolemia. This aligns with the ROSE concept (Resuscitation, Optimization, Stabilization, Evacuation) in septic shock management, where careful fluid titration is critical.(Ziarah et al., 2024) The management of hyperkalemia (K+ 7.1 mEq/L) with insulin and dextrose, followed by calcium gluconate, was a life-saving, guideline-directed intervention.(Aljaloud et al., 2024)

For acute pain (VAS 5), the administration of SP Fentanyl 100 mcg/24 hours was appropriate. Severe pain from peritonitis and post-laparotomy requires potent analgesics, and fentanyl is a preferred opioid in critical care due to its rapid onset and hemodynamic stability.(TIM POKJA SIKI DPP PPNI, 2018) The nurse's monitoring of vital signs before and after analgesic administration ensured patient safety and evaluated efficacy, which is a core component of the SAHAR model.(Saharuddin et al., 2025)

The evaluation of outcomes after 3 days showed partial resolution of the three primary nursing diagnoses. Tachypnea improved (RR from 40 to 24 x/min), SpO_2 was maintained at 97-98%, and pain decreased from VAS 5 to 3. However, ronchi persisted, and mild tachycardia remained, indicating ongoing inflammation and the need for continued care. This partial improvement is consistent with the complex clinical course of generalized peritonitis with AKI, where complete recovery often takes weeks.(Fu et al., 2026; Ostermann et al., 2025) The patient's improvement in consciousness (GCS E4V5M6) and stable hemodynamics (MAP > 65 mmHg) are positive prognostic indicators.(Aljaloud et al., 2024; TIM POKJA SLKI DPP PPNI, 2019)

The incidence and risk factors for AKI in this case are consistent with the literature. Priya et al. (2024) found that 49.3% of patients with perforation peritonitis undergoing emergency laparotomy developed AKI, with intraoperative vasopressor use, blood loss, and larger crystalloid volumes being significant risk factors.(Priya et al., 2024) In this case, the patient had significant intra-abdominal infection and underwent emergency surgery, placing him at high risk for AKI. The patient's hypoalbuminemia (albumin 3.1 gr/dL) and elevated leukocytes (14.3 rb/µL) also align with the inflammatory state that predisposes to AKI.(Ostermann et al., 2025; Priya et al., 2024)

The management of AKI in this patient focused on supportive care, including fluid balance management, correction of electrolytes, and avoidance of nephrotoxins, which is the current standard. Ostermann et al. emphasize that the cornerstone of AKI management is optimizing hemodynamics, avoiding further injury, and managing complications.(Ostermann et al., 2025) The patient did not require renal replacement therapy (RRT), which is a positive outcome given that RRT in septic AKI is associated with higher mortality.(Aljaloud et al., 2024; Ostermann et al., 2025)

The use of the SAHAR model as a decision-making framework is novel and addresses a gap identified in the literature. Saharuddin et al. developed this model to enhance clinical judgment in Indonesian emergency settings, which often face resource limitations and high patient loads.(Saharuddin et al., 2025) This case study is one of the first to operationalize the SAHAR model in a real-world ICU setting, demonstrating its practical utility in structuring nursing care for complex cases like peritonitis and AKI.

The successful application of the SAHAR model in this case has several implications. First, it provides a structured, replicable framework that can enhance clinical decision-making competencies, especially for less experienced critical care nurses. Integrating the SAHAR model into nursing education and ICU orientation programs may improve systematic assessment and timely interventions. Second, the model's emphasis on continuous evaluation aligns with the dynamic nature of critical care, where patient conditions can change rapidly. For future research, multicenter studies with larger sample sizes are needed to validate the SAHAR model's effectiveness across diverse critical care settings. Randomized controlled trials comparing SAHAR-guided care versus standard care could evaluate its impact on patient outcomes, including mortality, AKI progression, and length of ICU stay. Additionally, studies incorporating biomarkers like NGAL could enhance the early detection and differentiation of AKI, improving the model's predictive power.(Peerapornratana et al., 2019) Finally, the SAHAR model should be refined and adapted for other critical conditions such as sepsis, ARDS, and traumatic brain injury, where rapid, structured decision-making is essential.

CONCLUSION

The application of the SAHAR clinical decision-making model in this critical care case demonstrates its effectiveness as a structured, adaptive framework for managing complex conditions such as peritonitis complicated

by acute kidney injury. The model's sequential process from cue recognition to outcome evaluation, enables nurses to prioritize life-threatening problems, implement timely evidence-based interventions, and respond dynamically to changing clinical conditions. This case confirms that the SAHAR model enhances clinical judgment, supports systematic documentation, and promotes patient safety in high-acuity settings. Integrating this model into critical care nursing education and practice is strongly recommended, particularly in resource-limited environments. Further multicenter studies with larger samples are warranted to validate the model's impact on long-term patient outcomes and to explore its applicability across other emergency and critical care contexts.

LIMITATIONS AND RECOMMENDATION

This study has several limitations. First, as a single case study, the findings are not generalizable to all patients with peritonitis and AKI. Second, the absence of certain advanced biomarkers, such as Neutrophil Gelatinase-Associated Lipocalin (NGAL), limits the ability to differentiate the exact etiology of AKI (e.g., prerenal vs. intrinsic) and to detect kidney injury earlier than serum creatinine.(Peerapornratana et al., 2019) Third, the evaluation period of 3 days is relatively short; longer-term outcomes such as 90-day mortality, complete renal recovery, and development of chronic kidney disease were not assessed.(Priya et al., 2024) Fourth, the potential for observer bias exists, as the same nurse who provided care also evaluated outcomes, although this reflects authentic clinical practice

REFERENCES

Aljaloud, I. D. F., Altamimi, A. M. A., Alshammari, M. B. R., Alanzi, W. M. A., Alenezi, S. M. A., Massad, K. S. Al, Alsubaei, S. T. S., Kiady, G. H. Al, Asiri, M. M., Qahtani, F. A. A. A.-, Almutiri, N. F., Ammari, H. E., Zaman, H. M. A. Al, ALwadey, T. Y. M., & Hotan, M. H. H. (2024). Capillary Refill Time : A Vital Sign for Nurses in Sepsis Management. *Journal Of International Crisis And Risk Communication Research*, *7*(S10), 1646–1655. https://doi.org/10.63278/jicrcr.vi.1011

Angtoni, M., & Sucinta, A. (2025). Peritonitis Generalisata Et Causa Perforasi Gaster pada Wanita 71 Tahun dengan TB Paru Milier dan Gagal Ginjal Akut: Laporan Kasus. *Syntax Literate: Jurnal Ilmiah Indonesia*, *10*(3), 2358–2364.

Fu, X., Shu, Y., & Zhang, Y. (2026). The potential of neutrophil lipocalin in management of acute kidney injury and peritoneal dialysis-related peritonitis : a narrative review. *Frontiers in Nephrology*, *5*(1749827), 1–15. https://doi.org/10.3389/fneph.2025.1749827

Gofur, N., Gofur, A., Soesilaningtyas, Gofur, R., Kahdina, M., & Putri, H. (2021). Peritonitis Generalisata , A Life-Threatening Infection Pathophysiology : A Review Article. *Japanese Journal of Gastroenterology and Hepatology Review*, *6*(5), 1–5.

Ostermann, M., Lumlertgul, N., Jeong, R., See, E., Joannidis, M., & James, M. (2025). Acute kidney injury. *The Lancet*, *405*, 241–256. https://doi.org/10.1016/S0140-6736(24)02385-7

Peerapornratana, S., Manrique-caballero, C. L., Gómez, H., & Kellum, J. A. (2019). Acute kidney injury from sepsis: current concepts, epidemiology, pathophysiology, prevention and treatment. *Kidney Int.*, *96*(5), 1083–1099. https://doi.org/10.1016/j.kint.2019.05.026

Priya, P., Baidya, D. K., Anand, R. K., Ray, B. R., Khanna, P., Krishna, A., & Maitra, S. (2024). Epidemiology and Long-term Outcomes of Acute Kidney Injury in Adult Patients with Perforation Peritonitis Undergoing Emergency Laparotomy. *Indian Journal of Critical Care Medicine*, *28*(9), 854–858.

Saharuddin, S., Nurachmah, E., Masfuri, M., Gayatri, D., Kimin, A., Sakti, M., Saidi, S. B., & Yona, S. (2025). Exploring Clinical Decision-Making Competencies of Emergency Nurses in Trauma Care in Indonesia : Qualitative Study. *Asian/Pacific Island Nursing Journal*, *9*(e74282), 1–5. https://doi.org/10.2196/74282

Tim pokja SDKI DPP PPNI. (2017). *Standar diagnosa keperawatan indonesia* (edisi 1). Dewan pengurus pusat persatuan perawat nasional indonesia.

Tim pokja SDKI DPP PPNI. (2018). *Standar intervensi keperawatan indonesia* (edisi 1). Dewan pengurus pusat persatuan perawat nasional indonesia.

Tim Pokja SDKI DPP PPNI. (2019). *Standar luaran keperawatan indonesia* (edisi 1). Dewan pengurus pusat persatuan perawat nasional indonesia.

Ziarah, S., Faisal, Nurdin, H., & Palinrungi, A. S. (2024). Management Of Septic Shock Et Causa Secondary Peritonitis With Complications Acute Kidney Injury And Hospital Acquired Pneumonia In Treated Patients In The Intensive Care Unit. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, *23*(9), 13–25. https://doi.org/10.9790/0853-2309071325