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Beyond the ICU: Addressing Medication Safety During Transitions of Care in Saudi Critical Care Survivors

Theeb Dashin Alqahtani[1], Salamah Jali Alotaibi[2], Saad Mohammed Al Samra[3], Bandar Eiddan Al Harthi [4], Majdi Mohammed Alosaymi [5], Yousef Saud Alotaibi[6] Omar lafi olaythah alhejaili[7] Abdulmajeed Lafi Ibrahim Alotaibi[8]

1. *EMT Technician, Saudi Arabia*
2. *Technician-Emergency Medical Services, National Guard, Saudi Arabia*
3. *Emergency, Technician, King Khalid Military College Health Center, Saudi Arabia*
4. *Pharmacy Technician, Taif Iskan Center, Saudi Arabia*
5. *Health informatics Technician, King Khalid Medical City of the National Guard in Taif*
6. *Health information technician, Altaif, Saudi Arabia*
7. *National guard Prine mohammad bin abdulaziz hospital Specilazaion:Health Administration, omaralhejili1000@gmail.com*
8. *Health administration tech.malmghyry591@gmail.com*

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Abstract

Critical care survivors face numerous challenges during their transition from intensive care to regular hospital wards and eventually to home care. This article examines medication-related problems (MRPs) affecting critical care survivors in Saudi Arabia, where the healthcare system has rapidly developed but still faces challenges in care transitions. The review reveals that inadequate medication reconciliation during transitions, inappropriate continuation of ICU-initiated medications, and insufficient follow-up care are significant issues affecting patient outcomes. Common problematic medication classes include stress ulcer prophylaxis, antipsychotics, opioids, and various other ICU-initiated therapies that are often continued inappropriately after discharge. The article discusses potential interventions to address these problems, including structured medication reconciliation programs, multidisciplinary follow-up clinics, and pharmacist-led interventions. The findings highlight the need for Saudi Arabia to develop specialized post-ICU care services and implement systematic medication review processes to improve patient outcomes and reduce medication-related harm in critical care survivors.

Introduction

The transition of care from intensive care units (ICUs) to hospital wards and eventually to home represents a vulnerable period for patients, particularly concerning medication management (Kim & Flanders, 2013). Critical care survivors often experience complex medication regimens that undergo numerous changes during hospitalization, creating significant potential for medication-related problems (MRPs) during transitions of care. These problems can lead to adverse events, rehospitalization, and decreased quality of life (Kwan et al., 2013).

In Saudi Arabia, a country with a rapidly evolving healthcare system, critical care medicine has advanced significantly over recent decades. However, the management of transitions of care, particularly regarding medication safety, remains an area requiring further development and research. The Saudi healthcare system, while technologically advanced in many aspects, faces challenges in ensuring seamless continuity of appropriate

medication therapy when patients move across different care settings (Sutton et al., 2016).

According to the Institute of Medicine (now the National Academy of Medicine), medication errors are among the most common medical errors, contributing significantly to preventable adverse events in healthcare (Institute of Medicine, 2000). For critical care survivors, who often have complex medical histories, multiple comorbidities, and altered physiological states following critical illness, the risk of experiencing medication-related problems is substantially higher than in the general hospital population.

This review aims to examine the prevalence, nature, and consequences of medication-related problems among critical care survivors in Saudi Arabia, while identifying potential interventions that could improve medication management across transitions of care. By focusing on this vulnerable patient population within the Saudi healthcare context, this article seeks to highlight opportunities for healthcare system improvement and suggest practical strategies to enhance medication safety for critical care survivors.

Methodology

This review synthesizes current evidence on medication-related problems in critical care survivors, with particular attention to the Saudi Arabian healthcare context. The methodology involves analyzing studies that examined medication-related issues during transitions of care from the ICU to hospital wards and community settings. Studies were evaluated using the Newcastle-Ottawa Scale for assessing the quality of non-randomized studies (Wells & O'Connell, 2009).

Transitions of Care and Medication Safety

Challenges in Transitions of Care

Transitions of care represent periods of vulnerability for all patients, but particularly for those recovering from critical illness. Kim and Flanders (2013) define care transitions as the movement of patients between healthcare practitioners, settings, and home as their condition and care needs change. For critical care survivors, these transitions often involve multiple handovers between healthcare teams with different specialties, priorities, and awareness of the patient's complete medication history.

Sutton et al. (2016) conducted an ethnographic process evaluation of quality improvement projects aimed at improving transitions of care for older people. Their findings revealed significant communication gaps between healthcare providers during transitions, inadequate medication reconciliation processes, and insufficient patient and caregiver education regarding medication management. While this study was not specific to Saudi Arabia, similar challenges exist in the Saudi healthcare system, where transitions between different healthcare facilities and providers can be fragmented.

Haines et al. (2021) identified transitions of care after critical illness as particularly challenging periods for patients, requiring significant adaptation and problem-solving. Their research highlighted that medication management is one of the most complex aspects of post-ICU recovery, with patients often struggling to understand changes to pre-admission medication regimens and the purpose of new medications initiated during ICU stay.

Medication Reconciliation as a Safety Strategy

Medication reconciliation—the process of creating the most accurate list of a patient's medications across transitions of care—has been identified as a crucial patient safety strategy. Kwan et al. (2013) conducted a systematic review examining medication reconciliation during transitions of care and found that this process can effectively identify medication discrepancies and potentially prevent adverse drug events.

However, the implementation of effective medication reconciliation in Saudi healthcare settings faces several challenges. These include fragmented electronic health record systems, variable documentation practices, language barriers between healthcare providers and patients, and limited pharmacy resources in some settings. Additionally, the cultural context in Saudi Arabia, where family members often manage medications for patients, adds complexity to the medication reconciliation process (Sutton et al., 2016).

Redmond et al. (2018) conducted a Cochrane review on the impact of medication reconciliation for improving transitions of care. Their findings suggested that medication reconciliation interventions likely reduce medication discrepancies, but the clinical significance of these reductions remains unclear. This highlights the need for well-designed studies evaluating the impact of medication reconciliation specifically in Saudi Arabian healthcare settings, particularly for high-risk populations such as critical care survivors.

Common Medication-Related Problems in Critical Care Survivors

Inappropriate Continuation of Stress Ulcer Prophylaxis

One of the most extensively documented medication-related problems in critical care survivors is the inappropriate continuation of stress ulcer prophylaxis (SUP) after ICU discharge. Multiple studies have identified this as a common issue with potential for adverse effects and unnecessary healthcare costs.

Farley et al. (2013) found that inappropriate continuation of SUP beyond the ICU setting is widespread, with their study showing that 60% of patients continued to receive SUP after transfer from the ICU despite no ongoing indication. Similarly, Farrell et al. (2010) documented overuse of SUP in the critical care setting and beyond, noting that many patients were discharged from the hospital with prescriptions for proton pump inhibitors (PPIs) or H2-receptor antagonists that were initiated in the ICU but no longer indicated.

This pattern appears consistent across different healthcare systems. Wohlt et al. (2007) reported that 80% of patients who received SUP in the ICU were inappropriately continued on these medications at hospital discharge. Tan et al. (2016) conducted a retrospective study examining the incidence and cost of SUP after discharge from the ICU and found significant financial implications of this practice.

In Saudi Arabia, where PPIs are widely available and frequently prescribed, the inappropriate continuation of SUP represents a substantial concern for critical care survivors. The financial burden on the Saudi healthcare system and potential for adverse effects, including increased risk of community-acquired pneumonia, Clostridioides difficile infection, and potential interactions with other medications, make this an important area for intervention.

Blackett et al. (2021) identified several risk factors for inappropriate PPI continuation after ICU discharge, including longer ICU stays, mechanical ventilation, and the presence of multiple comorbidities. These findings are particularly relevant to Saudi critical care units, which often manage patients with complex medical conditions and prolonged ICU stays.

Continuation of Antipsychotics Initiated for ICU Delirium

Antipsychotic medications are commonly used in ICUs to manage delirium, a frequent complication of critical illness. However, research has consistently shown that these medications are often continued inappropriately after ICU discharge and even after hospital discharge.

Tomichek et al. (2016) conducted a prospective cohort study examining antipsychotic prescribing patterns during and after critical illness. They found that a significant proportion of patients who received antipsychotics for ICU delirium continued to receive these medications after transfer to the ward and even after hospital discharge, despite the lack of evidence supporting their long-term use for this indication.

Marshall et al. (2016) investigated antipsychotic utilization in the ICU and during transitions of care, reporting that 21% of patients who received antipsychotics in the ICU were discharged on these medications. Risk factors for continued antipsychotic use included older age, pre-existing psychiatric conditions, and longer duration of antipsychotic therapy in the ICU.

In Saudi Arabia, where mental health stigma remains significant and psychiatric services are still developing, inappropriate continuation of antipsychotics initiated in the ICU is particularly concerning. Patients may continue these medications for extended periods without appropriate psychiatric follow-up or monitoring for adverse effects.

Dixit et al. (2021) described this as an "unwarranted continuation" and conducted a multicenter evaluation that revealed significant variations in practice. Similarly, Levine et al. (2019) identified risk factors for continuation of atypical antipsychotics at hospital discharge, including age, pre-existing psychiatric diagnosis, and duration of ICU delirium.

Opioid Use After Critical Illness

Critical care survivors often experience pain during and after their ICU stay, leading to the initiation of opioid therapy. However, the transition from ICU to ward and eventually to home presents challenges in appropriate opioid management.

Wang et al. (2018) conducted a population-based cohort study examining opioid use after ICU admission among elderly chronic opioid users and found that critical illness was associated with increases in opioid dose after discharge. Similarly, Wunsch et al. (2020) investigated new opioid use after invasive mechanical ventilation and hospital discharge, finding that approximately 4% of previously opioid-naïve patients continued to receive opioids 90 days after discharge.

In Saudi Arabia, where regulatory frameworks for opioid prescribing are strict but follow-up care may be fragmented, critical care survivors face unique challenges related to pain management. The stigma associated with opioid use, combined with regulatory barriers, may lead to either inadequate pain management or inappropriate long-term continuation without proper monitoring.

Tollinche et al. (2022) examined discharge prescribing of enteral opioids in opioid-naïve patients following non-surgical intensive care and identified factors associated with discharge opioid prescribing, including longer ICU stays and specific pain-associated diagnoses. These findings highlight the need for structured approaches to pain management during transitions from critical care.

Von Oelreich et al. (2021) conducted a nationwide cohort study on opioid use after intensive care and found that critical illness was associated with increased and persistent opioid use, particularly among previously opioid-naïve patients. This raises concerns about the potential for new persistent opioid use following critical illness, a issue that requires attention in the Saudi Arabian context where comprehensive pain management services are still developing.

Other Medication-Related Problems

Beyond the major categories discussed above, critical care survivors face numerous other medication-related challenges. Bell et al. (2011) investigated the association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. They found that patients admitted to ICUs were at higher risk of having essential chronic medications unintentionally discontinued during care transitions. This is particularly relevant in Saudi Arabia, where patients often receive care from multiple providers across different healthcare sectors with limited information sharing.

Morandi et al. (2013) examined inappropriate medication prescriptions in elderly adults surviving ICU hospitalization and found that 85% of patients were discharged with at least one potentially inappropriate medication according to the Beers criteria. This suggests that medication appropriateness is not systematically evaluated during transitions from critical care to ward settings and discharge planning.

Eijsbroek et al. (2013) investigated medication issues experienced by patients and carers after discharge from the ICU and identified significant challenges including confusion about medication changes, difficulty obtaining prescriptions, and inadequate information about the purpose and duration of new medications. These findings highlight the need for improved medication education and support for critical care survivors and their caregivers, particularly in Saudi Arabia where health literacy varies widely and family members often assume responsibility for medication management.

Interventions to Address Medication-Related Problems

Pharmacist-Led Interventions

Several studies have demonstrated the value of pharmacist involvement in addressing medication-related problems for critical care survivors. MacTavish et al. (2019) evaluated the impact of a pharmacist intervention at an intensive care rehabilitation clinic and found significant benefits in identifying and resolving medication-related issues.

The intervention involved a pharmacist working within a multidisciplinary team to conduct comprehensive medication reviews, provide patient education, and communicate with primary care providers regarding medication changes. Results showed that 47% of patients required at least one medication change during clinic attendance, with the most common interventions involving discontinuation of medications no longer indicated and addressing untreated conditions.

Adie et al. (2022) examined the impact of a pharmacist in an interdisciplinary post-cardiac intensive care unit clinic. They found that pharmacist involvement led to identification and resolution of medication discrepancies, optimization of evidence-based therapies, and improved medication adherence among cardiac ICU survivors.

In Saudi Arabia, the role of clinical pharmacists has expanded significantly in recent years, particularly in tertiary care settings. However, their involvement in transitions of care and post-ICU follow-up remains variable. Implementing pharmacist-led medication reconciliation and review programs specifically designed for critical care survivors represents a promising approach to reducing medication-related problems in this population.

Post-ICU Follow-Up Clinics

Structured follow-up programs for critical care survivors offer opportunities to address medication-related problems and improve outcomes. Bottom-Tanzer et al. (2021) reported on high occurrence of post-intensive care syndrome identified in surgical ICU survivors after implementation of a multidisciplinary clinic. Their findings highlighted that medication review was a crucial component of the follow-up service, with medication adjustments being among the most common interventions.

MacTavish et al. (2020) conducted a multicenter program examining medication-related problems in intensive care unit survivors and found that 75% of patients attending a post-ICU recovery program had at least one medication-related problem. Their research underscored the value of specialized follow-up services for identifying and addressing these issues.

In Saudi Arabia, post-ICU follow-up clinics are not yet widely established as standard practice. Developing these specialized services within the Saudi healthcare system would provide opportunities to systematically address medication-related problems and improve care transitions for critical care survivors.

Transitional Care Interventions

Comprehensive approaches to improving transitions of care for critical care survivors necessarily include attention to medication management. Bourne et al. (2022) conducted a systematic review and meta-analysis of medication-related interventions to improve medication safety and patient outcomes on transition from adult intensive care settings. They found that medication reconciliation, medication review, patient education, and transitional care pharmacists were effective strategies for reducing adverse drug events and hospital readmissions.

The Faculty of Intensive Care Medicine (2019) guidelines for the provision of intensive care services recommend standardized processes for medication reconciliation during transitions of care. These guidelines emphasize the importance of communication between healthcare teams, accurate documentation of medication changes, and patient education regarding new medications and modifications to pre-existing regimens.

Henderson et al. (2023) evaluated a health and social care program to improve outcomes following critical illness in a multicentre study. Their intervention included medication review and reconciliation as core components, and results showed improvements in several outcomes including reduced hospital readmissions.

Implementation of similar transitional care interventions in Saudi healthcare settings would require adaptation to the local context, including consideration of cultural factors, healthcare system structure, and available resources. However, the principles of comprehensive medication reconciliation, review, and education remain applicable across different healthcare systems.

Special Considerations in the Saudi Context

Cultural and Social Factors

Several unique cultural and social factors influence medication management for critical care survivors in Saudi Arabia. Family involvement in healthcare decisions and medication management is particularly strong in Saudi culture, with family members often assuming responsibility for administering medications and coordinating care. While this strong family support system can be beneficial, it also necessitates that medication education and counseling extend beyond the patient to include family caregivers.

Language barriers can also impact medication safety, particularly when patients or caregivers have limited Arabic or English proficiency and medication instructions are not available in their primary language. Additionally, healthcare professionals from diverse international backgrounds may have different approaches to medication management based on their training and previous practice settings.

Healthcare System Factors

The Saudi healthcare system has unique structural characteristics that affect medication management during transitions of care. The system includes multiple sectors (Ministry of Health, other governmental sectors, and private providers) with varying levels of integration and information sharing. Critical care survivors may receive follow-up care in settings that have limited access to their complete medication history, creating potential for medication discrepancies and errors.

Electronic health record systems across different healthcare sectors in Saudi Arabia are not fully integrated, complicating medication reconciliation efforts. Furthermore, the availability of clinical pharmacy services varies across different healthcare facilities, with some settings having robust clinical pharmacy support while others have more limited resources.

Regulatory Considerations

Medication regulatory frameworks in Saudi Arabia influence prescribing patterns and medication access for critical care survivors. Strict regulations govern the prescribing of controlled substances, including opioids and certain psychiatric medications. While these regulations serve important purposes in preventing misuse, they can also create challenges in ensuring appropriate pain management and psychiatric care for critical care survivors.

Additionally, insurance coverage and medication access systems affect the ability of patients to obtain prescribed medications after hospital discharge. Some critical care survivors may face financial barriers to medication adherence if their insurance does not cover certain medications or if they do not have adequate coverage.

Recommendations for Saudi Healthcare System

System-Level Approaches

1. **Develop National Guidelines**: Establish Saudi-specific guidelines for medication management during transitions of care from ICUs to wards and community settings. These guidelines should address common medication-related problems identified in critical care survivors and provide standardized approaches to medication reconciliation, review, and deprescribing.
2. **Enhance Electronic Health Record Integration**: Improve integration of electronic health record systems across different healthcare sectors to facilitate accurate and complete medication information transfer during care transitions.
3. **Implement Post-ICU Follow-up Programs**: Develop structured follow-up programs for critical care survivors, similar to those described by MacTavish et al. (2019) and Bottom-Tanzer et al. (2021), with specific attention to medication management and adjustment.
4. **Healthcare Professional Education**: Enhance education for healthcare professionals regarding appropriate medication management during transitions from critical care, focusing on common problematic medication classes such as SUP, antipsychotics, and opioids.

Clinical Practice Recommendations

1. **Structured Medication Reconciliation**: Implement standardized medication reconciliation processes at key transition points, including ICU admission, transfer from ICU to ward, and hospital discharge. These processes should involve clinical pharmacists and include review of pre-admission medications, evaluation of the need to continue ICU-initiated therapies, and clear documentation of medication changes.
2. **Pharmacist-Led Interventions**: Expand the role of clinical pharmacists in critical care transitions, including participation in ICU discharge planning, medication review prior to hospital discharge, and involvement in post-discharge follow-up services.
3. **Deprescribing Protocols**: Develop and implement protocols for systematic review and deprescribing of medications commonly continued inappropriately after ICU discharge, particularly stress ulcer prophylaxis, antipsychotics initiated for delirium, and sedatives.
4. **Enhanced Patient and Caregiver Education**: Provide comprehensive medication education to patients and family caregivers, including information about medication purposes, potential side effects, expected duration of therapy, and signs that should prompt medical review.

Research Priorities

1. **Epidemiological Studies**: Conduct research to establish the prevalence and patterns of medication-related problems among critical care survivors in Saudi Arabia, identifying population-specific risk factors and outcomes.
2. **Intervention Effectiveness**: Evaluate the effectiveness of medication reconciliation, pharmacist-led reviews, and transitional care programs in reducing medication-related problems and improving outcomes for Saudi critical care survivors.

3. **Implementation Science**: Investigate barriers and facilitators to implementing evidence-based medication safety practices in Saudi healthcare settings, with attention to cultural, organizational, and resource considerations.
4. **Patient-Reported Outcomes**: Include assessment of patient-reported outcomes related to medication management, such as medication understanding, adherence challenges, and perceived burden of medication regimens after critical illness.

Conclusion

Medication-related problems represent significant challenges for critical care survivors in Saudi Arabia and globally. Common issues include inappropriate continuation of stress ulcer prophylaxis, antipsychotics, and opioids; unintentional discontinuation of chronic disease medications; and inadequate patient education regarding medication changes. These problems can lead to adverse effects, rehospitalization, and diminished quality of life during recovery from critical illness.

The Saudi healthcare system has opportunities to address these challenges through system-level approaches, clinical practice improvements, and targeted research initiatives. Implementing structured medication reconciliation processes, expanding clinical pharmacy services, developing post-ICU follow-up programs, and enhancing patient and caregiver education are promising strategies to improve medication safety during transitions of care.

As the Saudi healthcare system continues to evolve and advance, attention to medication management for vulnerable populations such as critical care survivors will be essential for achieving high-quality, safe, and patient-centered care. By addressing medication-related problems systematically, healthcare providers can significantly improve the recovery experience and outcomes for critical care survivors in Saudi Arabia.

References

Adie, S. K., Thompson, A. N., Konerman, M. C., et al. (2022). Impact of a pharmacist in an interdisciplinary post-cardiac intensive care unit clinic. Heart Lung, 52, 48-51.

Bell, C. M., Brener, S. S., Gunraj, N., et al. (2011). Association of ICU or hospital admission with unintentional discontinuation of medications for chronic diseases. JAMA, 306, 840-7.

Bell, C. M., Rahimi-Darabad, P., Orner, A. I. (2006). Discontinuity of chronic medications in patients discharged from the intensive care unit. J Gen Intern Med, 21, 937-41.

Blackett, J. W., Faye, A. S., Phipps, M., et al. (2021). Prevalence and risk factors for inappropriate continuation of proton pump inhibitors after discharge from the intensive care unit. Mayo Clin Proc, 96, 2550-60.

Bottom-Tanzer, S. F., Poyant, J. O., Louzada, M. T., et al. (2021). High occurrence of postintensive care syndrome identified in surgical ICU survivors after implementation of a multidisciplinary clinic. J Trauma Acute Care Surg, 91, 406-12.

Bourne, R. S., Jennings, J. K., Panagioti, M., et al. (2022). Medication-Related interventions to improve medication safety and patient outcomes on transition from adult intensive care settings: a systematic review and meta-analysis. BMJ Qual Saf, 31, 609-22.

Dixit, D., Barbarello Andrews, L., Radparvar, S., et al. (2021). Descriptive analysis of the unwarranted continuation of antipsychotics for the management of ICU delirium during transitions of care: a multicenter evaluation across new Jersey. Am J Health Syst Pharm, 78, 1385-94.

Eijsbroek, H., Howell, D. C. J., Smith, F., et al. (2013). Medication issues experienced by patients and carers after discharge from the intensive care unit. J Crit Care, 28, 46-50.

Faculty of Intensive Care Medicine. (2019). Guidelines for the provision of intensive care service.

Farley, K. J., Barned, K. L., Crozier, T. M. (2013). Inappropriate continuation of stress ulcer prophylaxis beyond the intensive care setting. Crit Care Resusc, 15, 147-51.

Farrell, C. P., Mercogliano, G., Kuntz, C. L. (2010). Overuse of stress ulcer prophylaxis in the critical care setting and beyond. J Crit Care, 25, 214-20.

Haines, K. J., Hibbert, E., Leggett, N., et al. (2021). Transitions of care after critical illness-challenges to recovery and adaptive problem solving. Crit Care Med, 49, 1923-31.

Henderson, P., Quasim, T., Shaw, M., et al. (2023). Evaluation of a health and social care programme to improve outcomes following critical illness: a multicentre study. Thorax, 78, 160-8.

Institute of Medicine Committee on Quality of Health Care in America. (2000). To Err is Human: Building a Safer Health System. Washington (DC): National Academies Press.

Kim, C. S., Flanders, S. A. (2013). Transitions of care. Ann Intern Med, 158(5_Part_1), ITC3.

Kwan, J. L., Lo, L., Sampson, M., et al. (2013). Medication reconciliation during transitions of care as a patient safety strategy: a systematic review. Ann Intern Med, 158(5 Pt 2), 397-403.

Levine, A. R., Lemieux, S. M., D'Aquino, D., et al. (2019). Risk factors for continuation of atypical antipsychotics at hospital discharge in two intensive care unit cohorts. Clinical Medicine Insights: Psychiatry, 10, 117955731986381.

MacTavish, P., McPeake, J., Breslin, A., et al. (2021). Evaluation of medication changes following severe COVID-19 infection: a multicentre evaluation. BMJ Open Resp Res, 8, e001037.

MacTavish, P., Quasim, T., Purdie, C., et al. (2020). Medication-Related problems in intensive care unit survivors: learning from a multicenter program. Ann Am Thorac Soc, 17, 1326-9.

MacTavish, P., Quasim, T., Shaw, M., et al. (2019). Impact of a pharmacist intervention at an intensive care rehabilitation clinic. BMJ Open Qual, 8, e000580.

Marshall, J., Herzig, S. J., Howell, M. D., et al. (2016). Antipsychotic utilization in the intensive care unit and in transitions of care. J Crit Care, 33, 119-24.

Morandi, A., Vasilevskis, E., Pandharipande, P. P., et al. (2013). Inappropriate medication prescriptions in elderly adults surviving an intensive care unit hospitalization. J Am Geriatr Soc, 61, 1128-34.

Redmond, P., Grimes, T. C., McDonnell, R., et al. (2018). Impact of medication reconciliation for improving transitions of care. Cochrane Database Syst Rev, 8, CD010791.

Sutton, E., Dixon-Woods, M., Tarrant, C. (2016). Ethnographic process evaluation of a quality improvement project to improve transitions of care for older people. BMJ Open, 6, e010988.

Tan, B., Norman, R., Litton, E., et al. (2016). Incidence and cost of stress ulcer prophylaxis after discharge from the intensive care unit: a retrospective study. Crit Care Resusc, 18, 270-4.

Tollinche, L. E., Seier, K. P., Yang, G., et al. (2022). Discharge prescribing of enteral opioids in opioid naïve patients following non-surgical intensive care: a retrospective cohort study. J Crit Care, 68, 16-21.

Tomichek, J. E., Stollings, J. L., Pandharipande, P. P., et al. (2016). Antipsychotic prescribing patterns during and after critical illness: a prospective cohort study. Crit Care, 20, 378.

von Oelreich, E., Eriksson, M., Sjölund, K-F., et al. (2021). Opioid use after intensive care: a nationwide cohort study. Crit Care Med, 49, 462-71.

Wang, H. T., Hill, A. D., Gomes, T., et al. (2018). Opioid use after ICU admission among elderly chronic opioid users in Ontario: a population-based cohort study. Crit Care Med, 46, 1934-42.

Wells, G. S., O'Connell, B. (2009). The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. The Ottawa Hospital Research Institute.

Wohlt, P. D., Hansen, L. A., Fish, J. T. (2007). Inappropriate continuation of stress ulcer prophylactic therapy after discharge. Ann Pharmacother, 41, 1611-6.

Wunsch, H., Hill, A. D., Fu, L., et al. (2020). New opioid use after invasive mechanical ventilation and hospital discharge. Am J Respir Crit Care Med, 202, 568-75.