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Review Article

Missed continuity of nursing and therapy care at the point of intensive care unit step-down: A scoping review

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ABSTRACT

Objectives: To map evidence on missed continuity of nursing and therapy care during ICU step-down, including how continuity is conceptualised, what care is lost, contributing factors, consequences, and strategies to support continuity.

Methods: We conducted a scoping review in accordance with Joanna Briggs Institute methodology and reported using PRISMA-ScR. MEDLINE, Embase, CINAHL, Scopus, Web of Science and grey literature sources were searched from 1998 to October 2025. Eligible studies reported adult ICU-to-ward transitions involving nursing and/or therapy care continuity or missed care. Two authors independently screened and charted data. Findings were analysed through descriptive mapping and thematic synthesis.

Results: Of 3021 records identified, 27 studies met the inclusion criteria. The evidence was mainly qualitative and nursing-focused, with limited inclusion of therapy professionals. Continuity was most often conceptualised as informational, with evidence of incomplete handover, poor documentation, and loss of clinically relevant detail. Management continuity failures included missed monitoring, delayed review, medication discontinuity, and poor follow-through of care plans. Relational continuity involved inadequate preparation of patients and families and limited interprofessional communication. Functional continuity, including rehabilitation and mobilisation, was less frequently examined but commonly disrupted. Four themes were identified: continuity breakdown between handover and ward enactment; structural mismatch between ICU and ward environments; patient safety risks linked to missed continuity; and under-recognition of relational continuity. Findings supported a continuity cascade model in which breakdown begins before transfer and progresses across interrelated domains.

Conclusions: Missed continuity of nursing and therapy care at ICU step-down is a multifaceted and under-conceptualised problem extending beyond handover. The proposed continuity cascade model suggests that breakdown occurs across anticipatory, informational, interprofessional, management, and functional/relational domains.

Implications for Clinical Practice: Interventions should address care enactment, interprofessional coordination, rehabilitation continuity, and patient and family preparation. ICU step-down should be recognised as a high-risk transition requiring structured, multidisciplinary continuity systems.

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Introduction

Transitions of care are recognised as vulnerable periods in healthcare, particularly when patients move between settings with different levels of coordination, monitoring, and support [1]. This is especially evident during intensive care unit (ICU) discharge to a ward setting, where responsibility for care is transferred across multidisciplinary teams. The quality of this transition is influenced by changes in care intensity, patient-specific needs, ward capacity, and the way the transfer is organised and enacted [2,3]. Importantly, patients discharged from ICU remain at risk of adverse outcomes, including ICU readmission, clinical deterioration, prolonged hospitalisation, and in-hospital mortality, highlighting the need for safe and effective continuity of care across the transition process [4].

A substantial body of evidence on ICU-to-ward transitions has focused on the processes of discharge planning, handover, and communication, showing that the quality of step-down care depends on how information, responsibilities, and ongoing care needs are prepared and transferred across teams [2,3,5,6]. Recurring challenges include inconsistent discharge practices, poorly structured information transfer, discharge timing, variable documentation, and limited handover standardisation [3,5–7]. Although these findings have informed structured handover tools and discharge processes, evidence suggests that improving information transfer alone does not fully address ICU step-down, as patients remain vulnerable to reduced nurse staffing levels, lower monitoring intensity, discontinuity of care, and adverse outcomes, including ICU readmission following transfer to the ward [3,8,9].

These persistent challenges suggest that information handover is too narrow to capture the complexity of ICU-to-ward transitions, because it does not fully address whether care is expected, experienced, coordinated, and sustained across settings and over time [3,5,10]. Continuity of care provides a broader framework, defined as the extent to which care is experienced as coherent, connected, and consistent with patients' needs over time and across providers [11]. It encompasses informational, management, and relational continuity and, in complex care contexts such as ICU step-down units, also requires coordination among multiple providers, adaptation to changing needs, and integration of care processes during care location transitions [12]. This is particularly important because ICU survivors often require ongoing multidisciplinary care to address physical, cognitive, and psychosocial consequences of critical illness [13].

Missed care, defined as required care that is omitted, partially completed, or delayed, is well established in nursing research as an error of omission with implications for care quality and patient outcomes [14,15]. Commonly missed elements include mouth care, bathing, emotional support, and feeding [16]. Missed nursing care is highly prevalent across acute healthcare settings and is associated with factors such as workload, staffing, and organisational conditions, with evidence linking it to adverse outcomes, including delayed care, reduced quality, and increased risk to patients [14,17,18]. Within this review, nursing care refers to ongoing assessment, monitoring, medication management, communication, patient education, psychosocial support, discharge preparation, and coordination of care delivered by registered nurses. Therapy care refers to rehabilitation and functional recovery activities delivered by allied health professionals, including physiotherapists, occupational therapists, and speech and language therapists, such as mobilisation, activities of daily living, swallowing management, communication rehabilitation, and discharge planning.

However, despite this extensive body of work, missed care has largely been examined within discrete care activities rather than across transitions, with limited attention to how care is sustained or lost between settings such as the ICU and ward [14,16]. Continuity of care is first understood as a neutral concept describing how care is experienced as connected and coherent across providers and settings [11]. This review adopts “missed continuity” as a conceptual lens to explore where these expected continuity processes are omitted, disrupted or insufficiently enacted during ICU step-down. Conceptualising continuity breakdown as a form of missed care, therefore, offers a way to examine how care processes fail across organisational boundaries and how these failures may contribute to risk during transition.

Furthermore, while ICU discharge requires coordinated input from multiple professional groups, including nurses, physicians and allied health professionals, existing reviews have primarily examined ICU transitions from a broad multidisciplinary perspective [19], whereas evidence on missed continuity of nursing and therapy care remains comparatively underdeveloped. Existing evidence on missed care is predominantly centred on nursing, with limited explicit consideration of therapy-related care despite its important role in rehabilitation, functional recovery and ongoing care needs [14,16]. Studies show that commonly missed elements include mobility, hygiene, emotional support and patient-centred care activities, reflecting broader gaps in holistic and rehabilitative care provision [14,20]. This is particularly relevant in the context of ICU survivorship, where ongoing multidisciplinary input is required, yet continuity of nursing and therapy care within this broader system remains insufficiently examined [13]. Accordingly, this review focuses specifically on nursing and therapy continuity to understand what is currently known about these professions' contributions to ICU step-down and to identify important evidence gaps requiring future multidisciplinary research.

To address these gaps, this scoping review aims to map the existing evidence on missed continuity of nursing and therapy care at the point of ICU step-down. Specifically, the review seeks to (1) describe how continuity of care is conceptualised in ICU-to-ward transitions, (2) identify types of missed, omitted, or disrupted care across nursing and therapy domains, (3) examine contributing factors and reported consequences of continuity breakdown, and (4) map existing strategies to support continuity. By synthesising this evidence, the review aims to clarify gaps in interprofessional continuity and inform future research and practice in ICU discharge and recovery.

Methods

Study design

We conducted this scoping review in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews and report in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews guidelines [21]. We developed and registered a protocol a priori on the Open Science Framework (Doi: 10.17605/OSF.IO/JGVST).

Eligibility criteria

We defined study eligibility criteria using the Population–Concept–Context (PCC) framework [21]:

- **Population:** Studies recruiting adults (≥16 years where patients were managed within adult ICUs, consistent with eligibility criteria used in several primary studies) discharged from ICU to an in-hospital ward, and/or healthcare professionals involved in their care or transition process (e.g., nurses, physiotherapists, occupational therapists, and speech and language therapists).
- **Concept:** Studies exploring missed, omitted, delayed, or disrupted continuity of nursing and/or therapist care during ICU-to-ward transition, including failures in handover, coordination, or care implementation.
- **Context:** ICU-to-ward transition period, typically within the first 24–48 h after transfer.

We included studies that reported empirical data (qualitative, quantitative, mixed-methods, audit, or quality-improvement). We excluded physician-only studies because the review specifically aimed to

examine continuity of nursing and therapy care. However, multidisciplinary studies including physicians alongside nursing and/or therapy professionals were eligible.

Search strategy

We developed a comprehensive search strategy in collaboration with an academic librarian, based on three key concepts: ICU-to-ward transitions, nursing and therapy care, and continuity or missed care. We combined controlled vocabulary (e.g., MeSH, Emtree) with free-text terms relating to ICU-to-ward transitions, nursing and therapy care, and continuity of care. Given the varied terminology used across the literature, continuity concepts included terms such as continuity, coordination, integration, follow-up, handover, care transfer, missed care, omitted care, and care discontinuity. Searches were conducted in MEDLINE (Ovid), Embase (Ovid), CINAHL (EBSCO), Scopus, and Web of Science Core Collection (See Supplementary Materials). We also conducted supplementary searches of grey literature sources, including NICE Evidence and NHS repositories, and relevant professional organisation websites, including the European Society of Intensive Care Medicine and the Society of Critical Care Medicine, to identify guidance, reports, and practice recommendations relating to ICU discharge, care transitions, and continuity of care. We limited searches to English-language human studies published between 1998 and October 2025, as the late 1990s marked the emergence of contemporary ICU discharge practices, structured handover approaches, and continuity-of-care frameworks relevant to modern critical care. The English-language restriction was applied pragmatically because translation resources were unavailable and is acknowledged as a limitation. We screened the reference lists of included studies to identify additional relevant evidence.

Study selection

We uploaded all retrieved records from the database search to Rayyan, a web-based systematic review platform that facilitates duplicate removal, independent screening, and reviewer conflict resolution, and removed duplicates [22]. Two reviewers (MDV and GO) independently screened titles, abstracts, and full-text articles against the predefined inclusion and exclusion criteria. Independent screening resulted in only two disagreements, both of which were resolved through discussion with a third reviewer (GUJ) until consensus was reached. The study selection process is presented in the PRISMA flow diagram (Fig. 1). The search identified 3021 records, of which 1895 remained after duplicate removal and were screened by title and abstract. Following screening, 170 reports were sought for retrieval, of which 167 were

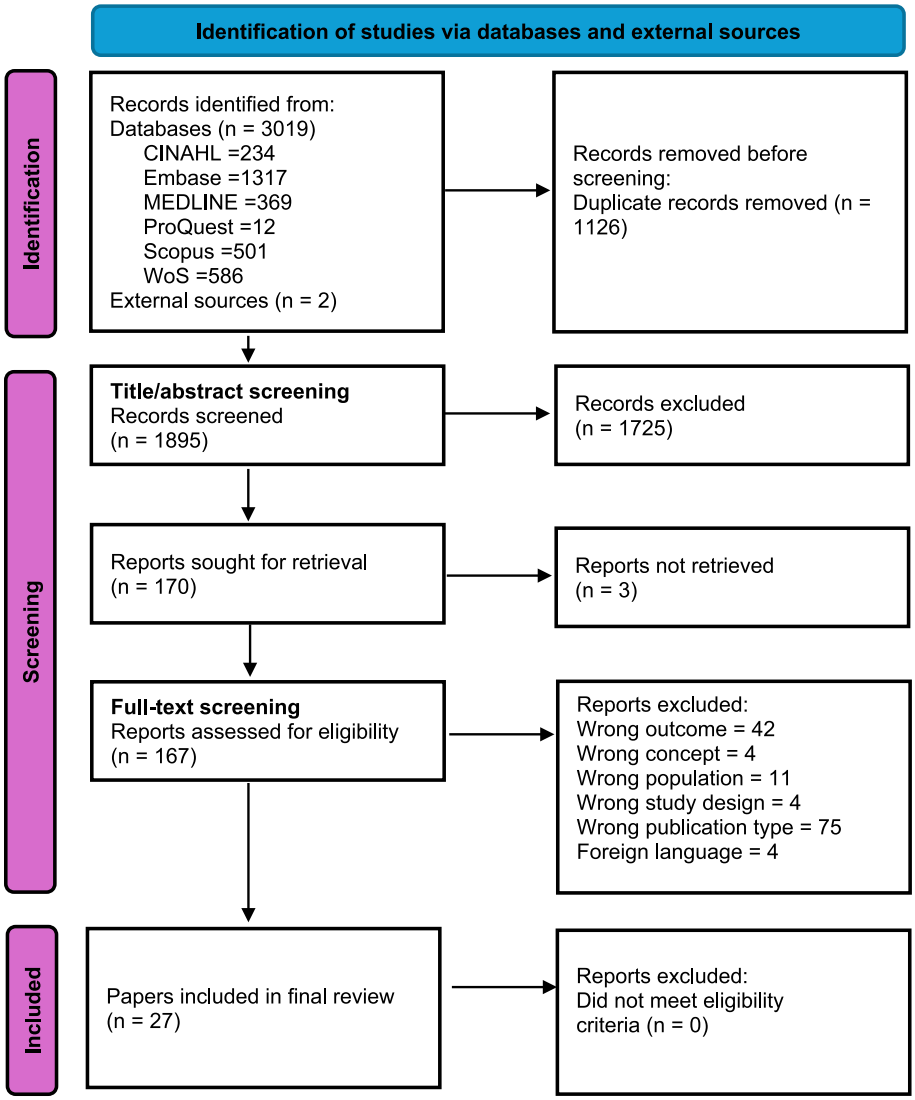


Fig. 1. PRISMA flow diagram.

obtained and assessed for eligibility. Three reports could not be retrieved despite attempts to contact the authors. Of the 167 full-text reports assessed, 140 were excluded for not meeting the eligibility criteria, resulting in 27 studies included in the review. The study selection process is presented in the PRISMA flow diagram.

Data charting

We conducted data charting using a structured form adapted from JBI guidance, which we piloted and iteratively refined. Two reviewers (MDV and GO) independently extracted data from included studies and verified each other's entries to ensure consistency and accuracy. A third reviewer (GUJ) performed overall verification of the extracted data. For each study, we extracted information on study characteristics (author, year, country, setting), professional participant groups involved, study aim and design, sample and participants, definition or conceptualisation of continuity, types of missed or disrupted care, contributing factors, reported consequences or outcomes, interventions or strategies, measurement tools or frameworks, key findings or themes, and implications for practice.

Data analysis and synthesis

We analysed the data using a descriptive mapping and narrative synthesis approach consistent with JBI scoping review methodology [21]. Findings were first mapped to established continuity domains (informational, management, and relational continuity) and then synthesised inductively to identify patterns of continuity breakdown, contributing factors, consequences, and strategies to support continuity [11]. Analysis was conducted iteratively, and findings were reviewed and verified by the research team. The analytical process is summarised in Table 1.

Consistent with scoping review methodology, the analysis focused on mapping, synthesising, and conceptually integrating the evidence to identify patterns of continuity and continuity breakdown during ICU step-down.

Table 1
Data analysis and synthesis process.

Stage	Analytical approach	Application in this review
Descriptive mapping	Tabulation and frequency mapping	We summarised included studies by year, country, setting, study design, professional groups, and continuity domains to describe the distribution of evidence.
Categorisation of continuity domains	Deductive coding informed by Haggerty et al.'s [11] continuity framework and inductive category development	We mapped extracted findings to the informational, management, and relational continuity domains of Haggerty et al.'s [11] continuity framework and inductively developed additional categories of functional and interprofessional continuity to capture aspects of continuity not represented within the original framework.
Identification of missed or disrupted care	Inductive coding	We coded findings describing omitted, delayed, disrupted, or poorly enacted care and grouped these into categories of missed continuity.
Thematic synthesis	Inductive thematic synthesis	We synthesised findings across studies to identify patterns relating to continuity breakdown, contributing factors, consequences, and strategies to support continuity.
Cross-professional comparison	Comparative analysis	We compared findings reported across nursing, therapy, patient, family, and multidisciplinary studies, where available, to identify similarities, differences, and gaps in the existing evidence.
Conceptual integration	Narrative synthesis and conceptual model development	We integrated findings across continuity domains and themes to develop the continuity cascade model, which describes pathways of continuity breakdown during ICU step-down.

Reflexivity and rigour

We enhanced rigour through independent screening, independent data extraction and verification, and iterative team discussions to ensure consistency in coding, interpretation, and synthesis across qualitative, quantitative, and mixed-methods evidence. The review team comprised clinicians and researchers with expertise in critical care, critical care outreach, and survivorship across the UK, Canada, and the USA. Several members are frontline critical care nurses with academic roles, while others hold academic appointments with expertise in ICU survivorship, outreach, ventilation, and patient and family-centred care. Reflexivity was maintained throughout, recognising that the team's clinical and disciplinary perspectives, particularly in critical care nursing, outreach, and survivorship, may shape the interpretation of continuity and missed care.

Results

Characteristics of included studies

Following exclusions, 27 studies were included. Included studies were published between 2012 and 2024. Most studies were conducted in high-income countries, although one study was undertaken in Iran, an upper-middle-income country. Most studies were conducted in Australia ($n = 7$), followed by the USA ($n = 3$), the Netherlands (n = 3), Norway (n = 3), and Denmark (n = 3). Canada contributed 2 studies ($n = 2$) and New Zealand contributed 2 studies (n = 2), while single studies ($n = 1$) were conducted in Singapore, Hong Kong, China, and Iran.

Methodologically, qualitative designs were the most common study type ($n = 14$), including ethnography, phenomenology, and qualitative descriptive approaches. Mixed-methods studies accounted for 6 of 27 studies, while 7 used quantitative designs, including observational, cohort, before-and-after, and survey-based approaches. Across studies, the dominant professional lens was nursing, with 17 of 27 studies focusing primarily on ICU nurses, ward nurses, or both. Six of 27 studies included multiprofessional participants, such as physicians, and 7 of 27 studies incorporated patient and/or family perspectives. Therapy professionals were not explicitly represented as primary participants, despite several studies addressing functional aspects of care such as mobility, rehabilitation, tracheostomy management, and activities of daily living. A summary of study characteristics is presented in Table 2. A detailed summary of study characteristics is presented in the Supplementary Materials.

Continuity domains identified across the literature

Using the continuity framework specified in the protocol, derived from Haggerty et al. [11], five overlapping domains were identified: informational continuity, management continuity, relational continuity, functional continuity, and interprofessional continuity.

Table 2
Characteristics of included studies ($n = 27$).

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
James et al. [23] Country: New Zealand Setting: 430-bed Metropolitan tertiary-level teaching hospital ICU and four wards that received the most ICU discharges. Profession: Nursing	To explore nurses' experiences of the discharge process from ICU to the ward environment	Exploratory descriptive study Questionnaire Sample: All registered nurses working in ICU and four wards.	1. Central to all those who participated was the desire to control the timing of the transfer from ICU to ward setting - ICU staff: frustrated by the limited amount of time to prepare; feeling pressured to complete tasks and documentation - Ward staff: need plenty of warning to organise the shift (obtaining correct equipment; appropriate skill mix; distribution of workload) 2. What to communicate - ICU staff: presenting specific information, most notably cardiovascular and respiratory systems; role is to communicate concerns with regard to patient acuity - Ward staff: wanting a plan of care "how to care for the patient" 3. Attitudes to handover and communication - ICU staff: felt that ward staff had negative feelings about receiving a patient back to the ward; reported that ward staff are ill-equipped to care for the patients; feeling staff is disinterested in handover; perceived that ward staff were adversarial, and looking to undermine the ICU nurses - Ward staff: ICU nurses don't listen and are unfriendly; provoked feelings of anxiety 4. Written communication - ICU staff: felt there was too much documentation and repetition of data in transcribing vital signs from ICU to ward charts - Ward staff: valued transcription of vital signs from ICU to ward chart; ICU charts are alien to the staff 5. Communication with patients and families	1. Better working relationship between ICU and ward 2. liaison-type role alleviating issues associated with handover 3. Written plan of care and checklist 4. Effective communication with patients and families during handover, including letting them know re: nurse-patient ratio 5. Preparation for transition to ward-based care, including reduced monitoring and mobilisation	Key findings were that written and verbal communication needs differ depending on the setting and the timing of discharge. Timing of handover also requires negotiation.
Lin et al. [24] Country: Australia Setting: 580-bed Australian Tertiary teaching hospital. Profession: Nursing, Managers/Admin, Medical	To explore the factors influencing the ICU patient discharge process	Ethnography Participant observation, Semi-structured interviews, document analysis Sample: Nursing (ICU and ward) Medical (ICU and ward) Administrative (ward clerk, bed manager)	1. ICU consultants as main decision makers for discharge; some (nurses and registrars) are not involved in the discharge decision-making but undertook the tasks in discharge process; patient not routinely sought and told late; variation in discharge decision making among ICU consultants 2. Goals- ICU to ward: discharge the patient as soon as possible; ward not considering receiving ICU patient as a priority over bed demands and other	Nil	Three patient activity systems were identified: intensive care patient discharge activity, acute care unit accepting patient activity, and hospital bed management activity. Analysis of the interactions among these activity systems revealed conflicting objects (goals), communication breakdowns, and teamwork issues.

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Table 2 (*continued*)

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
			patient care needs 3. Tools – Clinical handovers as tools being the most problematic - variety in length; phone handover happening long before the actual patient transfer; limited or no information received by acute care nurses; Form used to document ICU nursing phone handover were found helpful 4. Rules - Guidelines existed, but only a few were aware of their existence; medical staff did not review ICU discharge until the next day 5. Division of labour - limited communication among different departments leading to each team making different decisions; Not knowing the rationale for decisions made by other staff caused distrust among staff; Liaison nurse role found to be helpful; ward secretary updating discharge summaries is helpful to get ready		
Lee et al. [25] Country: Singapore Setting: 574-bed general hospital in Singapore Profession: Nursing, Patients, Medical	To explore the bidirectional transfer of care between the ICU and its partnering clinical units.	Mixed methods: focus group discussions & structured questionnaire survey Sample: Nursing and Medical (ICU and general ward)	1. Physician prep: patient notes, discharge summary with ICU stay synthesis, choosing senders 2. Nurse prep: patient notes, focus on the latest changes; letting ward nurses know what things to prepare at the bedside; prep ICU discharge summary 3. ICU info to gen ward: patient background; medications; investigations; devices including special things to prepare; care plan and follow-up including what things need to be done that day vs next day; wound care; family issues; Q&A	1. suggests that process designers first determine the needs and expectations of the providers prior to implementing trials of handoff tools and checklists. 2. ICU clinicians should proactively push information to the GW to heighten the fidelity of data and not simply rely on discharge summaries or checklists. 3. the use of unit- specific data checklists be based on patient acuity levels. For example, GW recipients of ICU patients who have less specialised skills may require specific instructions for the patient's care to reduce task ambiguity. The purpose of the checklist creates a shared mental model of the patient's current condition, diagnosis and prognosis and plan of care for the patient. 4. a protocol for resolving conflicting instructions prior to transfer to include a formal step by the sending team to ask for and provide answers to questions from the receiving team.	The protocols and supporting data elements of an ICU transfer vary by the type of transfer and transferring unit. Readiness for transfer means that sending unit protocols affirmatively consider the needs of the receiving unit's data needs and resource constraints.
[26] Country: Netherlands Setting: Trauma centre with 996 beds. Profession: Intensive Care Patients, Relatives/ Families	To understand what relatives go through and what they need may provide input on how to strengthen family-centred care and, in the end, contribute to the reduction of symptoms of post-intensive care syndrome-family.	qualitative descriptive study semi-structured face-to-face interviews Sample: Relatives of ICU patients were included if the ICU patient was admitted and stayed in the ICU for a minimum of five days, with an acute indication. If the ability to understand	1. Uncertainty - transfer was felt unexpected. Relatives felt shocked and frightened. - medical monitoring in intensive care missed, which gave them a feeling of safety - if prognosis was not clear, worries about health state were predominant	Not reported	Relatives of ICU patients expressed five types of experiences after transfer from the ICU to the general ward: (1) relief, (2) uncertainty, (3) need to be acknowledged in becoming a caregiver, (4) sharing expectations, and (5) need for continuity in care. Relatives experience major uncertainties and

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Table 2 (*continued*)

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
		and speak Dutch and a minimum age of 18 years.	2. Insufficient communication - general ward nurses have less time and seemed busier - relatives worried they had missed information about medication and diet - The majority of the relatives had no communication plan with medical staff at the general ward concerning future treatment 3. Relatives as caregivers - information was shared only with the patient, which created sometimes more confusion than clarity as the patient was in a delirious state - relatives did not feel that they were part of the recovery plan and felt that the decisions were not taken jointly or in consultation with them - lack of guidance to cope 4. Continuity of care - Relatives preferred someone who knew their situation from a professional point of view and followed up with them along their care pathway. They explained professionals should be focused on patients and their relatives.		prefer to be more actively involved in care and care decisions.
[27] Country: USA Setting: University of Chicago, the University of California-San Francisco and the Washington University of St. Louis Profession: ICU and ward Nursing, Managers/ Admin, Medical	To identify the handoff components involved in communication failures and to describe similarities and differences in the processes of patient transfer from the ICU to the ward across three teaching hospitals.	Mixed methods: multicentre survey and comparison of process maps through informal interviews Sample: Survey: Internal medicine post-graduate year 2 and year 3 Process maps: nurse managers, internal medicine residents, attending physicians, ICU fellows and administrative staff in bed control	1. Omitted or incorrectly communicated components of handoff notes / Communication failure - rehabilitation needs - intravenous access - indwelling hardware - risk for readmission to the ICU - pending results - subspecialty consultants - nutrition and fluids - healthcare decision-maker information - antibiotics 2. Varied physician-physician communication 3. Timing of transfer of professional responsibility in relation to the patient's location 4. Varied structure of handovers between sites	1. Well-structured handoff template	Of the 295 internal medicine residents approached, 175 (59%) completed the survey. 87% of the respondents recalled at least one adverse event related to communication failure during ICU–ward transfer. 95% agreed that a well-structured handoff template would improve ICU–ward transfer. Rehabilitation needs, intravenous access/hardware and risk assessments for readmission to the ICU were the most frequently omitted or incorrectly communicated components of handoff notes. More than 60% of the respondents reported that notes omitted or miscommunicated pending results, active subspecialty consultants, nutrition and intravenous fluids, antibiotics, and healthcare decision-maker information at least twice per month. Despite variable process across the three sites, all process maps demonstrated flaws and potential for harm in critical steps of the ICU–ward transition.
Hesselink et al. [3] Country: The Netherlands Setting: ICUs including	To explore and describe the everyday practices (Work-As-Done) that hinder and facilitate	Multiple qualitative case studies Observations, semi-structured interviews, qualitative survey	1) the preparation for ICU-discharge - forgetting to inform the patient on time - the last-minute availability of a bed on	1. ward nurses visiting the patient in the ICU prior to discharge 2. ward nurses being timely informed	Twenty-six cases were studied. For each case, the actual transfer was observed. Sixteen patients, five

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Table 2 (*continued*)

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
stepdown unit Specialised wards in three hospitals in the eastern part of the Netherlands Profession: Nursing, Patients, Relatives/ Families	patient care transitions from the intensive care unit (ICU) to the ward.	Sample: Cases were considered eligible if they encompassed an adult patient planned for a transfer from the ICU to one of the participating wards and discharged during office hours. Patients, or their relatives, were only approached if they were able to understand and communicate in Dutch language. The ICU and ward nurses who were involved in the transition process were also approached. Nursing	the ward made it impossible to timely inform the patient - ICU nurses also struggled with the timing of informing patients: i.e., informing at an early stage may frustrate patients as discharge times are often rescheduled or postponed - experience of discharge conversation varied, which could potentially help anticipate possible patient needs, concerns and expectations of care in the ward -lack of direct contact between ICU and ward nurses causing misunderstanding and frustrations 2) the transfer to the ward - involving relatives - anticipating environmental factors 3) the handover and installation in the ward - using standardised approach to help convey information - asking for psychosocial aspects and current care needs ~ lack of these information hindered effective follow-up - ward nurses were not always prepared - Using different information systems: As a result, valuable time was often spent in manually organizing and transferring information with an increased risk for crucial information being missed.	about the transfer to make necessary preparations 3. inviting relatives to be present during the transfer. Their presence often comforted the patient and enabled them to exchange relevant information with nurses when the patient was unable to do so 4. Using a standardised approach 5. Handovers were considered more efficient and effective if ward nurses had studied discharge summary information beforehand. 6. Providing ICU aftercare with a consultative ICU nurse	relatives and 36 nurses were interviewed. Two patients completed the survey. Fifteen themes emerged from the data, showing that the quality of transitions is influenced by the extent to which nurses anticipate to patient specific needs (e.g., providing timely and adequate information, orientation, mental support and aftercare) and to the needs of the counterpart to continue care (e.g., by preparing handovers) besides following standard procedures. Data also show that procedures sometimes interfere with what works best in practice (e.g., communication via a liaison service instead of direct communication between ICU and ward nurses).
[28] Country: Hong Kong Setting: Acute care hospital in Hong Kong Profession: Nursing, Patients	to explore and better understand the experiences of Hong Kong general ward nurses who care for post-ICU patients.	A qualitative study using focus group interviews Sample: 20 registered nurses who are currently registered with the Hong Kong Nursing Council and have more than 12-months post-qualifying experience, currently working in a general ward environment (surgical and/or medical) of an acute care hospital in Hong Kong, and who have cared for a post-ICU patient within the past 6–12 months participated in the study. Nursing	1. Ward nurses feeling out of depth, scared and helpless when caring for post ICU patients - unfamiliar with level of care required - nurse:patient ratio - increased workload - unfamiliar with the language of ICU including drugs and monitoring - ICU nurses were prone to under-stating the acuity of the patient to be able to transfer them - expectation of family to continue level of care and monitoring from ICU 2. Ward nurses feeling uninformed and ignorant of the needs of post ICU patients - lack of training - miscommunication from ICU nurses assuming ward nurses knew ICU language - lack of protocol and guidelines to support care to the post ICU patient - high volume of information provided	1. Systematic handover 2. more precise clarification of immediate patient need prior to and during handover so the ward nurse could prepare more effectively 3. access to ICU notes through electronic systems 4. family involvement	The ward nurses in this study described the difficulties and challenges they experienced caring for the post-intensive care patient. Issues around workload and patient allocation figured highly along with a lack of education and training. Many felt scared and helpless when caring for these patients which significantly increased their anxiety. Some were compelled to spend more time with their other patients while others were so consumed with the post-ICU patient that they often neglected their other patients. The handover from the intensive care unit nurse was filled with trepidation and concern because of the level of information being handed-over was alien and complex to them so was the medications and the level of monitoring the intensive care unit nurse expected which was not

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Table 2 (*continued*)

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
			during transfer of patient, without enough time for ward nurses to digest 3. Remaining hypervigilant in the face of adversity - Spending time deciphering ICU notes to plan nursing care - increase in workload and a lack of manpower along with a lack of knowledge regarding the needs of the post-ICU patient - overall lack of resources and the difficulty of accessing appropriate monitoring equipment and the traditional paperbased methods of record keeping - ICU medications needing review by medical team		often forthcoming on the ward simply because they didn't know what they were doing.
Nikolaisen et al. [29] Country: Norway Setting: One medical ward and one surgical ward in a hospital in South-Eastern Norway with 500 somatic beds Profession: Nursing, Patients	to explore how general ward nurses experience patient safety during patient transfers from ICUs to general wards	qualitative design with a phenomenological approach Sample: registered nurses working at one of the units for more than 1 year and having experience of patient transfer from the ICU to the ward. Nursing	1. High workload or acute transfers hindering preparation 2. Capacity challenges 3. Transfers between shifts 4. Transfers during points where atmosphere is hectic leading to information loss 5. Lack of resources 6. lack of competence and experience among ward nurses that could threaten patient safety 7. ICU nurses sometimes had unrealistic expectations regarding what ward nurses could handle 8. felt that ICU nurses and ward nurses did not always see the same picture	1. ideally, information about the transfer should be given 1 or 2 days before the transfer 2. nurses needed a telephone call in advance so that they had the opportunity to read about the patient, prepare themselves mentally, ask relevant questions and decide which nurses were most appropriate to take responsibility for the patient 3. updated written information was highlighted, including a short summary of what had happened during the ICU stay and with the main focus on concise and specific instructions regarding important observations and measurements important on the ward 4. Updated written information about equipment and short-term treatment goals and an updated medication list 5. both patients and relatives should be informed and well prepared before the transfer 6. The informants suggested that oral reports took place bedside. In this way patients were able to hear important information about their ICU stay being handed over and to ask questions. 7. transfers should preferably happen during the morning or later in the afternoon, and not between shifts 8. informants suggested it could be appropriate, for patient safety concerns, to increase staff on the shift, especially the first 24 h after transfer	The nurses' experiences of patient safety during patient transfer had four themes: (1) the importance of preparedness; (2) the importance of the handover of information; (3) stress and a lack of resources and (4) a feeling of two different worlds.

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Table 2 (*continued*)

Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
				9. informants thought it was important that ICU nurses and ward nurses spoke a common language and had a common understanding of the status of the patient, for example, by using a rating system like the NEWS scale.	
O'Neill et al. [30] Country: Australia Setting: Australian public metropolitan adult teaching hospital, accredited as a level 1 trauma centre. ICU Profession: Nursing, Patients	To design, implement, and evaluate the efficacy of a standardised handover process and tool for the transfer of ICU trauma patients.	A multimethod before/after study design Observations Semi-structured interview Sample: multitrauma patients aged 18 y, together with their ICU nurse and the ward nurse undertaking patient handover. Nursing	different ICU vs ward electronic medication system	1. Handover tool - easy to use with prompts 2. Modifications of lay-out of the tool 3. Improved communication around the time of discharge 4. Inclusion of medical history would be valuable 5. Discharge summary, which you can "save as you go" 6. Consistent EHR systems for medications	Eleven patient handovers were observed, and 21 nurses (11 from the ICU and 10 from the ward) were interviewed. Patients and family members were included during the handover following the intervention (n ¼ 0/10 [0%] vs n ¼ 4/11 [36%]), and the ward nurses were asked if they had any concerns (n ¼ 5/10 [50%] vs n ¼ 10/11 [91%]). Improvements in patient observations handed over were reported following the intervention. However, omissions remained in some key areas including patient introduction, patient identity, fluid balance, and allergies/alerts. Thematic analysis of interviews revealed that the new handover process was perceived as advantageous by both ICU and ward nurses because of its structured and comprehensive approach. Identified future improvements included the need for hospital service managers to ensure integration of ICU and ward electronic health record systems.
Herling et al. [31] Country: Denmark Setting: A university hospital with 690 beds and an 11-bed mixed medical/surgical ICU Profession: Nursing	to explore ICU and ward nurses' views on assignments in relation to patients' transition between ICU and hospital ward	qualitative study with semi-structured interviews Sample: experience with at least five transfers from the ICU to a hospital ward as the nurse in charge either of the ICU discharge or of hospital ward admission Nursing	1. ICU nurses worried that lack of resources, observations and competences in the ward could compromise patient recovery 2. Ward nurses were less confident outside their one specialty 3. A successful handover was considered by ICU nurses as a transfer where ward nurses, physiotherapists and occupational therapists were ready to meet, to listen and to respond to the dialogue and briefing initiated by the ICU nurse 4. Ward nurses appreciated ICU nurses accompanied the patient to the ward 5. Ward nurses with many tasks and may be in the middle of one during arrival of ICU nurse 6. ICU nurses found their time to be more valuable and important than the hospital ward nurses 7. ICU nurses were motivated to secure survival and prevent deterioration	Nil	The overarching themes were (1) 'Ritual of hand over' with the categories: (a) 'Ready, able and willing', (b) 'Transfer of responsibility' and (c) 'Nice to know versus need to know' and (2) 'From lifesaving care to rehabilitative care' with the categories: (a) 'Complex care needs persist', (b) 'Fight or flight mode' and (c) '"Weaning' the family".Nurses were highly focused on the ritual of the actual handover of the patient and discussed readiness as an indicator of quality and the feeling of passing on the responsibility. Nurses had different opinions on what useful knowledge was and thus necessary to communicate during handover. Although patients' complex care needs may not have been resolved when exiting the ICU, ward nurses had to receive patients in a setting where nurses were mostly comfortable within

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			whereas ward nurses focused on creating a normal cardiac rhythm and reintroducing the patient to everyday life. [different perspectives] 8. oral report from ICU nurses - ward nurses expressed they lacked information of mobility, nutrition, activities of daily living (ADL) and sleep – focusing on the normal biorhythms. 9. differences in the spoken language during the handover 10. Patient acuity and complex care - The ICU nurses considered the patient to be the most stable or physically best candidate for discharge, but after transfer to become the most ill patient in the hospital ward.		their own specialty – this was worrying for both type of nurses. Patients could enter the ward very exhausted and weak or in 'fight mode' and demand rehabilitation at a pace the ward was not capable of delivering. ICU nurses encouraged families to be demanding after the ICU stay, and ward nurses asked them to trust them and step back.
Zhan et al. [32] Country: China Setting: Third Grade First Class Hospital in Wuhan, China neurosurgery ICU and the general ward Profession: Nursing, Medical	to explore the cognition and practice on transitional care during the transfer from intensive care unit to a general ward among health care professionals in China.	qualitative research design Semi-structured interview Sample: 1. having doctor/nurse qualification certificate 2.working both in neurosurgery ICU and general ward for more than 2 years; 3. possessing good language competence and logical thinking and 4. voluntarily participating in this study and signing informed consent Medicine Nursing	1. Formulation and implementation of ICU transfer decision - Deciding the time to transfer patients out of the ICU is a challenge between the benefits and risks - ICU doctors and nurses fail to reach an agreement on the standards, time, and plan of transfer-out - There might be inconsistencies and contradictions in the standards of patients' transfer-out from ICU - the family members of patients will not be involved in the decision-making process of ICU transfer. 2. Communication and collaboration among teams - working time constraints, lack of information exchange and lines of responsibility among health care professionals - doctors in the general ward rarely take the initiative to consult the department of nutrition and rehabilitation 3. Information exchange and transmission - lack of standardised information communication and transmission tools, as well as insufficient development and support of electronic information resources - unsynchronized electronic nursing record system between ICU and ward - no standardised handover record applicable to both ICU and ward	1. Implementing shared decision between patients and health care professionals - Patients and their families are encouraged to actively participate in shared decision-making between doctors and patients - A tripartite meeting should be held before patients transferring out of ICU, especially for patients with complex and special situations 2. Full combination of communication and cooperation with information exchange - the information transmission process should be optimized, and diverse forms of information communication tools should be invented with the help of an information network system - After finishing the return visit of patients who transferred out, ICU nurses should establish a communication mechanism and information feedback process with ward head nurses and charge nurses. - design the electronic archives, establish the electronic information database and collect some information of patients, including diagnosis, treatment, examination and nursing, during the ICU transition period to dynamically master the patients' conditions 3. Construction of the supportive system for caregivers in multiple ways - Before transfer-out of ICU, it is necessary to strengthen the publicity, education, and expectation of patients	Based on data analysis, perceptions of ICU transitional care, influencing factors for transitional care and recommendations for improving transitional care were obtained.

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				and their families and to focus on the psychological state of patients and caregivers with a timely understanding of their needs, expectations and experience during the ICU transition period - ICU and the ward can work together to produce some vivid and intuitive publicity videos. - pay great attention to not only patients but also the psychological and emotional reactions of family members.	
Khoshkesht et al. [33] Country: Iran Setting: Hospital complex affiliated with the Tehran University of Medical Sciences Profession: Nursing, Patients	to explore nurses' experience of transitional care in the open-heart surgery intensive care unit and its requirements.	qualitative content analysis semi-structured interviews Sample: volunteer nurses with at least 6-month work experience and experience in transferring patients from open-heart surgery-ICU general ward Nursing	1. The process of patient transfer - premature transfer due to bed capacity - the patient is not psychologically prepared to go to the general ward - the patient is not notified, and they are worried - nurses deliver the patient to the new nurse at the nurse station without accompanying the patient to their bed - There is no checklist or guidance for handover reporting 2.Transitional care requirements - Psychological preparation of the patient - The necessity of consolidating communication - Maintaining continuity of care in transition: the need to develop guidelines for transfer, avoid early transfer, and follow up with the patient, were identified as the requirements for maintaining the continuity of transitional care - Patient education and support; however no time due to workload - Considering the position of the family in transitional care	1. necessity of effective education before, during, and after the transfer 2. the need to develop guidelines for transfer 3. avoid early transfer 4. follow up with the patient 5. need for effective self-care training in all transfer processes 6. special attention should be paid to the family as a member of the transfer team.	The main categories included the process of patient transfer and transitional care requirements. The sub-categories of the patient transfer process included pre-transfer, handover, and care measures after settlement in the general ward. The sub-categories of transitional care requirements included psychological preparation of the patient, the necessity of consolidating communication, maintaining continuity of care, patient education, and support, and considering the family's position in transitional care
Powell et al. [34] Country: Australia Setting: Level 1 trauma-accredited metropolitan public adult teaching hospital. Profession: Nursing, Patients	To assess current handover practices and perceptions of ICU and ward nurses regarding handover delivery for ICU trauma patients	Multimethod observational study Sample: $N = 30$ total: 10 trauma patients (aged 18+), 10 ICU nurses, 10 ward nurses. Purposive maximal sampling for diverse nurse experience and patient characteristics (short/long-stay, age variations). All provided informed consent.	1. Interruptions (e.g., doctors asking questions mid-handover, background noise) 2. Time and workload pressures (bed swaps, simultaneous admissions) 3. Patient acuity and complexity (ICU LOS, number of treating teams, comorbidities) 4. Inexperience of ward nurses with ICU patients 5. Incompatible EMR systems between ICU and wards (administrative sign-off barrier) 6. Ward staff frequently unprepared: equipment ready in only 2/10 transfers	1. Trauma-specific discharge summary and handover checklist (suggested by nurses) 2. Structured tool (e.g., head-to-toe or ISBAR-based approach) to guide comprehensive handover 3. Direct phone communication between bedside ICU nurse and ward nurse ~30 min before transfer 4. Minimum data set for handover developed with patients and families 5. Two-phase handover (set-up phase and hands-off phase) to reduce interruptions	1. Clinically significant deficits and discrepancies in information communicated (e.g., temperature omitted 7/10; patient identity verified 1/10) 2. Median handover duration: 15 min (IQR = 6 min); mostly bedside (8/10) 3. No patient or family member was asked for questions or concerns in any (0/10) handover 4. Variable handover structure: 5/10 used systems approach, 3/10 ISBAR, 2/10 no identifiable method 5. ICU nurses had worked 3× longer in specialty than ward nurses (median 7 vs

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Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
				6. Prioritise preparation and handover over other activities (teamwork)	2 years) 6. Nurses agreed on handover quality ratings within 1 point in 8/10 handovers 7. Ward staff readiness was poor: equipment ready in only 2/10 transfers
Bodley et al. [35] Country: Canada Setting: Academic hospital, ICU and GIM Profession: Medical	To develop, implement, and evaluate a customised user-designed transfer tool to improve transitions from the ICU to the general internal medicine (GIM) ward.	Pre & post intervention study Sample: ICU and GIM clinicians including staff physicians, residents, and rapid response team members. Pre-intervention: 99 of 191 surveys returned (51.8% response rate): GIM residents 58.5%, rapid response team 24.2%, GIM attendings 17.2%.	1. Poor communication, 2. lack of standardisation, 3. high-pressure situations during transfers.	1. Structured, user-designed ICU-to-GIM transfer tool. 2. Multimodal implementation strategy: a. Daily encrypted group messaging to ICU residents during rollout. b. Monthly ICU handover orientation sessions. c. GIM noon-report feedback sessions to address barriers. 3. Education sessions for clinicians.	Implementation of a structured, user-designed transfer tool significantly improved perceived transfer adequacy (from 48.8% to 93.3%) and clinician ability to plan safe discharges (from 31.0% to 69.2%). Despite these improvements, missed continuity persisted due to inconsistent tool adoption (64.2% usage) and high omission rates of critical data, specifically home medications (83.4% missing) and secondary diagnoses (33.3% missing).
Roberts et al. [36] Country: New Zealand Setting: 23-bed medical and surgical ICU within a 650-bed acute tertiary hospital. Profession: Nursing, Patients, Medical	To improve the communication and documentation of Current Problems (CPs) in medical transfer documents for patients moving from ICU to general wards.	Quality Improvement (QI) project using the Institute for Healthcare Improvement (IHI) framework and Plan-Do-Study-Act (PDSA) cycles Sample: ICU medical staff (registrars/ doctors) and nursing staff involved in the ICU discharge process. Project team of 4 doctors and 2 nurses. Baseline review of 50 clinical summaries; subsequent PDSA cycle analyses based on 20 patients.	1. Rapid timing of discharge (patient transferred as soon as possible for bed flow; <24 h decision-to-transfer window) 2. Change of personnel (shift work; discharging doctor may have known patient only hours) 3. Data not readily available (CPs scattered across written and electronic notes from multiple specialists) 4. Form design issues (original form complex with dates/signatures poorly completed) 5. Registrar lack of specialty knowledge and limited holistic patient knowledge 6. Perception that receiving team already knows the problems	6 PDSA cycles: 1. PDSA 1: Bedside paper problem list trial (mean CPs 1.8 to 2.4) 2. PDSA 2: Redesigned, simplified official problem list form (mean fell to 1.1 due to simultaneous doctor changeover) 3. PDSA 3: Education - doctors asked to place problem list in collection basket alongside existing document when completing transfer document (mean 1.1 to 2.7) 4. PDSA 4: Education intervention targeting zero-CP summaries (no effect) 5. PDSA 5: Discharge checklist sticker added to problem list for common day-of-discharge issues (mean 2.7 → 3.85; zero-CP summaries eliminated) 6. PDSA 6: Exemplar form with example problems to reduce nursing reluctance (no significant change)	The average number of documented problems per patient increased from 1.8 to 3.85. Zero-item summaries were eliminated. Bedside tools and checklists were more effective than education alone.
[37] Country: Norway Setting: 2 surgical wards in a university hospital and 1 surgical ward in a local hospital. Profession: Nursing, Patients	To describe ward nurses' experiences of the transfer of patients from the ICU to general wards and identify their suggestions for improvement	Qualitative descriptive design; individual interviews using open questions (interview guide with topics). Sample: 8 RNs from three different inpatient wards (medical and surgical) with experience receiving ICU patients. Nurses with at least 1 year of experience and who have cared for ICU patients and could understand and speak Norwegian	1. Poor quality of handovers, 2. lack of verbal dialogue (relying too much on written notes), 3. the intensity gap (1:1 care vs. 1:8 care), 4. transfer timing (evening/night).	1. Dialogue-based handovers, 2. shadowing/rotation between ICU and wards, 3. standardised reporting tools, 4. introduction of liaison/outreach nurses.	Main category: ICU patients' transition: a great responsibility and a huge challenge. Generic category 1: A challenging transition for nurses, patients and relatives with subcategories: i. All advanced work to be done leads to uncertainty; ii. The patient has become a typical ICU patient; iii. A system that makes things difficult. Generic category 2: Dialogue and competencies as tools for improvement with subcategories:

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Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
					i.The importance of cooperation and communication; ii.The importance of a good report; iii. The importance of clinical gaze and expertise on the ward. Nurses expressed uncertainty, stress and frustration; felt transfers were inadequate and a patient safety risk.
Bunkenborg et al. [38] Country: Denmark Setting: University hospital, ICU and general wards Profession: Nursing	To explore nursing practice and perceptions of communicative interaction when handing over multi-morbid patients from the ICU to general medical or surgical wards.	Explorative qualitative; focused ethnography Sample: Two distinct samples: Observation phase: $N = 37$ (17 ICU nurses [10 with postgraduate specialisation] + 20 general ward staff [17 RNs, 3 assistants]). Focus group phase: $N = 20$ (9 ICU RNs + 11 ward RNs); these are separate participants, not a subset of the observation group.	1. ICU nurses used organ-system verbal structure with ICU-specific terminology inaccessible to ward nurses. 2. Ward nurses did not take written notes during handover. 3. Electronic nursing discharge reports were inaccessible or incomprehensible to ward staff. 4. Lack of shared goals and cultural differences in patient ownership. 5. Environmental busyness/chaos; intensity gap between high-monitoring ICU and general ward. 6. Cultural differences in ownership of the patient.	1. Use of clinical nurse specialists as guides, 2. developing shared aims, 3. improving electronic report accessibility, 4. distinguishing between information sharing vs. knowledge transfer.	Observation theme: Communicative interaction as a process of sharing and adopting ownership (subtheme: expectations influence degree of engagement). Focus group theme: Balancing and negotiating when passing on, consuming and adapting knowledge' (5 categories: varying foundations of knowledge; ambiguity of roles; passing on ownership; consuming and adapting knowledge; collaboration and involvement). Overall: information loss occurs through structural and cultural barriers, not individual failure; ward nurses did not take notes; electronic discharge reports were inaccessible or written in ICU terminology.
Stelfox et al. [39] Country: Canada. Setting: 10 Canadian hospitals across 7 cities. Profession: Nursing, Patients, Medical	To provide a 360-degree description of ICU-to-ward transfers by understanding current procedures and the perspectives of patients, physicians, and nurses.	Multi-center prospective cohort study Sample: $N = 451$ adult patients (18+ years) discharged alive from medical-surgical ICUs to hospital wards, admitted for ≥24 h. Survey respondents: ICU physicians (80% response rate), ICU nurses (80%), ward physicians (46%), ward nurses (64%), patients (74%). 10 hospitals across 7 Canadian cities (July 2014–January 2016).	1. Egocentric communication 2. separation of information and responsibility 3. inefficient patient flow 4. ICU capacity strain 5. lack of a shared mental model 6. timing and process omissions.	1. Standardised face-to-face handover, 2. documented care plans that travel with the patient, 3. avoiding transfers during shift changes or at night.	1. ICU providers consistently reported communicating more information than ward providers/patients reported receiving (statistically significant gaps across all domains) 2. Median transfer duration: 25 h (IQR 6-2 h), varying widely by hospital (5-86 h) 3. Patient satisfaction strongly associated with: receiving more information (aOR 1.32), having questions addressed (aOR 3.96), meeting ward physician pre-transfer (aOR 4.61), nurse assessment within 1 h of arrival (aOR 4.70) 4. Most common recommendation from all stakeholders: documented care plan to travel with the patient 5. Nurses: avoid transfers at shift change; Patients: be informed of transfer in advance 6. ICU occupancy >80% negatively associated with ICU nurse satisfaction (aOR 1.71)
Graan et al. [40] Country: Australia Setting: Private metropolitan hospital.	To adapt existing tools to standardise nursing handover from the ICU to a cardiac ward and	Three-stage, pre-post interrupted time-series design (mixed methods). Includes observation of handovers and audits of clinical records.	1. No standardised handover process or content tool in use at baseline. 2. Handover located away from bedside in 75% of cases (prevented patient	1. Introduction of a standardised handover tool 2. associated ISOBAR checklist.	Stage 3 post-implementation vs Stage 1 baseline:: 1.Ward readiness to receive patients: increased from 10% to 95%. 2. Checking patient identity (3

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Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
Profession: Nursing, Managers/Admin	assess patient safety risks before and after implementation	Sample: 68 RNs (ICU and cardiac ward) who provided prior written consent to be observed. Observed handovers involved 35 ICU nurses (18 Stage 1 + 17 Stage 3; experience range 1.5–30 years) and 33 cardiac ward nurses (16 Stage 1 + 17 Stage 3; experience range 2–38 years). Purposive sample of 11 senior nurse managers/educators participated in focus group interviews. Inclusion: ICU RNs required ≥3 months experience.	observation/involvement). 3. Ward nurses not ready/room not set-up in 90% of handovers (competing patient demands). 4. Body-system approach used verbally but inconsistently (not all systems addressed). 5. Junior ward staff unfamiliar with what questions to ask. 6. No guidance or checklist existed to prompt comprehensive information transfer.		identifiers): 0% to 100%. 3. Handover conducted at bedside: 25% to 100%. 4. Communication of complete handover information: 40% to 100%. 5. All equipment ready: 60% in Stage 3 (vs inconsistent in Stage 1). 6. Escalation plans and ongoing care needs consistently communicated in Stage 3. 7. Handover duration slightly longer in Stage 3 (M = 18.5 min vs M = 16.7 min Stage 1) - attributed to increased attention to care transfer.
Cognet & Coyer [41] Country: Australia Setting: A tertiary referral hospital; Neurosurgical ward and medical assessment ward. Profession: Nursing	To explore how registered nurses in the general ward setting perceive discharge processes and practices for patients recently transferred from the ICU.	Qualitative simplified grounded theory design within a constructivist paradigm; focus group interviews. Sample: 27 RNs from two wards (neurosurgical and medical assessment ward). Mix of male and female nurses; age range 22–65 years; minimum qualification Bachelor of Nursing. Four focus groups; group size 4–9 participants.	1. 'Sugar coating': ICU nurses presenting patients more positively than reality to ease transfer acceptance. 2. Multiple disruptive phone calls from ICU to ward (reported up to 5 calls per transfer). 3. Handover sometimes conducted by an ICU nurse unfamiliar with the patient. 4. Disconnection between ICU and ward staff culture. 5. Lack of accurate and complete information during handover.	1. Introduction of ICU liaison nurses. 2. Standardised handover protocols. 3. Written summary sheets to accompany verbal handover. 4. Pre-transfer preparation strategies for relatives: information brochures, pre-transfer introduction of ward nurse to patient/family. 5. Improved communication strategies between departments.	Core category of 'two worlds' identified; Communication disconnect and family needs are significant issues.
Elliott et al. [42] Country: Australia Setting: Australian public and private hospitals that utilise ICU Liaison Nurses. Profession: Nursing	To explore the opinions of an expert group of clinicians around factors contributing to adverse events in patients discharged from ICU.	Quantitative cross-sectional online survey using a validated 25-item questionnaire. Sample: $N = 39$ practising Australian ICU Liaison Nurses. Response rate 92.8% (39/42 estimated population). 82.1% held a Graduate Certificate or Diploma in intensive care nursing.	1. Lack of experienced ward staff, 2. high patient co-morbidities, 3. heavy nursing workloads, 4. premature ICU discharge, 5. inadequate communication between ICU and ward staff.	1. Increased use of ICU Liaison Nurses, 2. improved ward staff education, 3. better clinical handover processes, 4. adequate staffing levels on general wards.	System factors rated often/always by majority: 1. Heavy workloads on wards: 76.3% 2. Lack of experienced nursing staff: 52.6% 3. Lack of/inadequate supervision of ward medical staff: 50% Human factors rated often/always: 1. Delayed medical care on ward: 68.4% 2. Lack of recognition of/response to patient deterioration: 52.7% 3. Inadequate patient monitoring or assessment: 50% Patient factors (all rated often/always by majority): 1. Clinically challenging patients: 68.4% 2. Increased illness acuity: 57.9% 3. Presence of co-morbidities: 57.9% Correlation analysis: inadequate handover positively correlated with hours Liaison service available ($r = 0.308$, $p = 0.036$); nurse:patient ratios negatively correlated ($r = -0.354$, $p = 0.017$).
Mondrup et al. [43] Country: Denmark Setting: Registered	To elucidate the management of patients with a tracheostomy in	Descriptive study using an electronic questionnaire survey. Sample: $N = 34$ ICU heads of unit	1. Absence of specialised tracheostomy review teams, 2. scarce clinical guidelines,	1. Use of multidisciplinary tracheostomy teams, 2. development of formalised	1. 100% of ICUs discharge patients with uncuffed tracheostomy in situ; 18% also with cuffed cannula.

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Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
Intensive Care Units across Denmark (34 out of 43 ICUs participated) Profession: Medical	situ at discharge from the ICU to the ward.	(physicians) from 34 of 43 registered Danish ICUs (response rate 79%; 100% completion). University departments: 35% ($n = 12$); provincial hospitals: 65% ($n = 22$).	3. lack of formal education for ward staff nurses	decannulation flowcharts, 3. implementation of mandatory staff education/training on wards.	2. 56% do not document individual decannulation plans; 91% provide no daily ward follow-up. 3. No ward decannulation guidelines exist in any department. 4. Only 6% have an accidental decannulation guideline. 5. Decannulation decision on the ward: anaesthesiologist in 47% of cases; ward doctors in 35%. 6. Decannulation procedure on ward: ward doctors/nurses alone or together in 44%; anaesthesiology staff in 32%. 7. Only 29% of ICUs report formalised ward nurse education in tracheostomy management. 8. 21% felt national guidelines were needed; 70% did not.
Hopkins et al. [44] Country: USA Setting: LDS Hospital; Respiratory intensive care unit (RICU) and medical ward. Profession: Patients	To determine whether patients who received early physical activity and mobility in the ICU continued to receive physical therapy after transfer to the hospital wards.	A cohort study; assessed 300 consecutive mechanically ventilated patients who were critically ill and diagnosed with respiratory failure. Sample: $N = 72$ patients (from 300 screened; 228 excluded). Mean age 60.9 years (SD 14.2); 50% female. APACHE II score mean 21.8 (SD 5.7). Mean mechanical ventilation duration 12.0 days (SD 5.7). Mean total ICU LOS 19.4 days; mean RICU LOS 11.1 days; mean ward LOS 6.5 days. Charlson Comorbidity Index mean 4.1.	1. Inefficient communication/ information gaps during handoff, 2. cultural differences regarding the importance of activity between ICU and ward staff, 3. patient-to-staff ratios/workload, 4. patient fatigue, and patient refusal.	1. Education of ward staff on ICU debilitation, 2. enhanced communication among care providers at handoff, 3. focus on patient-centred outcomes, 4. making activity a planned care process.	Despite 90% having mobility orders at transfer, activity levels decreased in 55% of patients on the first ward day; 14 of 61 patients who walked ≥100 ft. in the ICU did not ambulate on the first ward day.
Akroute et al. [45] Country: Norway Setting: Two university teaching hospitals; ICU and general wards (cardiology, neurology, ear, nose, and throat). Profession: Nursing	To investigate ICU nurses' and registered nurses' perceptions of the barriers to providing care to adult patients with a temporary tracheostomy in ICU and general wards.	Secondary qualitative analysis of primary datasets using a qualitative descriptive design and inductive approach. Sample: $N = 12$ female nurses (6 ICU nurses and 6 registered nurses). Inclusion: Minimum 5 years of nursing experience; working permanently in rotation-shifts.	1. Encountering ambivalence: ethical tension around discharging patients with no guaranteed readmission pathway; long-term patients receiving less attentive care; inter-departmental disputes over patient 'ownership'. 2. Inadequate staffing: insufficient numbers of skilled nurses in general wards; competence gap in tracheostomy management. 3. High workload/rapid staff turnover in general wards. 4. Poor communication and documentation during handovers. 5. Low prioritisation of long-term/ complex patients.	1. Establishment of specialised weaning step-down units, 2. ICU liaison services, 3. practical education/training programs, 4. creation of stable multidisciplinary teams.	Four main barrier themes: encountering ambivalence (low prioritisation), inadequate staffing levels (lack of expertise), lack of patient continuity of care, and lack of systematic follow-up.
Elliott et al. [46] Country: Australia Setting: A large tertiary referral hospital. Units included ICU and general wards. Profession: Nursing,	To identify and describe the experiences and perceptions of nurses regarding the factors that contribute to the readmission of patients to intensive care.	Qualitative, descriptive study using unstructured one-to-one interviews. Sample: $N = 21$ nurses (8 ICU nurses, 6 ward nurses, 7 in education/ managerial/support roles) involved in the care of readmitted patients.	remature discharge from ICU (bed shortages), delayed medical care at ward level, heavy nursing workloads, lack of skilled staff, and high-acuity patients.	Increasing knowledge/skills of ward staff, utilising HDU, implementing team-based nursing, and improving ICU-ward communication.	Five main themes identified:1. Premature discharge from ICU, 2. delayed medical care at the ward level, 3. heavy nursing workloads, 4. lack of adequately qualified staff, and 5. clinically challenging patients.

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Author, Country, Setting, Profession	Aim / Purpose	Study Design & Sample	Triggers / Contributing Factors	Interventions / Strategies	Key Findings
Patients, Managers/ Admin					
Van Sluisveld et al. [47] Country: The Netherlands. Setting: 10 Dutch hospitals for the qualitative phase and 64 for the quantitative phase, including general, teaching, and academic hospitals Profession: Nursing, Patients, Managers/ Admin, Medical	To gain insight into barriers and facilitators to implementing and using ICU discharge practices.	Mixed methods: 23 individual interviews, 4 focus group interviews, and a national questionnaire survey. Sample: Qualitative: 23 individual semi-structured interviews (5 ICU physicians, 5 ICU nurses, 3 ward physicians, 5 ward nurses, 3 policy makers including 2 hospital managers and 1 medical insurance consultant, 2 post-ICU patients) from 10 Dutch hospitals. 4 focus group interviews (n = 25 total: 5 ICU physicians, 5 ward physicians, 7 ICU nurses, 8 ward nurses). Quantitative: 166 ICU physicians (21.8% response rate) from 64 Dutch hospitals (71.1% of all 90 Dutch hospitals).	1. Suboptimal/incomplete clinical handover communication 2. Lack of specific ICU discharge criteria (77.1% agreed variation exists because no specific criteria) 3. Overestimation of ward capabilities by ICU physicians (74.7%) 4. Absence of a culture of feedback between ICU and ward (55.4% reported ward professionals do not give feedback) 5. "Ivory tower"/island image of ICU - cultural differences and physical separation cause unfamiliarity 6. Lack of management prioritisation (72.9% agreed ICU discharge process deserves more management attention) 7. Organisational barriers: ward physician unavailability for face-to-face handover (65.1%); no hospital-wide electronic patient file 8. Negative attitudes towards checklists/forms among some clinicians (despite 92.2% supporting a handover checklist)	1. Standardised discharge checklists to structure verbal handover (92.2% of ICU physicians support this) 2. Formulation of specific, ward-specific ICU discharge criteria (agreed between ICU and each general ward; regularly evaluated) 3. Stimulating a culture of professional feedback between ICU and ward (learning from suboptimal handovers) 4. Preventing overestimation of general ward capabilities through better communication and ward-specific criteria 5. Team training, multidisciplinary meetings, cross-over internships, and improved leadership to reduce the "island" image of the ICU 6. Hospital-wide electronic patient file (indispensable for up-to-date medication overview: 78.3% agreed)	66 barriers and facilitators were identified. 92.2% of physicians believe a checklist is useful for handovers. 74.7% of ICU physicians admit to sometimes overestimating the capabilities of general wards. 87.3% agree there is room to improve communication between the ICU and general wards.
Ofoma et al. [48] Country: USA Setting: Academic tertiary referral center with 213 ICU beds across two campuses; notably has no dedicated step-down units. Profession: Nursing, Medical	To explore the experiences and perceptions of physicians and nurses regarding the ICU discharge process and factors predisposing to readmissions.	Qualitative study; Semi-structured interviews Sample: N = 19 providers: 10 from ICU (5 nurses, 2 consultants, 3 fellows) and 9 from general medicine (4 nurses, 2 consultants, 3 residents). Nurses required ≥1 year experience.	1. Poor communication and transitions, 2. experience/comfort level and decision-making, 3. resource constraints (no intermediate care) and institutional policies.	1. Enhancing nurse-physician collaboration, 2. better communication with primary teams, 3. conducting care conferences to address goals of care.	Identified 4 main themes: Patient, Process, Provider, and Organisational. Communication (84%) and discharge decision-making (79%) were the most cited factors predisposing to readmission.

Informational continuity

Informational continuity was the most consistently reported domain, identified in 18 of 27 studies [3,23–25,27–29,30,32,34–40,47,48]. It was reflected in studies describing incomplete or poorly structured handover, inaccessible written documentation, omitted discharge information, missing escalation plans, failure to communicate medications or ongoing care needs, and mismatches between what sending teams believed they had communicated and what receiving teams actually understood.

Eight of 27 studies suggested that the problem was not only the absence of information but also its poor usability. ICU-specific terminology, lengthy documentation, non-standardised communication, different information systems, and poorly timed handovers reduced the likelihood that information would be translated into meaningful ward action [3,24,28,30,34,38,39,47].

Management continuity

Management continuity referred to whether planned care was actually continued after ICU discharge [11] 12 of 27 studies discussed management continuity, such as missed or delayed monitoring, poor medication reconciliation, delayed review, absent or unclear discharge plans, lack of follow-up, incomplete tracheostomy planning, and uncertainty about who was responsible for ongoing care [32–34,36,39,40,42,43,45–48].

This domain was particularly evident in 6 of 27 studies, showing that handover could occur without achieving continuity in practice, as wards lacked the staffing, resources, clinical expertise, or organisational support needed to enact care plans [28,29,31,37,42,45].

Relational continuity

Relational continuity emerged most clearly in qualitative studies and was identified in 9 of 27 studies. This included poor preparation of patients and families, the need for reassurance and acknowledgement, limited direct communication between ICU and ward teams, loss of trust, and the recurring experience that ICU and ward were fundamentally different care environments [3,23,26,28,29,31,33,37,41].

Patients and families often reported feeling uncertain, abandoned, or unprepared after transfer, particularly when communication was limited, and expectations were not clearly shared, as described in 7 of 27 studies [3,23,26,29,31,33,39].

Functional continuity

Functional continuity was less often explicitly described but was identified in 7 of 27 studies. It was evident in studies addressing rehabilitation, mobilisation, tracheostomy and decannulation planning, sleep, nutrition, and activities of daily living after ICU discharge [27,28,31,43–46]. These findings suggest that continuity failures were not confined to documentation and communication but also involved interruption of supportive and rehabilitative care.

Interprofessional continuity

Interprofessional continuity was identified in 10 of 27 studies across the review. It was reflected in studies describing role ambiguity, differing expectations between ICU and ward teams, disagreement about readiness for discharge, lack of shared mental models, and poor collaboration across professional and organisational boundaries [3,23–25,31,32,39,41,47,48].

Missed or disrupted care elements

Across the included studies, six broad categories of missed or disrupted continuity were identified.

Handover and documentation gaps

The most common category, identified in 17 of 27 studies, involved incomplete verbal handover, non-standardised communication, inaccessible written documentation, omitted discharge summaries, and failure to convey care priorities or escalation plans [3,23–25,27–30,32,34–40,47].

Medication continuity failures

Medication-related continuity failures were identified in 7 of 27 studies and included omitted or delayed medication information, poor medication reconciliation, inadequate communication of ICU-specific treatment, and missed alerts or pending results [27,28,30,32,35,36,39].

Monitoring and assessment omissions

Monitoring and assessment omissions were reported in 7 of 27 studies, including delayed or missed post-transfer monitoring, delayed clinical review, absent follow-up, and delayed recognition of deterioration in the early ward period [34,37,39,40,42,45,46].

Therapy and functional continuity loss

Therapy and functional continuity loss were identified in 7 of 27 studies and included reduced mobilisation, interrupted rehabilitation, poor carry-over of tracheostomy or decannulation plans, missed activities of daily living support, and disruption of functional recovery after ICU discharge [27,28,31,43–46].

Patient and family relational discontinuity

Patient and family relational discontinuity was identified in 9 of 27 studies and included poor preparation of patients and relatives, lack of psychosocial support, limited explanation of what to expect on the ward, and insufficient acknowledgement of relatives as part of the care process [3,23,26,29,31–33,39,41].

Discharge decision and flow failures

Discharge decision and flow failures were identified in 10 of 27 studies and included premature transfer, bed pressure–driven discharge, inconsistent discharge criteria, poor ward preparedness, and overestimation of ward capability [23,24,29,32,33,39,42,46–48].

Thematic synthesis

Theme 1: continuity is most often lost at the interface between handover and ward enactment

The central issue across the literature was not simply whether handover occurred, but whether the receiving ward team could translate the information into safe, timely care. This theme was identified in 10 of 27 studies, which showed consistent gaps between information sent and information understood, between plans documented and plans enacted, and between expectations held in ICU and realities faced on the ward [3,25,27,30,32,34,36,38,39,47].

Theme 2: ICU-to-ward transfer is shaped by a structural mismatch between two care worlds

A pattern across the literature, identified in 11 of 27 studies, was the mismatch between ICU intensity and ward capacity. Ward staff frequently received patients whose acuity exceeded the resources, staffing, or confidence available on the ward, while ICU staff often viewed the ward as underprepared to continue complex care [23,28,29,31,37,38,41,42,45–47,49]. This mismatch was organisational and structural as much as interpersonal.

Theme 3: patient safety risks are closely linked to omitted nursing and functional care in the first 24–48 h

Many studies, identified in 11 of 27 studies, linked continuity breakdown to patient safety concerns, including missed medications, delayed review, omitted monitoring, readmission risk, tracheostomy-related hazards, and interrupted rehabilitation or mobilisation [27,34,35,37,39,42–46,48]. Although causality cannot be established in a scoping review, the evidence consistently positioned the immediate

post-transfer period as a vulnerable window.

Theme 4: relational and psychosocial continuity are persistently undervalued

Another recurrent finding, identified in 8 of 27 studies, was that patients and relatives were often insufficiently prepared for transfer and the realities of ward care. Families sought explanation, involvement, continuity, reassurance, and acknowledgement, yet these were often secondary to the procedural demands of discharge [3,23,26,29,31–33,41].

Cross-professional comparison

The evidence identified in this review was predominantly nursing-focused, with comparatively limited representation of therapy-related continuity. Given the review's focus on nursing and therapy care, these findings describe the available evidence identified rather than the wider multidisciplinary literature. Nursing continuity was examined explicitly in 8 of 27 studies, focusing on handover, documentation, monitoring, communication, readiness, and patient safety [23,28,30,34,38–40,42]. By contrast, therapy continuity was represented in 6 of 27 studies (22%) and was typically implicit, appearing through references to mobility, activities of daily living, rehabilitation, tracheostomy management, and functional follow-up rather than through direct inclusion of therapy professionals' perspectives [27,31,43–46]. This indicates that therapy-related continuity is clinically important but remains under-theorised and under-studied.

Conceptual integration

The included studies support a conceptualisation of missed continuity of nursing and therapy care as a cascade rather than a single event. This pattern was identified in 11 of 27 studies, which showed that continuity breakdown often begins before transfer through inadequate preparation and poor anticipatory planning, progresses through incomplete or poorly usable handover, weak interprofessional alignment, and structural ward constraints, and ultimately becomes visible as omitted monitoring, poor medication continuity, disrupted functional care, limited follow-up, and insufficient patient or family preparation [3,23,24,28,29,32,36,38,39,45,47].

The findings support a proposed cascade model of missed continuity of nursing and therapy care at ICU step-down, developed from this review and extending established continuity domains [11]. The model is summarised in Table 3.

Table 3
Proposed cascade model of missed continuity of nursing and therapy care at the ICU step-down.

Stage of continuity	Definition in ICU step-down	Examples of continuity breakdown (from our review)
Anticipatory continuity	Preparation for transfer, including discharge planning, risk anticipation, and readiness for ward care	Premature discharge, poor discharge planning, lack of ward preparation, unclear escalation plans
Informational continuity	Transfer and usability of patient information across ICU and ward teams	Incomplete handover, inaccessible documentation, missing medication information, and non-standardised communication
Interprofessional continuity	Alignment and coordination across professional groups and teams	Role ambiguity, differing expectations, poor collaboration, lack of shared mental models
Management continuity	Continuation and enactment of care plans after transfer	Missed monitoring, delayed review, poor medication reconciliation, lack of follow-up, unclear responsibility
Functional and relational continuity	Continuity of rehabilitation, daily care, and patient–family experience	Reduced mobilisation, interrupted rehabilitation, poor tracheostomy planning, lack of psychosocial support, and poor patient and family preparation

Discussion

This scoping review mapped the evidence on missed continuity of nursing and therapy care at ICU step-down and identified consistent patterns of breakdown across informational, management, relational, functional, and interprofessional domains. The findings suggest that ICU-to-ward transition is not adequately captured by the concept of handover alone. Rather, continuity failure appears to occur as a cascade, beginning with inadequate preparation for transfer, progressing through incomplete or poorly usable information exchange and weak interprofessional alignment, and becoming evident on the ward as gaps in monitoring, medication continuity, rehabilitation, and patient and family support. These findings informed a proposed cascade model of missed continuity, extending established continuity domains [11] to reflect how continuity is enacted and disrupted across ICU step-down.

Missed continuity extends beyond handover, and our findings align with broader transitional care literature demonstrating that information transfer alone does not ensure safe or effective care transitions. A large prospective observational study shows that while multiple transitional care strategies, including discharge summaries and communication processes, are widely implemented, improved outcomes are observed only when these are combined with coordination, trust, and clear follow-through across settings [50]. This reinforces our cascade model, where continuity failure occurs not simply at the point of handover, but in the breakdown between information transfer and its enactment in subsequent care. This creates opportunities for co-design of the structures and processes of care transitions [51]. Smaller mixed-methods evidence provides further granularity, showing that even when information is transferred, failures in coordination, accessibility, and role clarity lead to medication errors, missed appointments, and unplanned readmissions, indicating a disconnect between documentation and care delivery [52]. While this evidence base is predominantly observational and limited by small sample sizes in some studies, the consistency of findings across contexts supports the inference that continuity is a system-level process rather than a discrete communication event [53]. Our review extends this by explicitly framing these failures as a cascade across continuity domains. Practically, this suggests that improving ICU step-down requires system-level interventions that move beyond standardised handover tools by embedding accountability, enabling real-time interprofessional dialogue, and ensuring active follow-through of care plans. Without this, improvements in documentation are unlikely to translate into meaningful improvements in patient outcomes [54].

Another major finding was the consistent characterisation of ICU and ward as fundamentally different care environments. Across studies, ICU staff described wards as under-resourced and less equipped to manage complex patients, while ward staff reported receiving patients whose acuity exceeded ward capacity, reflecting structural differences in staffing, monitoring, workflows, and expertise rather than communication alone. Qualitative evidence shows that patients and families experience a clear disruption in care following ICU discharge due to reduced surveillance and differing expectations of care delivery [2], while documentation studies demonstrate misalignment in clinical priorities, with only 42% agreement in patient issues between ICU and ward records [55]. Broader evidence on transitional care further supports this structural mismatch, indicating that outcomes improve only when transitions are supported by coordination, capacity alignment, and system-level integration, rather than by communication processes alone [50]. Within our cascade model, this highlights that a breakdown in continuity is not primarily an individual failure but a consequence of transferring high-acuity patients into environments that are not configured to sustain the equivalent intensity of care. Practically, this

suggests that improving ICU step-down requires system-level interventions, including aligning discharge timing with ward readiness, strengthening escalation pathways, and embedding post-ICU support, rather than focusing solely on handover processes.

Missed continuity should be understood as a patient safety issue rather than a minor process failure. In broader nursing literature, gaps in continuity are explicitly linked to preventable adverse events, including failure to recognise deterioration, communication lapses, and overlooked care needs [18]. This is reinforced by out-of-hours evidence showing that reduced staffing, delayed escalation, poor handover, infrequent observations, and out-of-hours ICU discharge increase the risk of harm, including higher in-hospital mortality and increased readmission risk after ICU discharge [56]. Practical improvement work also shows that strengthening continuity processes can reduce omissions, with a structured weekend continuity checklist improving handover completeness, escalation planning, and clinical preparedness on a respiratory ward [57]. At the same time, continuity is not only technical but also relational: reduced relational continuity is associated with more patient complaints, suggesting that disrupted continuity also affects patients' confidence, safety, and care experience [58]. These studies support our cascade model by showing that when continuity breaks down, the consequences are clinical, organisational, and relational, which strengthens the case for structured follow-up, clearer escalation planning, and deliberate preparation of patients and families during ICU step-down.

Therapy continuity is visible but under-studied. In our review, losses in mobility, rehabilitation, activities of daily living, tracheostomy care, functional recovery, and follow-up were evident, yet therapy perspectives were rarely examined directly. This matters because ICU rehabilitation improves physical function and reduces ICU and hospital length of stay, indicating that therapy input is clinically consequential rather than peripheral [59]. However, recent physiotherapy literature indicates that therapy processes are often constrained by poor interprofessional communication, limited documentation uptake, time pressure, and the perception that physiotherapy goals are not consistently visible or valued across teams [60]. ICU professionals likewise describe physiotherapy as essential but limited by insufficient staffing, constrained treatment time, and the need for stronger multidisciplinary coordination [61]. This gap is amplified by the broader evidence base, where allied health professions remain comparatively understudied and fragmented relative to nursing and medicine [62]. Similarly, the recent UK NCEPOD review identified substantial deficiencies in multidisciplinary rehabilitation pathways after ICU discharge, including inconsistent rehabilitation planning, poor communication across settings, and limited coordination of ongoing recovery, further emphasising that rehabilitation continuity remains a persistent systems challenge [63]. These findings support our argument that ICU step-down should be understood not only as a nursing and medical handover, but also as a rehabilitation continuity process that requires explicit study.

Implications for clinical practice

The findings suggest that improving ICU step-down requires moving beyond completing handover to ensuring the usability and enactment of information on the ward, including clear ownership of care, prioritisation of monitoring and medication changes, and continuity of nursing and therapy needs. Transfer planning should explicitly incorporate functional and relational elements, such as mobilisation status, tracheostomy management, rehabilitation goals, and patient and family preparation, and should, where possible, be supported by liaison or outreach models that bridge ICU and ward care during the early post-transfer period. These strategies are most likely to be effective when implemented as system-level interventions that align organisational processes, workforce capability, communication pathways, and accountability across ICU and ward settings, rather than relying solely on individual clinicians to improve handover practices. More broadly, ICU step-down should be considered a distinct transition phase that requires anticipatory planning, interprofessional coordination, and follow-up. Future research should prioritise prospective and intervention studies, explicitly include therapy professions, and examine continuity across domains rather than in isolation. The proposed cascade model provides a structured framework for this work and a clinically meaningful lens for understanding persistent vulnerability at the ICU step-down.

Limitations

Several limitations should be considered. The evidence base was dominated by qualitative and nursing-focused studies, limiting the depth of analysis on therapy-specific continuity. Most included studies were conducted in high-income settings, which may reduce transferability to other healthcare contexts. There was substantial heterogeneity in study aims, terminology, and reporting of continuity, which made consistent categorisation and comparison challenging. In addition, continuity was rarely explicitly defined in primary studies, requiring interpretive judgement during data extraction and synthesis, which may have influenced how findings were classified within the proposed framework. Future research could apply implementation or systems-based frameworks to better understand the mechanisms underpinning the breakdown of continuity during ICU step-down. The review was restricted to English-language human studies, which may have excluded relevant evidence published in other languages.

Conclusion

This scoping review demonstrates that missed continuity of nursing and therapy care at ICU step-down is a significant and under-conceptualised problem. Continuity breakdown extends beyond handover and occurs across informational, management, relational, functional, and interprofessional domains, with the early post-transfer period representing a key point of vulnerability. The evidence highlights a predominantly nursing-focused literature, with therapy continuity visible but insufficiently examined. Addressing this gap requires system-level interventions that support sustained, coordinated, and interprofessional continuity of care before, during, and after ICU transfer, rather than viewing ICU discharge as a single handover event.

CRediT authorship contribution statement

Gideon U. Johnson: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Misha Denise Virtudazo:** Writing – review & editing, Visualization, Validation, Software, Resources, Project administration, Methodology, Formal analysis, Data curation. **Godfrey Opiah:** Writing – review & editing, Visualization, Validation, Software, Resources, Project administration, Methodology, Formal analysis, Data curation. **HyunBin You:** Writing – review & editing, Visualization, Validation, Resources, Methodology, Formal analysis. **Laura Istanboulian:** Writing – review & editing, Visualization, Validation, Resources, Methodology, Formal analysis. **Natalie Pattison:** Writing – review & editing, Validation, Resources, Methodology. **Louise Rose:** Writing – review & editing, Validation, Resources, Methodology.

Ethical Statement

Ethical approval was not required for this study as it involved the synthesis of data from previously published studies and did not include human participants or identifiable personal data.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.iccn.2026.104535.

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