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The Timing of Care as a Component of Breathlessness Management: A Theoretical Framework for Coordinating Exertion, Recovery, and Essential Nursing Activities in Advanced Illness

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Abstract

To examine timing as a clinically relevant but underdeveloped dimension of breathlessness management and to develop a theoretical account of how exertion, recovery opportunity, essential nursing activity and patient priorities may be coordinated in advanced illness. Discursive theoretical paper integrating contemporary breathlessness, nursing, rehabilitation, symptom-management and palliative-care scholarship. A critically selected evidence set from 2017–2025 was used to examine chronic and episodic breathlessness, functional activity, self-management, nursing practice, rehabilitation and multimodal symptom management. Necessary care can itself require exertion. Temporal organization therefore deserves attention alongside intervention choice, symptom assessment and patient preference. The proposed theory treats recovery opportunity as individualized and conditional rather than as a fixed interval. Breathlessness management may be strengthened by considering how care demands accumulate, how recovery is enabled between demanding activities and which activities patients regard as essential or worthwhile. These propositions require prospective empirical evaluation before they can support prescriptive sequencing protocols. The paper provides a nursing-specific conceptual basis for studying whether the organization of necessary activities across time influences tolerability, participation and symptom burden in advanced illness.

Keywords: Breathlessness, Dyspnea, Nursing, Advanced illness, Activity pacing, Symptom management

Introduction

Chronic breathlessness can persist despite treatment of the underlying disease and has been proposed as a clinical syndrome in its own right when it continues to cause disability or distress [1]. Its clinical expression is multidimensional. The Breathing, Thinking, Functioning model describes interacting physiological, cognitive, emotional and activity-related processes that can sustain or amplify symptom burden [2]. Qualitative and interdisciplinary work similarly shows that breathlessness is experienced through bodily capacity, anticipation, meaning and the practical circumstances in which activity occurs [3]. These perspectives make temporal organization relevant because symptoms are encountered within sequences of activity, interruption and attempted recovery rather than as isolated measurements.

Holistic breathlessness services already combine symptom education, self-management, rehabilitation and palliative approaches, indicating that effective management often depends on coordinated responses rather than a single treatment modality [4]. Contemporary cancer guidance likewise emphasizes individualized assessment and multimodal management [5]. Yet the timing of necessary care within a patient's limited functional day is rarely

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treated as a distinct theoretical problem. A patient may tolerate washing, transfer, medication administration, clinical assessment and a personally valued activity when they are distributed differently from the same activities performed in close succession. The important question is not whether nursing care should be withheld to avoid breathlessness, but how unavoidable and valued activities can be organized without assuming that every patient has the same physiological reserve or recovery pattern.

This paper develops the Temporal Coordination Theory of Breathlessness Care around four separable considerations: exertional burden, recovery opportunity, essential nursing work and patient priorities. The theory does not assign universal rest periods or rank activities through a numerical score. Its purpose is to explain why the order, proximity and clustering of activities may matter, which conditions limit that proposition, and what future empirical work would be required before temporal coordination could become a tested component of breathlessness management.

Background

Breathlessness care is already delivered within complex service arrangements in which assessment, symptom-management strategies, rehabilitation and palliative input can interact. A pragmatic randomized evaluation of a specialist breathlessness service illustrates how coordinated multidisciplinary care can address symptom mastery and broader consequences of advanced disease [6]. Such studies support the clinical relevance of organization and coordination, although they cannot establish that timing itself is responsible for benefit. They also highlight a practical feature of breathlessness care: each intervention has its own effort, duration, cognitive demand and dependency on patient participation.

Some symptom-relieving actions impose very little physical demand. In terminal cancer, a randomized trial showed that directing a handheld fan toward the face could reduce perceived dyspnea over a brief observation period [7]. This finding does not establish a general recovery interval, but it demonstrates that supportive interventions can differ substantially in the effort required from the patient. Other strategies demand more active participation. International expert work on episodic breathlessness identified cognitive and behavioural strategies intended to be available when sudden symptom escalation occurs [8]. A subsequent mixed-methods phase II study found that a brief cognitive-behavioural intervention for episodic breathlessness was feasible and could support patients' sense of mastery, while remaining an early-stage intervention without a concurrent control group [9].

These findings suggest that anticipation matters. A person who expects severe breathlessness during personal hygiene or transfer may alter movement, request help, avoid activity or conserve energy for something considered more important later in the day. Recovery after exertion may also involve more than physiological normalization. It can include regaining confidence, reducing panic, restoring a sense of control and deciding whether another activity is tolerable. The duration and meaning of this recovery cannot be presumed to be constant across patients or episodes.

Therapeutic uncertainty further limits any attempt to reduce breathlessness management to a single pharmacological schedule. Early feasibility work evaluating mirtazapine for severe breathlessness demonstrated the need for formal testing rather than reliance on plausible mechanisms alone [10]. For nursing practice, this uncertainty matters because temporal coordination should complement appropriate disease-directed and symptom-directed treatment, not substitute for them. The theoretical problem is therefore narrower: when essential or valued activity itself contributes to exertion, how should clinicians think about the relationship between that burden and the opportunity to recover before another demand is introduced?

Table 1 presents essential nursing activities as qualitatively different sources of potential respiratory demand.

Table 1. Essential nursing activities as qualitatively different sources of potential respiratory demand

Nursing-care situation	Principal source of potential demand	Why temporal placement may matter	Patient-specific information required	Temporal Coordination Theory interpretation
Repositioning or bed mobility	Muscular effort, positional change and repeated movement	A second demanding activity immediately afterwards may occur before the patient feels ready to continue	Baseline breathlessness, assistance required, positional tolerance, patient preference	Treat as a potentially exertional care episode whose consequences should be reassessed before additional demand
Transfer between bed, chair or toilet	Weight bearing, balance, anticipatory anxiety and functional effort	Transfer may consume capacity needed for another essential activity	Mobility level, previous response to transfer, urgency, safety requirements	Sequence according to necessity and observed tolerance rather than a fixed rest rule

Washing, dressing or personal hygiene	Sustained upper-body activity, bending, standing and repeated task components	Activities can sometimes be divided or combined depending on patient goals and tolerance	Desired level of independence, symptom response, privacy, assistance preferences	Consider whether task clustering reduces disruption or instead concentrates excessive burden
Toileting and continence care	Urgency, transfer demand, positioning and limited ability to defer	Clinical necessity may override an idealized recovery period	Urgency, continence needs, mobility, distress and safety	Essential care may take priority even when prior exertion has not fully resolved
Medication administration or clinical assessment requiring movement	Repositioning, communication, swallowing or procedural cooperation	Burden depends on what the intervention requires physically from the patient	Route, positioning needs, alertness, current symptom intensity	Distinguish low-burden care from activities that add meaningful exertion
Patient-valued activity occurring within the care period	Physical effort combined with emotional or social importance	Nursing tasks scheduled around it may preserve or reduce the patient's capacity to participate	Patient priorities, expected effort, flexibility of nursing activities	Patient priorities are part of temporal coordination, not an optional addition after clinical tasks

Data sources

The evidence base for this theoretical paper was selected to illuminate mechanisms and boundaries relevant to temporal coordination rather than to generate a systematic-review estimate. Sources were drawn from contemporary scholarship on advanced-disease breathlessness, self-management, nursing intervention, rehabilitation, pharmacological treatment and functional activity. A randomized feasibility evaluation of the SELF-BREATHE intervention demonstrates continuing interest in self-directed management for people living with chronic breathlessness due to advanced disease [11]. Pharmacological evidence contributes a different perspective: a systematic review and meta-analysis of opioids for cancer-related dyspnea found evidence of benefit in some circumstances while also documenting limitations in the underlying trial base [12]. These literatures establish that breathlessness management includes both active patient strategies and clinician-delivered therapies, each with different implications for effort, monitoring and timing.

Functional activity provides an equally important evidence stream. A randomized trial combining pulmonary rehabilitation with a cognitive-behavioural intervention in chronic obstructive pulmonary disease assessed breathlessness alongside functional and psychological outcomes, reinforcing the close relationship between activity and symptom experience [13]. Nursing research extends this connection into day-to-day care. An integrative review of nursing interventions for dyspnea self-management identified individualized education, breathing strategies and supportive approaches across complex chronic illness [14]. Direct qualitative evidence from nurses caring for inpatients with advanced cancer further emphasizes that dyspnea assessment depends on recognizing the patient's subjective experience and adapting responses to the immediate clinical situation [15].

The sources also caution against treating activity response as uniform. Observational work in advanced respiratory disease demonstrates variation in illness perceptions and cognitive and behavioural responses to chronic breathlessness [16]. Such variation is important for temporal theory because the same physical task may be anticipated, experienced and recovered from differently by different patients. Current European Respiratory Society guidance likewise indicates that symptom-management options for serious respiratory illness differ in their supporting evidence and that intervention choice must remain attentive to benefits, harms and individual circumstances [17]. Accordingly, this paper treats temporal coordination as a conditional organizing principle embedded within established clinical assessment, not as a substitute for disease-specific management.

Across these evidence domains, three recurring observations are relevant. First, breathlessness is linked to functioning and therefore to the activities through which everyday and nursing care are delivered. Second, patients participate actively in symptom management, meaning that anticipation, perceived control and willingness to undertake another activity may affect what is tolerable. Third, intervention evidence remains heterogeneous enough that no literature-based universal recovery interval can be defended. These observations create the evidentiary basis for examining exertion and recovery as related but non-identical elements of nursing care.

The resulting theoretical distinction is between activity burden, meaning the exertional, cognitive or emotional demand associated with an activity; anticipated breathlessness, meaning the patient's expectation of symptom escalation in relation to that activity; and recovery opportunity, meaning the practical opportunity for symptoms, confidence or perceived readiness to settle before another demand occurs. None of these elements is assumed to have a fixed quantitative value. Their importance lies in the relationships among them and in how those relationships may alter the tolerability of care.

This relationship is summarized in **Figure 1**.

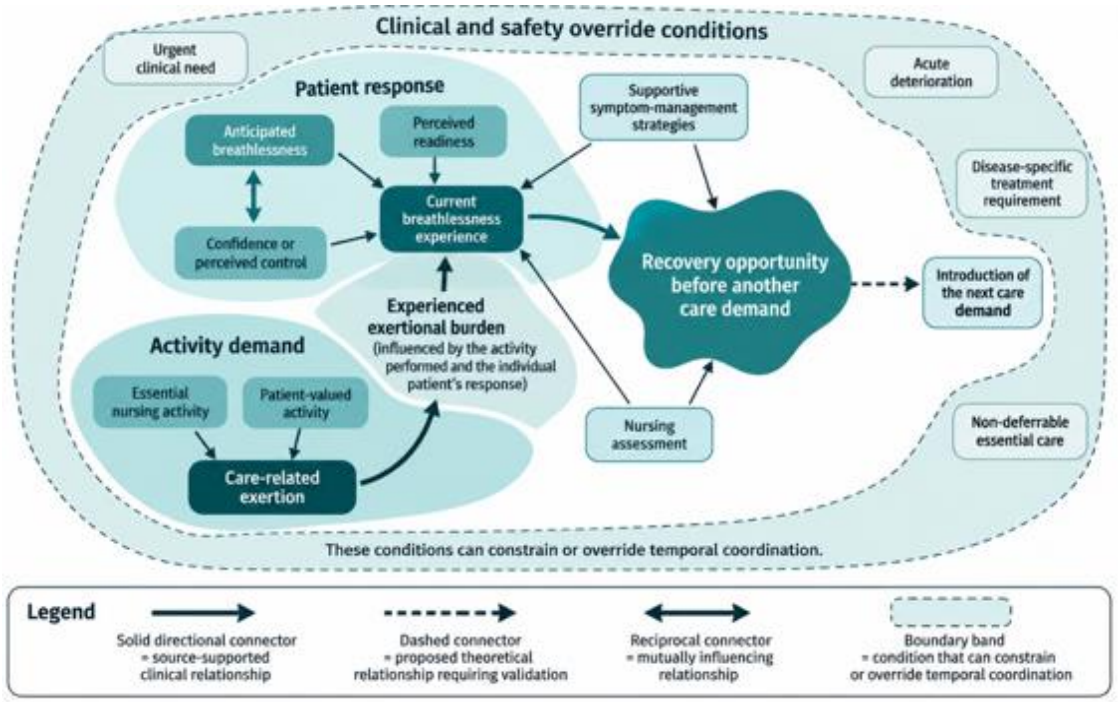


Figure 1. Conditional temporal relationships among care-related exertion, breathlessness and recovery opportunity

Overview of the issues

The practical problem begins with the accumulation of demands within a patient's available functional capacity. In advanced respiratory disease, disability in activities of daily living can increase over time, and the determinants of that progression include symptoms and functional limitations that are not captured by diagnosis alone [18]. An essential nursing activity may therefore occur against a background of already constrained capacity. The same task can be manageable on one occasion and disproportionately demanding on another because the preceding activity, symptom state, assistance available and urgency differ.

Disease context further changes what can reasonably be coordinated. Breathlessness in amyotrophic lateral sclerosis occurs alongside progressive neuromuscular impairment, making ventilatory support, communication, mobility and caregiver involvement relevant to how activity is approached [19]. Pharmacological options for severe chronic breathlessness also remain selective and conditional, requiring attention to indication, benefit and adverse effects [20]. Temporal coordination cannot be separated from these clinical realities. A plan that preserves recovery opportunity has little value if it delays necessary treatment or ignores a mechanism that requires direct intervention.

Evidence against apparently plausible treatments also cautions against assuming that symptom management can be organized from theory alone. The BETTER-B phase III trial did not support routine mirtazapine for severe breathlessness in chronic obstructive pulmonary disease or interstitial lung disease [21]. The relevance to care timing is methodological: plausible mechanisms do not guarantee benefit under stronger testing. Temporal Coordination Theory must therefore remain testable and revisable if sequence and spacing do not improve outcomes.

Context also affects what patients can do between formal care episodes. A realist review of breathlessness self-management in India showed that mechanisms of self-management are shaped by health beliefs, family and community relationships, access to services and the organization of care [22]. Broader synthesis likewise demonstrates substantial variation in the prevalence and correlates of breathlessness across general and clinical populations [23]. Temporal coordination cannot assume a single model of independence, family participation or service availability. Acceptable sequencing may differ across home, hospital and specialist palliative settings, especially where patients and families carry much day-to-day management.

The central issue is therefore competition among activities that differ in necessity, value and deferrability. Toileting, repositioning or urgent assessment may be difficult to postpone. Washing or dressing may sometimes be divided into smaller components. A conversation, meal, visit, religious practice or brief period outside the bed may be highly valued even when it is not conventionally classified as clinical care. Temporal Coordination Theory treats these competing claims as part of the same care horizon. Nursing organization should recognize that

preserving capacity for a patient-valued activity can be clinically meaningful, while also acknowledging that essential care and safety requirements can constrain choice.

Conceptual findings

The first proposition is that care-related exertion should be interpreted as a sequence-dependent burden. The physical or emotional demand of an activity does not occur in isolation from what preceded it. A methodological debate concerning airflow for breathlessness illustrates why evidence certainty and practical usefulness cannot always be treated as equivalent concepts when complex non-pharmacological interventions are considered [24]. Temporal coordination extends this distinction: the burden associated with an activity can be clinically relevant even when no trial has established an optimal interval before the next activity.

The second proposition is that recovery opportunity is a care condition rather than a standardized period. A quality-improvement project using a breathlessness self-management resource showed that implementation can change staff confidence and preparedness, although it did not establish improved patient outcomes [25]. In temporal terms, nursing preparedness may influence whether opportunities for symptom settling, coping strategies or patient-led adjustment are recognized before another activity begins. Recovery opportunity therefore includes the practical possibility of pausing or modifying the next demand, while remaining subordinate to urgency and safety.

The third proposition is that timing has different meanings across treatment states. Secondary analysis of randomized-trial data has shown that adverse effects associated with morphine for chronic breathlessness can vary according to dose, duration and titration phase [26]. This pharmacological finding should not be transferred directly into nursing scheduling. It nevertheless demonstrates a wider principle: a person's current state and recent trajectory can alter the meaning of a subsequent intervention. Temporal Coordination Theory applies that principle to care burden by proposing that recent exertion, unresolved breathlessness and perceived readiness should inform how the next non-urgent activity is approached.

The fourth proposition is that temporal coordination must remain subordinate to causal reassessment. In patients with central malignant airway obstruction, bronchoscopic intervention can reduce breathlessness when a treatable mechanical cause is present [27]. A schedule designed to conserve energy would be inadequate if it displaced recognition of such a cause. Similarly, exploratory population evidence suggests that the impact of breathlessness on everyday activity can differ with symptom duration, indicating that the relationship between breathlessness and function may evolve over time [28]. The theory therefore requires repeated interpretation rather than a fixed sequence applied across a disease trajectory.

The fifth proposition concerns competing symptom-management explanations. Benzodiazepines have a limited and context-dependent role in advanced-illness dyspnea, with their potential use shaped by anxiety, refractoriness and end-of-life circumstances rather than by breathlessness alone [29]. Psychological context can also modify response to behavioural management: secondary analysis of a trial in advanced lung cancer found that depression and anxiety moderated aspects of response to a nurse-led intervention [30]. These findings reinforce the need to distinguish exertional burden from emotional amplification, treatment effects and disease progression. Temporal coordination can organize care around the patient's current experience, but it cannot claim that timing is the sole mechanism producing that experience.

Together, these propositions define the theory as a conditional relationship among four elements. Exertional burden concerns what the activity demands from this patient at this time. Recovery opportunity concerns whether the patient has a practicable chance to regain sufficient comfort, control or readiness before another avoidable demand. Essential nursing work identifies activities whose clinical or basic-care importance limits deferral. Patient priorities identify activities for which the patient wishes to preserve capacity or accept symptom burden. The theoretical contribution lies in considering these elements jointly rather than maximizing any one of them.

The resulting coordination principles and their patient-relevant qualifications are summarized in **Table 2**.

Table 2. Conditional coordination principles linking care demand, recovery opportunity and patient priorities

Coordination principle	Clinical question addressed	Patient-relevant consideration	Circumstance that can modify or override the principle	Status within the theory
Recent burden informs the next non-urgent demand	What has the patient just had to do, and how was it experienced?	Current breathlessness, fatigue, confidence and willingness to continue	Urgent assessment, non-deferrable care or rapidly changing condition	Proposed temporal synthesis grounded in functional and symptom-management evidence

Recovery is judged through readiness, not a universal clock	Is there evidence that the patient is sufficiently settled or willing to proceed?	Patient report, observed distress, perceived control and goals	Some necessary activities cannot wait for complete symptom resolution	Proposed principle; no validated recovery interval
Care can be divided, clustered or reordered when clinically permissible	Would changing proximity between activities alter burden or disruption?	Preference for fewer interruptions versus preference for smaller task units	Infection control, medication requirements, staffing, safety and treatment schedules	Proposed organizational implication
Patient-valued activity competes legitimately for limited capacity	What does the patient wish to remain able to do?	Personal, relational, social or spiritual importance	Essential clinical needs may restrict available choices	Normative and person-centred component of the theory
Disease-directed and safety priorities supersede temporal optimization	Is breathlessness signaling deterioration or a treatable mechanism?	Avoiding preventable distress while preserving necessary treatment	Acute deterioration, reversible obstruction, treatment toxicity or emergency	Boundary condition
Repeated reassessment replaces a fixed sequence	Has the response to previous activity changed what is reasonable next?	Variability across episodes and disease trajectory	Communication limitations or rapidly evolving illness may require proxy/clinical judgment	Proposed adaptive principle requiring empirical validation

Results and Discussion

Temporal Coordination Theory adds a temporal question to established breathlessness assessment: after determining what the patient needs and what interventions are appropriate, clinicians should also consider how unavoidable and valued activities are distributed across the patient's changing capacity. Nursing is particularly relevant because nurses frequently coordinate multiple activities within the same care period and observe changes in symptoms, function and willingness to continue. The theory provides language for examining that organization without assigning a standardized workload score or assuming that symptom reduction is always the patient's highest priority.

The theory also exposes a tension between efficiency and tolerability. Clustering care may reduce repeated disturbance and allow longer uninterrupted periods, yet several demanding activities together may concentrate exertional burden. Dividing care can create opportunities for recovery yet may also produce repeated interruptions, anticipatory anxiety or fragmented rest. Neither pattern is intrinsically preferable. The relevant comparison is the patient-specific consequence of each pattern under the clinical conditions in which it is used.

Implementation would therefore require judgement rather than a new bedside timetable. Nursing assessment would need to incorporate the patient's report of prior activity, present symptom state, anticipated difficulty and priorities for the remaining care period. Existing evidence on self-management and nursing assessment supports this individualized orientation [14]. Current respiratory guidance also reinforces the importance of matching interventions to evidence, benefit, harm and circumstances [17]. The theory extends those principles to the organization of care while preserving the distinction between established symptom-management interventions and the unvalidated proposition that sequencing itself can alter tolerability.

Several safeguards are necessary. Temporal coordination must never delay assessment of acute deterioration, treatment of a reversible cause or clinically required intervention. The negative BETTER-B findings illustrate why theoretically plausible strategies require rigorous outcome testing [21]. Morphine safety findings similarly show that treatment state can alter risk and that temporal reasoning without clinical specificity may mislead [26]. Evidence from malignant airway obstruction demonstrates the importance of identifying causes that require disease-directed intervention [27]. Patient preference also has limits: preferences should guide negotiable aspects of sequencing, but clinicians retain responsibility for explaining risks and responding to urgent need.

The theory remains limited by the indirectness of its evidence. The literature establishes disability, individual variability, self-management, nursing assessment needs and context-sensitive effects. It does not directly establish that changing nursing-activity order or spacing improves breathlessness, function, satisfaction or safety. Prospective research should therefore compare clearly described patterns of care organization while avoiding arbitrary fixed intervals. Outcomes should include patient-reported breathlessness, perceived recovery, ability to complete essential and valued activities, care disruption, acceptability and adverse consequences. Qualitative inquiry would be needed alongside quantitative evaluation because an apparently efficient sequence may conflict with how patients understand dignity, autonomy or worthwhile activity.

The theory is also likely to operate differently across settings. Hospital routines can compress multiple assessments and care activities into narrow periods, whereas home care may provide greater temporal flexibility but fewer immediately available staff. Cultural expectations concerning family participation and self-management may alter who decides when an activity occurs [22]. Progressive disability and symptom duration may change what patients regard as recovery or worthwhile exertion [18, 28]. These are moderators of the theoretical relationship rather than reasons to abandon it.

Figure 2 integrates these safeguards by representing care sequencing as a conditional field of competing claims rather than as a stepwise algorithm.

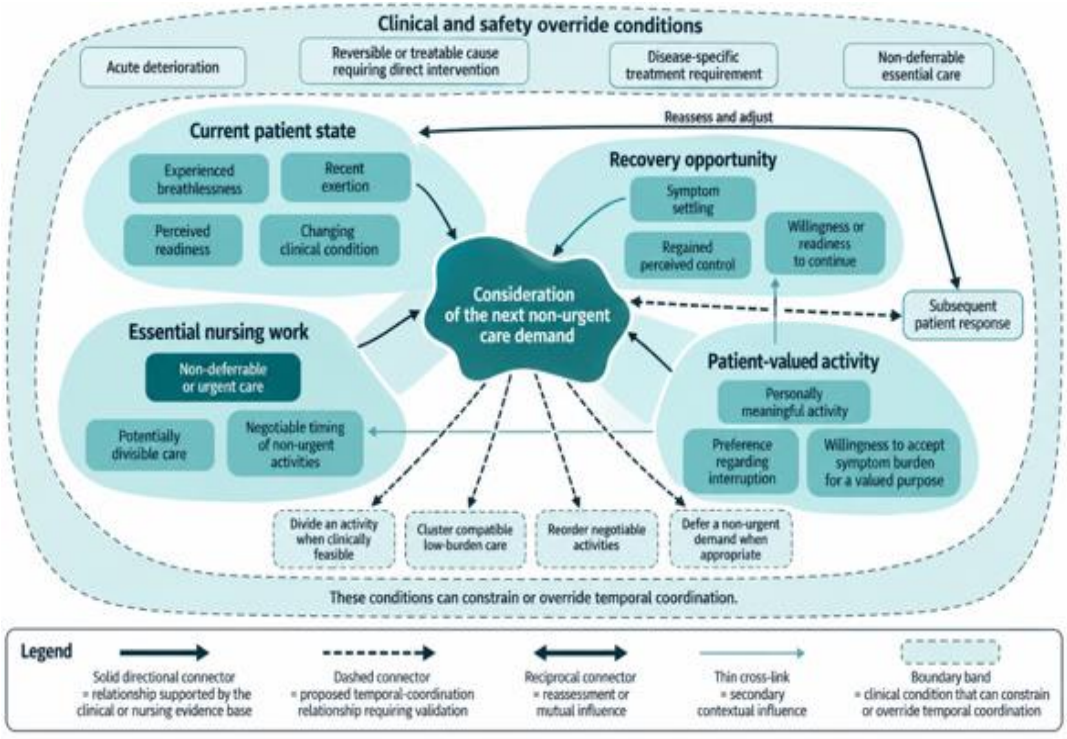


Figure 2. Conditional care-sequencing field for breathlessness management in advanced illness

Conclusion

Timing deserves consideration as one component of individualized breathlessness management because necessary care, symptom-provoking activity and personally valued activity occur within the same limited and changing functional horizon. Temporal Coordination Theory proposes that clinicians consider recent exertional burden, the practical opportunity for recovery, the necessity of upcoming nursing work and the patient's priorities when organizing non-urgent activities. It does not prescribe standard recovery intervals or fixed sequences. Its value lies in making temporal organization explicit, clinically contestable and empirically testable while preserving safety, disease-specific treatment and patient-centred judgement. Future research must determine whether changing care sequence or proximity produces meaningful benefits before temporal coordination can be recommended as a validated intervention.

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