Received: 22 October 2018 | Revised: 21 January 2019 | Accepted: 24 January 2019

DOI: 10.1111/nin.12289

FEATURE

WILEY Nursing Inquiry

Integrating preparation for care trajectory management into nurse education: Competencies and pedagogical strategies

Davina Allen[1] | Mary Ellen Purkis[2] | Anne Marie Rafferty[3] | Aud Obstfelder[4]

[1]School of Healthcare Sciences, Cardiff University, Cardiff, UK

[2]School of Nursing, University of Victoria, Victoria, British Columbia, Canada

[3]Florence Nightingale School of Nursing, London, UK

[4]Centre for Care Research, Department of Health Sciences, Faculty of medicine and health sciences, NTNU, Norwegian University of Science and Technology, Gjøvik, Norway

Correspondence
Davina Allen, School of Healthcare Sciences, Cardiff University, Cardiff, UK.
Email: allenda@cardiff.ac.uk

Abstract

Nurses make an important contribution to the organisation and coordination of patient care but receive little formal educational preparation for this work. This paper builds on Allen's care trajectory management framework to specify evidence-based and theoretically informed competencies for this component of the nursing role and proposes how these might be incorporated into nursing curricula. This is necessary so that at the point of registration nurses have the expertise to realise their potential as both providers *and* organisers of patient care and are better able to articulate and develop this aspect of nursing practice.

KEYWORDS

care coordination, care trajectory management framework, nurse education, organising work, translational mobilisation theory

1 | INTRODUCTION

Nurses make an important contribution to the coordination and organisation of patient care but receive little formal preparation for this work. Drawing on Allen's (2015, 2018a,b) programme of research on care trajectory management, this paper specifies evidence-based and theoretically informed competencies for the organisational component of the nursing role and proposes how these might be developed and assessed in educational programmes. There is international recognition of the need to improve health and social care coordination. Formal preparation for care trajectory management is necessary to equip nurses at the point of registration with the skills to realise their potential as providers *and* organisers of patient care and to lead improvements in this critical area of service provision.

The paper proceeds as follows. First, we consider the organisational components of clinical nursing practice. Second, we propose that the care trajectory conceptual framework (Allen, 2018b) offers a structure and language with which to articulate this aspect of nursing work for educational purposes. Third, we build on this framework and draw on and extrapolate from Allen's work to specify the competencies that underpin care trajectory management. Fourth, we propose pedagogical and assessment strategies for building formal preparation for care trajectory management competence into educational programmes.

2 | ORGANISING WORK AND NURSING PRACTICE

Contemporary nursing is typically understood, and understands itself, as a care-giving profession. It is through its relationships with patients and their families that nursing is defined. Yet since its emergence as a formally recognised occupation in the mid–19th century, there has always been an organisational component in the clinical nursing role. Despite the dominant image of Nightingale as a bedside nurse, her contribution to healthcare had as much to do with improving the organisation of services and enhancing sanitary conditions as with directly attending to the comfort of patients (Dingwall, Rafferty, & Webster, 1988). Nineteenth-century nursing was primarily concerned with creating the environments to foster health and healing. This entailed managing the physical surroundings for reasons related to treatment, care and hygiene, but also to enable

TABLE 1 The domain assumptions and core components of translational mobilization theory (Allen & May, 2017)

Domain Assumptions

1. **An ecological approach to collective action**—Ecological approaches underscore the dynamic and emergent qualities of systems of activity and the inter-relationships between people, materials and technologies within a given context.
2. **A process view of organisations**—Seemingly durable social forms—such as professional roles and organisational structures—are understood as on-going accomplishments that come into being through their use in action.
3. **An understanding of practices as mediated**—We never interact with the social world directly, and activity is always influenced by material (tools, technologies and instruments), or cognitive artefacts (categories, heuristics).
4. **A socio-material conceptualisation of activity**—Action is conceptualised as distributed between people, materials and technologies.

Core Components

1. **Project**—The primary unit of analysis in translational mobilisation theory; it provides a frame for understanding the relationships in a trajectory of activity.
2. **Strategic Action Field** (Fligstein & McAdam, 2011)—Defines the contexts in which projects (trajectories) are mobilised and which furnish the resources (interpretive repertoires, organising logics, materials and technologies, structures) through which action is organised and managed.
3. **Mechanisms**—How projects of collective action are mobilized.
   - **Object formation**—How people draw on the interpretative resources available to them within a strategic action field to create the objects of their practice.
   - **Translation**—The processes that enable practice objects to be shared and different understandings accommodated.
   - **Articulation** (Strauss et al., 1985)—The secondary work processes that align the actions, knowledge and resources necessary for the mobilization of projects of collective action.
   - **Reflexive monitoring** (May & Finch, 2009)—The processes through which people collectively or individually appraise and review activity.
   - **Sense-making** (Weick, 1995)—The processes through which agents create order in conditions of complexity.

the care of as many patients as possible within available resources. Under the close supervision of hospital matrons, the organisational components of the clinical nursing role involved physical labour, moving heavy objects and walking 'endless corridors', and included traditional household activities, supportive care, as well as making the arrangements for putting new technologies for diagnosis and treatment into use (Sandelowski, 2000).

A century later, although much changed, the organisational components of nursing work continue to make an essential contribution to patient care. Contemporary nurses remain responsible for creating the environments that foster health and healing, through clinical leadership, the management of budgets, standard setting, audit and the deployment of staff; additionally, they have become comprehensively enrolled in the coordination and organisation of patient care (Allen, 2015). The expansion of this additional component of the nursing role reflects the increased complexity of modern healthcare provision, combined with the twin challenges of delivering high quality, safe and affordable services while meeting the needs of an ageing society. Hospital populations typically are characterised by high levels of acuity, with many patients presenting with comorbidities and accumulative complexity that challenge care coordination. Specialisation, coupled with accelerated throughput, has increased the work involved in transfers of care and bed management (Allen, 2014a). In the community, a large number of people are living with multifaceted care arrangements (Exley & Allen, 2007), magnifying the challenges of hospital discharge planning (which must also be accomplished in compressed timeframes), and complicating community care arrangements. The impact of this has been to significantly increase the volume and complexity of the organisational elements of nursing (Michel, Waelli, Allen, & Minivielle, 2017), which, in some contexts, is estimated to account for more than 70% of the work that nurses do (Furaker, 2009).

Despite the centrality of organising work in the contemporary nursing role, it is poorly integrated into educational programmes with expertise typically developed after registration and practice informed by tacit knowledge. In the face of international debate about the fitness of extant educational programmes in preparing nurses for the demands of the 21st century (Maben & Griffiths, 2008), and a growing realisation that poor coordination is a major cause of failures in healthcare quality and safety (Gandhi et al., 2018; Kobewka et al., 2016), the importance of embedding formal preparation for nurses' organisational function into curricula is increasingly acknowledged (Allen, 2014b, 2015; Nursing and Midwifery Council, 2018).

3 | CARE TRAJECTORY MANAGEMENT

In the next part of this paper we introduce the care trajectory management framework (Allen, 2018b), which offers a language and structure with which to formalise those components of the clinical nursing role concerned with the coordination and organisation of patient care. While nurses have access to the scientific language of anatomy, physiology, psychology and pharmacy to talk about their clinical, supportive and public health work, until recently there have been no theories or conceptual frameworks with which to explicate the organisational components of patient care.

3.1 | Empirical and theoretical foundations

The care trajectory management framework is founded on in-depth ethnographic research on the 'organising work' of 40 hospital nurses in a large University Health Board in Wales (Allen, 2015). The study highlighted the important, complex and largely invisible, contribution nurses make to the coordination, mobilisation and organisation of patient care in conditions of organisational complexity. Allen conceptualises this work as care trajectory management. The concept of a 'care trajectory' is developed from the scholarship of the sociologist Anselm Strauss (Strauss, Fagerhaugh, Suczet, & Wiener, 1985) and refers to the 'unfolding of a patient's health, welfare and social

care needs, the total organisation of work associated with meeting those needs, plus the impact on those involved with that work and its organisation' (Allen, Griffiths, & Lyne, 2004). Allen proposes the concept as an alternative to the more common notion of a clinical pathway in order to underline the unpredictable and uncertain qualities of much healthcare organisation and nurses' role in managing these relationships. Whereas pathways are founded on a logic which presupposes certainty, standardisation and rational planning, the concept of a care trajectory points to the requirement for on-going and flexible management in response to changing patient and family needs and organisational capacity and is informed by an alternative logic, conceptualised as 'emergent organisation' (Allen, 2018b). Although distinguishable analytically, planned and emergent forms of organisation are often intertwined, with patient care comprising of standard interventions and processes that can be prepared for, as well as emergent elements that require flexible responses to contingencies (Allen, 2015).

Allen deploys the term 'translational mobilisation' to refer to the work of nurses in managing patient trajectories of care; the term is intended to capture the ordering work nurses do in bringing all the components of care together, their mediating work in managing the inter-relationships in healthcare processes, and the energy they inject into the system through their work and its involved and continuous character. Translational mobilisation theory (Allen & May, 2017) was developed from this research to describe, identify and explain the mechanisms of emergent organisation in complex organisational contexts wherever these are found (Table 1). A full account of the theory (Allen & May, 2017) and its application to nursing is available (Allen, 2018a).

3.2 | The conceptual framework

The care trajectory management framework (Allen, 2018b) was developed from a secondary analysis of Allen's empirical research using translational mobilisation theory. Within the framework, care trajectory management is conceptualised as comprising of three components—trajectory awareness, trajectory working knowledge and trajectory articulation—each aligned to specific translational mobilisation mechanisms. Each component, its mechanisms and their relationships are described below.

3.2.1 | Trajectory awareness

Trajectory awareness is the first component of care trajectory management, and refers to the activities required to maintain an overview of trajectories of care as these evolve. Trajectories develop in response to changes in patient's health and social care needs, shifts in the social, organisational and material arrangements associated with managing these needs and the dynamic interaction of these elements.

Maintaining trajectory awareness is an essential prerequisite for care trajectory management but achieving this can be challenging. The language of teamwork is used frequently in healthcare, but for much of the time providers make largely independent contributions to care and this work is fragmented in time and space. There is quite literally no single person who has all the relevant details of a case. Facts and understanding are typically dispersed throughout the network of health professionals, communities, artefacts and information systems (Ellingsen & Monteiro, 2003) and for care to progress and decisions made, this information has to be brought together, interpreted and synthesised for the purposes at hand. It is primarily nurses who fulfill this function. Nurses often refer to 'knowing the patient' as a foundation for their practice and this is typically taken to refer to holistic understanding of an individual's bio-psycho-social care needs. Allen's (2014b, 2015) study revealed that the nursing gaze extends far beyond this framing to include an awareness of patients' overall health and social care requirements, and the social, material and organisational arrangements that support this.

Maintaining trajectory awareness involves the translational mobilisation mechanisms of reflexive monitoring, sense-making and object formation. In translational mobilisation theory, **reflexive monitoring** (May & Finch, 2009) denotes how participants maintain awareness of an evolving activity. In care trajectory management, it draws attention to the processes involved in monitoring an individual's care and treatment. This includes reviewing the history of the case, the current situation and what is planned; assessing the status of the clinical environment and the organisation—such as shifting demands, priorities and resources, accessibility of personnel, availability of materials; and evaluating the implications of these relationships for trajectory management—such as whether treatment plans have to be amended in the light of organisational capacity. Allen describes how nurses shift their gaze from attending to individual patients to focus on whole populations and the wider organisation in order to keep under review trajectories of care as these evolve in response to patient and organisational factors.

Closely related to reflexive monitoring is the mechanism of **sense-making**. Derived from the work of Weick (1995), in translational mobilisation theory sense-making denotes how actors comprehend and make order in work. In care trajectory management, it points to the activities involved in interpreting and synthesising all the pertinent knowledge and information relevant to trajectory management (which may be clinical or organisational), identifying any inconsistencies and resolving gaps in understanding, and detecting abnormal patterns and processes. Allen's (2015) original study highlighted the high volume of work involved in nurses' sense-making activity both in accumulating and synthesising relevant information and in validating and double-checking different sources.

The mechanisms of reflexive monitoring and sense-making come together in **object formation** which, in translational mobilisation theory, refers to how actors construct the focus of an activity in order to be able to do their work. For the purposes of care trajectory management, object formation directs attention to the processes through which trajectories of care are encapsulated and communicated by nurses in order that they can be managed. In Allen's original study, nurses achieved this through the generation and maintenance of 'trajectory narratives'. These were stories that summarised a

patient's overall care, and which were typically initiated during the admission process, disseminated through the nursing handover, and revised as trajectories evolved. Nurses recorded patient trajectories as 'plot summaries' on handover sheets they carried in their pockets and which they updated in response to changes in patients' ongoing care and treatment.

Through the linked mechanisms of reflexive monitoring, sense-making and object formation, nurses create the awareness and oversight of patient care that is essential to trajectory management and a precondition for the second component of the framework: trajectory working knowledge.

3.2.2 | Trajectory working knowledge

Trajectory working knowledge refers to the processes involved in generating the information flows necessary for the on-going organisation of health and social care. People do not arrive in health and social care systems as ready-made patients; work has to be done to enable them to become the object of professional attention. Nurses assess their nursing care needs; doctors assess their medical needs; and allied health professionals assess needs for rehabilitation and assistive technologies. Patients report frustration with having to re-tell their stories, but in each case the healthcare professional brings a singular set of cognitive concerns to the interaction. The result, as Mol (2002) has shown, is that patients are understood and 'seen' in numerous ways for different purposes. A major challenge for care coordination, then, is how these diverse understandings can be brought together to enable concerted action.

Good communication in health and social care is typically presented as a case of ensuring the comprehensiveness of information. In practice, however, successful trajectory management depends less on the exhaustiveness of information and more on ensuring that the *right* information is shared in the right form for the purposes at hand (Allen, 2015) and that there is sufficient agreement between participants to allow progress. Consider the information that must be communicated to ensure a safe transfer of care to the operating theatre compared to the information required to support discharge home. For the purposes of the operating theatre transfer it is important to know about the existence of allergies, when the patient last ate, their weight and whether they have dental caps or crowns, but there is no need for information on social circumstances, mobility, hobbies, dietary preferences or any other details which might be relevant in planning for discharge from hospital. These aspects of patients' identities are not relevant for the work of operating theatre staff. Understanding that information flows in health and social care must be tailored to the context brings us to the mechanism of working knowledge generation: **translation.**

In translational mobilisation theory, translation refers to the processes through which perspectives are shared and different viewpoints accommodated to enable people to work together. In care trajectory management, it denotes how different understandings of the patient are communicated in order to support the on-going organisation of the work across professional and organisational boundaries. Nurses are central to these processes and described as 'obligatory passage points' in Allen's original study, a term derived from Actor Network Theory (Latour, 2005), to refer to the focal point in a network through which all others must pass to enable an activity to progress. This is an active role in which nurses draw on their relational knowledge of health and social care providers and their trajectory awareness to select out the information relevant to participants and communicate this in a format that enables care to progress.

3.2.3 | Trajectory articulation

Trajectory articulation is the third component of care trajectory management. First developed by Strauss et al. (1985) in their classic ethnography on the social organisation of medical work, in translational mobilisation theory **articulation** refers to the secondary work processes that align the actions, knowledge and resources necessary for the mobilisation of projects of collective action. It is the work that makes the work, work. In care trajectory management articulation refers to the practices through which trajectory elements—whether this is people, expertise, materials, technologies or processes—are organised to support action and decision-making. Health and social care is complex and choices must be taken about what should be done, by whom, when, where, and with what materials. Because patient care is often uncertain, emergent and unpredictable, and health and social care work is massively distributed in time and space, alignment of all relevant actors cannot be taken-for-granted. The more elements involved, the more challenging this becomes.

In her original study, Allen identified three kinds of articulation work in care trajectory management. First, temporal articulation work coordinates action in time and space. Here, nurses have an important role in sequencing activity, which requires anticipating people's needs and planning ahead. Second, integrative articulation is designed to ensure that care arrangements and decision-making are coherent. When largely independent actors interact around the patient, decisions that seem reasonable in isolation can be problematic in the context of a wider trajectory of care. Because nurses maintain trajectory awareness they are cognisant of the interdependencies of constituent elements and thus have an important role in managing these relationships and identifying and addressing these potential dangers. Third, material articulation aims to ensure the availability of materials (technologies, expertise, resources) to support care. With their work located in the sites of care, it is nurses who take responsibility for ensuring the accessibility of resources and materials, both in maintaining the care environment and in locating resources to support specific actions. These are not mundane considerations: research on patient safety in healthcare has repeatedly identified the unavailability of equipment and/or medications as factors that have contributed to catastrophic outcomes in critical incidents (BBC 2012; National Patient Safety Agency, 2007; Telegraph Reporters 2012) and these observations hold true for both hospital and community-based care.

While presented separately here, the core components of care trajectory management are interrelated (Figure 1) and together

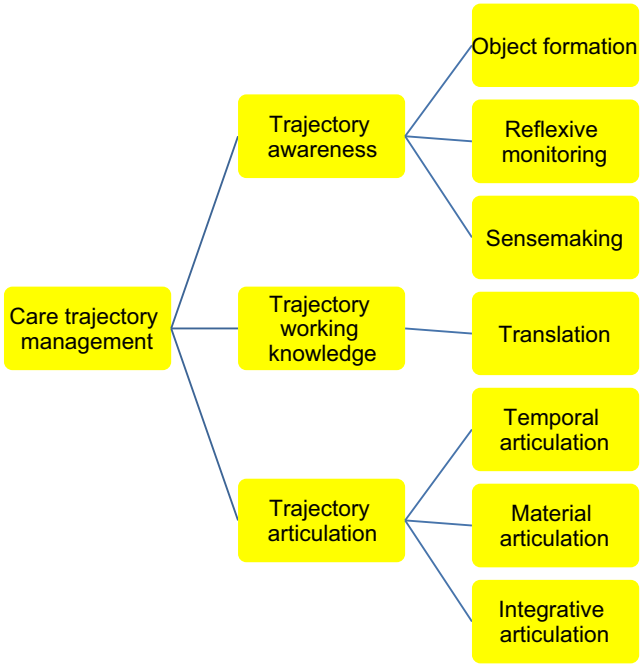

FIGURE 1 Care trajectory conceptual framework (Allen, 2018b)

produce a particular professional gaze and a distinctive way of working in which organising work is incorporated into and interleaved with nurses' wider clinical, supportive and public health activities.

> Overall, then, [care trajectory management] depends for its success on the synthesis of clinical and organisational knowledge and a professional vision that enables nurses to zoom in and out from the individual to the many and to do so with sufficient intellectual agility, pragmatism and focus, to be able to work flexibly in response to contingencies while at the same time ensuring the progression of planned activity. It depends too on a particular habitus in which organising work activities are interleaved, woven through the fabric of everyday practice with much of the work performed on the fly (Allen, 2015, p. 139).

4 | CARE TRAJECTORY MANAGEMENT COMPETENCIES

The care trajectory management framework provides evidence-based concepts and theories through which to describe, analyse, and reflect on this aspect of nursing practice for educational purposes. In the following section, we build on, and further extend, the framework to outline the previously unspecified competencies underpinning care trajectory management drawing on the nursing practices described in Allen's original ethnographic study. When practices are studied ethnographically, one does not look for knowledge located in participants' minds, rather knowledge and competencies are located in their activities. Revisiting the activities described in Allen's study, we propose that care trajectory management is underpinned by generic and component-specific competencies.

4.1 | Generic Competencies

4.1.1 | Theoretical and conceptual competence

An important and foundational care trajectory management competency is the deployment of concepts and theories to describe, analyse, and reflect on practice. This requires an understanding of the care trajectory management framework and the precepts of translational mobilisation theory and the ability to apply these. The aptitude to see the things that matter in any profession is not simply a property of eye or brain, but is instead a property of the classificatory systems, mental schema (Zerubavel, 1999) and discursive practices (Goodwin, 1994) by which professionals demonstrate competence in their profession. The care trajectory management framework and translational mobilisation theory provide nurses with a language and concepts with which to talk about their organising work and to move tacit knowledge into the explicit knowledge and cognitive framework of the profession. This is particularly important for nurse educators and clinical mentors to enable them explicate the basis of their practice and enhance neophytes' 'optical socialisation' (Zerubavel, 1999) by assisting students to 'see' how they see trajectories and from seeing, how to take explicit action in support of high quality care for patients and families.

4.1.2 | Interleaving clinical and organisational work competence

Care trajectory management is contingent on skills in interleaving clinical and organising work and understanding the implications of this relationship for care trajectory management. This requires the ability to develop and maintain a full clinical picture of the patients assigned to the nurses' care and to comprehend the practical, social and concrete activities necessary to meeting these needs that must be organised. This includes an awareness of any constraints on this activity—such as the temporal organisation of services, the sequencing of actions, accessibility of personnel and the availability of equipment—and building these considerations into work planning.

4.1.3 | Health and social care systems competence

Knowledge of health and social care systems is a further competency. This requires the capacity to look beyond the patient and their nursing needs to consider their wider network of care and understand its implications for care trajectory management. It also entails the ability to identify the organisations and services involved in a case, an awareness of the legislative, policy and regulative frameworks within which they operate, and an understanding of patient's social networks and informal sources of support.

4.1.4 | Relational competence

Care trajectory management is inherently relational. It depends on the capacity to understand the perspectives of those involved in a trajectory of care, interact and communicate across professional boundaries and organisational hierarchies, and mediate between different interests in articulating services around the needs and wishes of patients and their families (Allen, 2004). This requires an understanding of the roles and responsibilities of healthcare providers, the knowledge and confidence to act as an equal partner in the team, and highly developed communication skills in translating information into a content and format that is tailored to the situation and recipient.

4.1.5 | Complexity management competence

Successful care trajectory management requires nurses to be able to function in conditions of uncertainty and turbulence. This necessitates an understanding of planned and emergent forms of organisation and the ability to recognise when routines, standards and protocols are appropriate mechanisms for organising care and when bespoke approaches are called for. Functioning in complex uncertain conditions also depends on having the skills to manage a patient caseload, to balance the needs of individuals with the needs of whole populations, and to demonstrate a critical sensitivity to the ethical dimensions of prioritising care. The ability to make a cognitive and psychological shift from the high levels of alertness and vigilance necessary to maintain trajectory awareness to being present in the moment for patients and families in attending to their needs is essential. The capacity to work flexibly, resourcefulness, problem-solving and strength and agility in responding to surges in demand, contingencies and evolving care needs are additional vital competencies in this context.

4.1.6 | Information and communications competence

Care trajectory management requires the capability to navigate information infrastructures and competence in the use a range of paper-based and digital technologies to access, input, share and apply information and data within teams and between agencies. Health and social care are knowledge intensive systems of work and require skills in the use of a range of digital technologies, the absence of which is as consequential for the quality and safety of patient care as is the absence of clinical skills and should be reflected in nurses' continuing professional development strategies.

4.2 | Component specific competencies

Care trajectory management also depends on a number of specific capabilities related to the three components of the conceptual framework.

4.2.1 | Maintaining trajectory awareness competence

Maintaining trajectory awareness requires the ability to identify the social, material, and organisational arrangements that comprise individual trajectories of care, understand their interrelationships, and be able to encapsulate this for the purposes of care trajectory management work. This includes skills in trajectory assessment and the capacity to recognise sources of actual or potential trajectory complexity, and to build this understanding into workforce planning and trajectory management. These might include diagnostic uncertainty; disagreements between the health and social care team and family carers; the size and familiarity of the health and social care team; psychosocial factors; financial and legal factors (Allen, 2018b).

Reflexive monitoring and sense-making are central components of maintaining trajectory awareness and depend on the nurse's capacity to recognise clinical and organisational indicators that are consequential for care trajectory management and determine the appropriate response. At the level of the patient, this entails monitoring, noticing and assessing salient aspects of care as these evolve and understanding when an intervention is indicated. At the level of the organisation or care environment, it entails alertness to the impact of shifting patterns of demand and organisational capacity on care trajectory management, and an understanding of the temporal and spatial constraints on action. Reflexive monitoring and sense-making at both of these levels depend on the aptitude to proactively identify, access, make sense of, and synthesise relevant information, identify any gaps in understanding, and address any discrepancies. They depend too on alertness and expertise in reading a complex field in order to identify important clinical and organisational patterns. These are sophisticated cognitive processes the quality of which can be observed in the oral and written presentation of 'trajectory narratives' during handover, for example.

4.2.2 | Creating working knowledge competence

Creating working knowledge depends on communication and relational skills in order to ensure that the right information is mobilised in the right format, at the right time, across lay, professional, and service boundaries. It includes the activities involved in supporting everyday information flows between the range of actors interacting around the patient, and the work of managing transfers of care. These both require an appreciation of the different understandings of a patient that comprise a trajectory; the ability to encapsulate this into trajectory awareness; translational skills in interacting across professional, departmental and organisational interfaces; and communicating information in a form that enables the receiving party to do their work. In the case of everyday information flows, it additionally requires skills in prioritising action, recognising those elements of a trajectory that need to be shared to facilitate the organisation of the work, as well as an appreciation of the wider demands and commitments of other participants. In the case of transfers of care, it depends too on an understanding of how individual needs are mediated

by the new environment of care. An overall essential competency in this context is relational knowledge of roles and responsibilities and the skills of perspective-taking in order to understand the information needs and work purposes of others. Perspective-taking is difficult (Heath & Staudenmayer, 2000) and these challenges are further pronounced in organisational settings with transient working relationships and where face-to-face communication is not possible and must be mediated through alternative formats. Highly developed oral, written and digital communication competencies—including an understanding of the strengths and limitations of different media—are therefore essential.

4.2.3 | Trajectory articulation competence

Competence in maintaining trajectory awareness and creating working knowledge are prerequisites for trajectory articulation. Additionally, specific competencies underpin different kinds of articulation work.

Temporal articulation requires an understanding of the work of professions, departments and units involved in a trajectory and their temporal–spatial organisation. It also depends on skills in identifying the relevant organisational routines and procedures and assessing their implications for trajectory management. Allen's (2015) original study revealed how nurses relied on pattern recognition and organisational routines in order to manage their work. Thus specific categories of patients acted as triggers for particular courses of action, certain decisions were associated with particular lines of work, and different clinical presentations were associated with discrete interventions. The use of organisational routines has been contentious in nursing and often criticised as detracting from individualised patient-centred care, but there is a growing recognition that routines and standards are a valuable sense-making resource in complex and turbulent environments, which release cognitive capacity to address the non-standard trajectories. Understanding the value of standards and protocols in a given trajectory and recognising when these are a poor fit with the needs of patients and having the ability to articulate this is an important skill. In some circumstances routines will be very familiar, but in others not; a reflexive awareness of such knowledge gaps and how to address this is also essential.

Integrative articulation is founded on the capacity to assess a care trajectory holistically to recognise possible contradictory or conflicting decisions, communicate this to those concerned, and reach a resolution. This demands comprehension of complex clinical presentations and organisational arrangements and the skills and confidence to raise and elucidate pertinent issues with the relevant parties.

Material articulation requires the ability to identify and locate relevant resources necessary to meet patient needs (materials, technologies, knowledge and expertise) and understand their interrelationships and implications for care trajectory management. Allen's (2015) study revealed that routines applied to material configurations too and cognisance of these is an important skill particularly in time-critical situations. 'Bed management' is an important form of material articulation. The 'bed' is associated with a whole host of resources: people, knowledge, space and technology. Placing someone in the most appropriate bed whether this is in the hospital or home helps ensure the resources needed to meet their needs are available (Allen, 2014a).

5 | INDICATIVE PEDAGOGICAL AND ASSESSMENT STRATEGIES

Care trajectory management competencies are complex and require a blended approach to learning and teaching. While presented here as discrete competencies, expertise in trajectory management depends both on their integration and the interleaving of organising work with nurses' clinical, supportive and public health functions. Thus students need to be enabled to develop skills progressively over the pre-registration education programme underpinned by an assessment strategy that builds through formative assessments of individual competencies through to summative assessments at the end of the final year of educational programmes. We envisage that this process commences with the development of conceptual understanding and the application of this to practice, deploying problem-based learning case studies of increasing complexity, through to progressively challenging simulation learning, and advancing to reflective practice and action learning sets drawing on experience from practice placements. Integrating care trajectory management into nursing curriculum underlines the importance of inter-professional learning opportunities and also points to the importance of practice placements which expose students to a whole systems understanding of health and social care, including shadowing other professions, rather than the fragmented insights that are more commonplace. Indicative pedagogical strategies are summarised in Table 2.

6 | DISCUSSION AND CONCLUSION

In this paper we have made the case for formalising preparation for care trajectory management in the nursing curriculum and have proposed that Allen's work on care trajectory management provides a conceptual framework for this purpose. Building on this work, we first identified previously unspecified evidence-based and theoretically informed competencies that underpin care trajectory management, and then outlined indicative pedagogical and assessment strategies for integrating these into nursing curricula. Care trajectory management is a complex activity and depends on high-level clinical, organisational and communicative knowledge and skills that need to be built up over time along the novice-expert continuum through blended pedagogical strategies and formative and summative assessment. In this paper we have suggested how care trajectory management might be explicitly addressed as a discrete element of practice in programmes of nurse education. But there is also a need for cognisance of this component of nursing work as a

TABLE 2 Pedagogical strategies

Level	Competencies	Examples	Pedagogical strategies	Assessment	
				Formative	Summative
Generic	Theoretical/ conceptual competence	Understand the care trajectory management framework Understand translational mobilisation theory	Lecture Self-directed learning Digital resource www. theinvisibleworkofnurses Digital resource https://www.translationalmobilisationtheory.org Application of concepts and theories to analyse a case study using problem based learning	Group presentation of case study analysis	Academic paper demonstrating the integration of theoretical constructs with a practice example
	Interleaving clinical and organisational work competence	Develop and maintain a full clinical picture of patients assigned to care Identify the practical, social and concrete activities necessary for meeting those needs Develop a plan for the organisation of care taking into account potential system constraints	Shadowing staff nurse on practice placement Simulation scenario followed by action learning debrief Reflective practice	Individual reflective practice narrative focused on a single case—students should be able to articulate the clinical and organisational components of patient care, outline a plan for their management.	Academic paper and explicit narrative review of reasoning and decision-making processes in a clinical case study scenario—which includes 'thick descriptions' of what clinical and organising work elements were involved and their anticipated consequences for the quality of care and a management plan.
	Health and social care systems competence	Look beyond the patient and their immediate nursing needs to understand their wider formal and informal network of care and the professions, agencies and organisations involved and their implications for care trajectory management Understand the legislative, policy and regulative frameworks of within which trajectory actors operate	Lecture Case studies using problem-based learning and action learning debrief Practice placements—whole systems focused	Presentation of simple case study demonstrating knowledge of health and social care systems and their relevance for patients and families. The narrative review should include 'thick descriptions' which demonstrates the student's knowledge of the formal structure of national and local health and social care systems.	Presentation of complex case study demonstrating knowledge of health and social care systems and their relevance for patients and families. The narrative review should include 'thick descriptions' which demonstrates the student's knowledge of the formal structure of national and local health and social care systems.
	Relational competence	Understand the perspectives of those involved in a patient's care Understand the roles and responsibilities of the health and social care teams Interact and communicate across professional and organisational boundaries and hierarchies Mediate the relationships and interests involved in organising care around the wishes and needs of patients and families Translate information and tailor communication to meet the needs of the recipient	Inter-professional learning—lecture Inter-professional learning—simulation scenarios and action learning debrief Practice placement—shadowing the work of other non-nursing care providers to understand their working worlds Practice placement—transfers of care focused Reflective practice	Individual reflective practice narrative—students should be able to articulate the other professions' perspectives on concrete clinical matters; demonstrate that they know what the other professions 'look for' in oral or written communications.	Final-year practice-based assessment of management of clinical caseload for a shift

(*Continues*)

TABLE 1 (Continued)

	Complexity management competence	Work in conditions of uncertainty and turbulence Understand planned and emergent forms of organisation Identify when routines and guidelines should be applied and when more responsive and bespoke approaches are indicated Manage a patient caseload and prioritise care Demonstrate a critical sensitivity to ethical dimensions of prioritising care Make cognitive and psychological shifts from high levels of alertness and vigilance and being present in the moment for patients and families Flexibility, resourcefulness, problem-solving and being able to respond to shifting demand patterns.	Practice placement Priority setting in simulation scenarios Reflective practice and action learning debrief	Individual reflective practice narrative – students should be able to reflect on the cognitive, emotional and organisational capacities involved, including shifting perspectives from one patient to many, ethical considerations in managing resources, the demands of maintaining vigilance and alertness to clinical and organisational indicators, coping with a caseload	Final year practice based assessment of management of clinical caseload for a shift
	Information and communications competence	Competence in the use of paper -based and digital technologies Competence in navigating unfamiliar ICT systems	Lecture—importance of skills IT laboratory learning Practice placement	Practical demonstration of efficient navigation and information retrieval and documentation in EPR and other electronic-and paper-based systems	Objective structured clinical examination
Function Specific	Trajectory awareness competence	Identify the social, material and organisational arrangements comprising a patient's care Encapsulate and summarise patient trajectories for different audiences Identify potential sources of trajectory complexity and build this into care planning Reflexive monitoring of patient's evolving care and organisation and understanding the implications of these relationships Making sense of complex information sources and identifying gaps and/or inconsistencies and implementing strategies for resolving these	Virtual ward round Practice placement Simulation Reflective practice and action learning debrief	Practice-based assessment through the oral and written presentation of patient trajectories in handover	Final-year practice-based assessment of management of clinical caseload for a shift
	Creating working knowledge competence	Perspective-taking and the utilisation of relational and communication skills to mobilise the right information in the right format for the appropriate audience in a timely fashion	Inter-professional learning Practice placements—shadowing the work of others Following patients through contexts of care (e.g., hospital to home; home to primary care clinic; hospital to residential care home) Case studies and reflective practice	Objective structured clinical examination—select the appropriate information and format to communicate to relevant actors in a transfer of care	Final-year practice-based assessment of management of clinical case load for a shift
	Trajectory articulation competence	Understand the work of others involved in a trajectory of care Identify and appropriately use organisational routines to make sense of and articulate care trajectories Holistic assessment of patient trajectories and the comprehension of clinical and organisational relationships Identify the material arrangements necessary to support patient needs Bed management	Practice placements—including bed management team Case studies Simulation scenarios and reflective practice and action learning Critical incident training	Group presentation of a complex case. This should include descriptions and reflections on the elements necessary successful trajectory management.	Final-year practice-based assessment of management of clinical caseload for a shift

central pillar of professional identity and practice across the wider curriculum (Allen, 2014b).

Building preparation for care trajectory management into the nursing curriculum will involve a number of challenges. It will require an extension of the profession's theoretical models and frameworks of understanding if future generations are to be equipped with a language with which to articulate this aspect of their practice. It will also necessitate new clinical placement strategies, if students are to be supported to see beyond the fragments of the patient journey, which are typical of encounters in contemporary health and social care systems. Development programmes will also be necessary to prepare nurse educators and clinical mentors to support neophytes.

While competency in care trajectory management at the point of registration is essential to meet the expectations and needs of contemporary health and social care systems, organisational changes are also necessary to create an infrastructure to support this component of the nursing role. First, there is a need for the development of more systematic approaches to the assessment of trajectory complexity in the context of workforce planning. Nurses make numerous assessments about patient care needs, risks and acuity, and have developed tools and frameworks for these purposes; care trajectory management requires parallel systematic assessment frameworks and competence in their use. Second, orthodox approaches to care coordination are predicated on a conceptualisation of health and social care that presupposes predictability, linear cause and effect relationships, and the possibility of rational planning and control. Emergent organisation is poorly served by such approaches and new technologies are needed. There is a growing realisation that ensuring the quality and safety of patient care requires new ways of thinking about, and technologies for intervening in, contemporary healthcare organisations that recognise their dynamic qualities as complex systems (Braithewaite, 2018). The inclusion of care trajectory management in the nursing curriculum will ensure that nursing is well placed to contribute to this agenda.

Nursing has a historical legacy of successful interventions in the organisation of care. Formalising preparation for care trajectory management in the nursing curriculum will equip future generations of nurses with the theoretical and conceptual resources with which to comprehend, analyse and communicate this component of nursing work; increase its legitimacy; optimise its effectiveness; and contribute to new service models, technologies and processes.

ORCID

Davina Allen https://orcid.org/0000-0002-6729-7502

REFERENCES

Agency, N. P. S. (2007). *Safer care for the acutely ill patient: Learning from serious incidents* (The fifth report from the Patient Safety Observatory). London, UK: Author.

Allen, D. (2004). Re-reading nursing and re-writing practice: Towards an empirically-based reformulation of the nursing mandate. *Nursing Inquiry*, *11*(4), 271–283. https://doi.org/10.1111/j.1440-1800.2004.00234.x

Allen, D. (2014a). Inside 'bed management': Ethnograhic insights from the vantage point of UK hospital nurses. *Sociology of Health & Illness*, *37*, 370–384. https://doi.org/10.1111/1467-9566.12195

Allen, D. (2014b). Re-conceptualising holism in the contemporary nursing mandate: From individual to organisational relationships. *Social Science & Medicine*, *119*, 131–138. https://doi.org/10.1016/j.socscimed.2014.08.036

Allen, D. (2015). *The invisible work of nurses: Hospitals: Organisation and healthcare*. Oxford, UK: Routledge.

Allen, D. (2018a). Translational mobilisation theory: A new paradigm for understanding the organisational elements of nursing work. *International Journal of Nursing Studies*, *79*, 36–42. https://doi.org/10.1016/j.ijnurstu.2017.10.010

Allen, D. (2018b). Care trajectory management: A conceptual framework for formalizing emergent organization in nursing practice. *Journal of Nursing Management*, *27*, 4–9. https://doi.org/10.1111/jonm.12645

Allen, D., Griffiths, L., & Lyne, P. (2004). Understanding complex trajectories in health and social care provision. *Sociology of Health and Illness*, *26*(7), 1008–1030. https://doi.org/10.1111/j.0141-9889.2004.00426.x

Allen, D., & May, C. (2017). Organising practice and practicing organisation: An outline of translational mobilisation theory. *Sage Open*, 7(2), 1–14. Retrieved from https://doi.org/10.1177%2f2158244017707993

BBC. (2012). Secret Scottish NHS incident reports released. Retrieved from https://www.bbc.co.uk/news/uk-scotland-20395257

Braithewaite, J. (2018). Changing how we think about healthcare improvement, *BMJ*, *361*:kk2014. doi: https//doi.org/10.1136/bmj.k2014

Dingwall, R., Rafferty, A. M., & Webster, C. (1988). *An introduction to the social history of nursing*. London, UK: Routledge.

Ellingsen, G., & Monteiro, E. (2003). Mechanisms for producing working knowledge: Enacting, orchestrating, and organizing. *Information and Organization 13*, 203–239. https://arxiv.org/pdf/1803.07153.pdf

Exley, C., & Allen, D. (2007). A critical examination of home care: End of life care as an illustrative case. *Social Science & Medicine*, *65*, 2317–2327. https://doi.org/10.1016/j.socscimed.2007.07.006

Fligstein, N., & McAdam, D. (2011). Toward a general theory of Strategic Action Fields. *Sociological Theory*, *29*(1), 1–26. https://doi.org/10.1111%2fj.1467-9558.2010.01385.x

Furaker, C. (2009). Nurses' everyday activities in hospital care. *Journal of Nursing Management*, *17*(3), 269–277. https://doi.org/10.1111/j.1365-2834.2007.00832.x

Gandhi, T., Kaplan, G., Leape, L., Berwick, D., Edgman-Levitan, S., Edmondson, A., & Wachter, R. (2018). Transforming concepts in patient safety: A progress report. *BMJ Quality & Safety*, *27*(12), 1019–1026. https://doi.org/10.1136/bmjqs-2017-007756

Goodwin, C. (1994). Professional vision. *American Anthropologist*, *96*(3), 606–633. https://doi.org/10.1525/aa.1994.96.3.02a00100

Heath, C., & Staudenmayer, N. (2000). Coordination neglect: How lay theories of organising complicate coordination in organizations. *Research in Organizational Behaviour*, *22*, 155–193. https://doi.org/10.1016/S0191-3085(00)22005-4

Kobewka, D., van Walraven, C., Turnball, J., Worthington, J., Calder, L., & Forster, A. (2016). Quality gaps identified through mortality review. *BMJ Quality & Safety*, *26*, 141–149. https://doi.org/10.1136/bmjqs-2015-004735

Latour, B. (2005). *Reassembling the social: An introduction to Actor-Network-Theory*. Oxford, UK: Oxford University Press.

Maben, J., & Griffiths, P. (2008). *Nurses in society: Starting the debate*. London: National Nursing Research Unit, King's College London, University of London.

May, C., & Finch, T. (2009). Implementing, embedding, and integrating practices: An outline of Normalization Process Theory. *Sociology*, *43*(3), 535–554. https://doi.org/10.1177%2f0038038509103208

Michel, L., Waelli, M., Allen, D., & Minivielle, E. (2017). The content and meaning of administrative work: A qualitative study of nursing

practices and perceptions. *Journal of Advanced Nursing*, *73*(9), 2179–2190. https://doi.org/10.1111/jan.13294

Mol, A. (2002). *The body multiple: Ontology in medical practice*. Durham, NC: Duke University Press.

Nursing and Midwifery Council. (2018). *Future nurse: Standards of proficiency for registered nurses*. London: Nursing and Midwifery Council. Retrieved from https://www.nmc.org.uk/globalassets/sitedocuments/education-standards/future-nurse-proficiencies.pdf

Sandelowski, M. (2000). *Devices & desires: Gender, technology and American nursing*. Chapel Hill, NC & London, UK: University of North Carolina Press.

Strauss, A., Fagerhaugh, S., Suczet, B., & Wiener, C. (1985). *The social organization of medical work*. Chicago, IL: University of Chicago Press.

Telegraph Reporters. (2012). Patients die due to flat batteries in hospital equipment. Retrieved from: https://www.telegraph.co.uk/news/health/news/9589157/Patients-die-due-to-flat-batteries-in-hospital-equipment.html

Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA, London & New Delhi: Sage.

Zerubavel, E. (1999). *Social mindscapes: An invitation to cognitive sociology*. Cambridge, MA & London, England: Harvard University Press.

How to cite this article: Allen D, Purkis ME, Rafferty AM, Obstfelder A. Integrating preparation for care trajectory management into nurse education: Competencies and pedagogical strategies. *Nurs Inq*. 2019;e12289. https://doi.org/10.1111/nin.12289