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Linking team competences to organisational capacities in health care

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Abstract Palliative care is a complex environment in which teams of healthcare professionals are constantly challenged to match the configuration of care delivery to suit the dynamics of the patient's bio-medical, social and spiritual situations as they change during the end-of-life process. In such an environment these teams need to engage in ongoing interaction between different professional disciplines, incremental improvement in care delivery, learning and radical innovation. This is aimed at combining operational effectiveness, strategic flexibility, exploitation and exploration, in a way that ensures the best possible care for the patient. This paper examines previous research on the management competences and the organisational capabilities necessary for continuous innovation, and analyses evidence emerging from a study of palliative care. Work on the relationships between innovation capacities, organisational capabilities and team-based competence is drawn together. Evidence is presented from research into the management of innovation in palliative care.

Introduction

Jassawalla and Sashittal (1999) offer the opinion that the elements that enable cross-functional new product development teams to work synergistically are not well understood, despite evidence of the success of such teams. The authors note that not all such teams work well, that collaboration does not automatically come from team membership and that work needs to be done on how learning occurs within these teams. A successful team-based organisation must be dynamic and ready to change and re-orient its core competences in order to deal with new environmental challenges, utilising dynamic organisational capabilities (Teece *et al.*, 1997). Organisations with superior knowledge-based resources can develop their own assets by engaging in innovation in order to cope with an uncertain and dynamic environment (Miller and Shamsie, 1996). Team-based organisations, particularly organisations dependent on cross-functional teams, would therefore seem somewhat vulnerable in dynamic environments if their managers do not understand the basis of their organisational performance. Palliative care is one such dynamic and uncertain environment within which organisations are



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dependent on cross-functional, multidisciplinary teams. Within this environment the transformation and reconfiguration of resources and capabilities are key components in innovation, indicating the need for management to be actively involved in these processes. Palliative care teams in hospices consist of tightly knit groups of professionals from different healthcare disciplines. They are able to bring together a large range of discipline-based skills and competences. By bundling these together in different ways and using different team members they can create the sets of competences required to engender a range of continuous innovation capacities. In so doing they match the organisation to the environment.

Managing innovation

Whether contemplating radical or incremental innovation, managers need to consider the strategic incentives of investing in innovation and their organisational capabilities and they must understand their capabilities before engaging in any type of innovation. Although in many organisations, including healthcare organisations, individuals engage in innovation without involving or informing management. Pitt and Clark (1999) suggest that the strategic management of innovation is the result of the conscious integration of management's understanding of the environment, organisational knowledge and management capabilities. This implies that management must understand the issues of capabilities, knowledge management and strategy and have decided on the type of innovation that suits. Johannessen *et al.* (1999), in reporting on the management of innovation in the knowledge economy, note that there is conscious effort on the part of management to come to an understanding of circumstances, goals and capabilities. They also report that trust, among other components, has a key role to play in the successful management of innovation. McDermott and Sexton (1998), on the other hand, argue that there is no prescription for managing innovation. However, even with this view, the authors describe a number of guidelines for organisations to use to become and remain innovative. The use of these guidelines is based around three organisational artefacts: culture, management and people. Again, this implies a need for management to understand the organisation and its capabilities.

Incremental innovation, described by Herrmann (1999, p. 786) as "the small changes to a product, which increase its capabilities or its quality", may prove more worthwhile for some organisations. Organisations generally already have the required capabilities and knowledge in place for incremental innovation and, according to Pitt and Clark (1999), this type of innovation can avoid major disruptions to current practice and markets. In palliative care organisations it seems apparent that existing capabilities are the enablers of opportunistic incremental innovation. This occurs in an environment where the contingent variables such as demography of the patient, catchments and the range of

diseases for which palliative organisations provide care, have changed markedly in the recent past and continue to change (Higginson, 1999).

Tushman and Rosenkopf (1992), in exploring the dynamics of innovation, looked at the extent of a firm's influence on the evolution of the innovation and the industry standard. They argue that this depends on the amount of technological uncertainty, complexity of technology and stage of the evolution. Complexity is a function of factors including the innovation's dimension of merit, its attributes as perceived by the local environment, the number of interfaces between the innovation and complementary innovations, the number of components that make up the innovation and the linkages between them and the number of organisations in the local environment that are impacted on by it. Complexity is very high in the palliative care environment (Davison and Hyland, 2002). Bessant and Boer (2002) argue that knowledge-based organisations such as palliative healthcare facilities need to engage in continuous innovation, that is both operationally effective in exploitation and strategically flexible in exploration. It was often argued that these two capabilities could not be combined successfully. Yet, according to Bessant and Boer (2002) recent developments in society, markets, technology and industry suggest that leading organisations need to find configurations of processes, procedures, people, technologies, and organisational arrangements that allow them to become continuously innovative.

According to Boer (2002) continuous innovation is the ongoing interaction between operations, incremental improvement, learning and radical innovation aimed at effectively combining operational effectiveness and strategic flexibility, exploitation and exploration. In seeking to develop a culture of continuous innovation there needs to be a focus on an organisation's capability to renew all or part of its managerial competences and to create radically new competences in order to achieve congruence with the changing business environment (Teece *et al.*, 1997). Continuous innovation is the fundamental task for an organisation that exists in dynamic and unstable environments and it requires a constant surveillance of regulatory policies, technologies, and the capability to quickly accomplish changes (Teece *et al.*, 1997). In palliative care this can be expressed as a method of understanding situations that is capable of changing as situations change. This is related, primarily, to understanding the patient's situation as a basis for care (McDonald and Krauser, 1996; Witt Sherman, 1999). Understanding a patient's situation in palliative care is more than generating an exclusively bio-medical picture of a patient's condition. The quality of life of people at the end of their lives is an issue of relief of suffering, whether the cause is physical, emotional or spiritual; known or unknown (McDonald and Krauser, 1996; Higginson, 1999; Witt Sherman, 1999).

Beckett *et al.* (2002) argue that there are two key inputs to the innovation process: background knowledge and diversity of views. Both these inputs are supplied by the healthcare professionals in palliative care teams. Background

knowledge requires knowledge about treatments, techniques and processes, and linkages between their components, the patient and the patient's family and social support group. The palliative care team needs to have the necessary professional background knowledge and understanding to initiate and support the innovation process. Without this background the significance of new opportunities, or the steps necessary to act on them, may not be appreciated. Innovative products or processes are novel combinations of existing artefacts or a combination of new and existing artefacts, so they require a diversity of views to support their conceptualisation. Without the variety of views provided by the team members from a variety of multidisciplinary backgrounds novel treatments, techniques, processes, applications, and innovative linkages are unlikely to be established.

Every system operates within constraints and continuous innovation in palliative care is not immune from this. Within the innovation process Beckett *et al.* (2002) characterise four constraints. The first is a culture and environment that supports the free expression and exchange of a diversity of views, sharing of knowledge, risk-taking, and linkages between disparate parts of a hospice that are needed to support the emergence of an innovation. In any enterprise, this must be balanced against maintaining focus on current operational activities, protection of intellectual property and controlling risk exposure, potentially sustaining unproductive tensions between creativity and sound business management. In palliative care this tension appears to be minimal. There are also arguments that innovation is stimulated by a demanding environment and by competition. Taken together, this suggests a need to synchronise the internal and external environment to sustain effective innovation. Next there is evidence that some form of incentive is needed to deliver on prospective innovations, as innovation can be a risky business. Incentives may be related to personal motivation, for example in palliative care the incentive to innovate is often to provide the patient with a more comfortable end-of-life experience. Opportunity access relates to access to an innovative environment. Innovative individuals need the time and permission to access people, places and capabilities that can help develop their ideas, and to assist with the implementation of these ideas. For example, time release from a routine job and access to internal or external experts may be needed to progress an idea. Finally, organisations need to establish acceptance criteria for innovations to proceed past the discovery of possibility point. At any given time, innovative enterprises will have a portfolio of candidate innovations, and as part of the assessment and prioritisation process there is a need to consider criteria related to potential risk, resource limitations, potential future benefits and strategic fit. It appears, therefore, that palliative care hospices have developed capabilities and competences to support and manage their innovation processes within a set of constraints.

Capabilities and competences

According to Gieskes and Langenberg (2000), capabilities are integrated resources that the organisation draws together deliberately. These resources include tangible and intangible assets, ranging from behaviours and skills to information systems. Competences are described by Karnoe (1995, p. 430) as a "repertoire of experiences, skills and beliefs" and by Drejer (2000, p. 206) as "a system of technology, human beings, organisational (formal) and cultural (informal) elements and the interactions of these elements". Exploratory research in palliative care organisations in Sydney appears to be indicating that competences are the dynamic that enables the operationalisation of organisational capabilities, as noted by Teece *et al.* (1997).

This reflects what Boccardelli and Magnusson (2000) term a dynamic capabilities approach. In the dynamic capabilities approach, core competences stem from the dynamic interaction of tangible and intangible resources and organisational know-how, within and between organisations. The dynamics of these interactions allow organisations to move from one set of competences to one that better fits the emerging environmental challenges. This dynamic reconfiguration of competences is mainly led by organisational knowledge creation processes and other learning processes. Within this frame the evolution from a set of core competences to a new set or new single competence can be because of internal and external sources of competence development and/or by combining existing competences in new ways. This rebundling occurs on a regular basis in palliative care. Patient care professionals are continually looking for new ways and new combinations that will assist patients in their end-of-life state. In the patient care team members can call on a wide range of competences and reconfigure or transform them to suit the individual patient's situation.

Garud and Nayyar (1994) have examined transformative capacity, which is described as a capability to accomplish three different tasks: choose technologies, maintain them over time, and to reactivate them when required. This transformative capacity is essential for palliative care professionals. Other authors have worked on the capacity of creating knowledge (Nonaka and Takeuchi, 1995), and on the need to integrate different capabilities in R&D work (Clark and Fujimoto, 1991; Kogut and Zander, 1992; Leonard-Barton *et al.*, 1992; Grant, 1996). Starting from the ideas of Henderson and Cockburn (1994), it is possible to produce an analytical map, where the development of competences is linked to organisational mechanisms and tools that might facilitate a dynamic mastering of the configuration of competences. The complexity of the palliative care environment requires a dynamic mastering of the configuration competences as the patient care team is configured on a patient-by-patient basis, depending on the individual patient's requirements and the stage of the end-of-life process (Davison and Hyland, 2002).

These combinative competences aim at integrating complex, systemic, and often tacit knowledge. This is a decisive factor in turning a project into a single step of a longer sequence of technological knowledge development (Iansiti and Clark, 1994; Bartezzaghi *et al.*, 1997). Therefore, combinative competences not only work within a single project, but also in a longitudinal sequence and in simultaneous projects such as the treatment of a variety of terminally ill patients in the final stages of several different diseases (Nobeoka and Cusumano, 1997). Palliative care teams and team members utilise a concurrent transfer strategy (Nabeoka, 1995) where a new care project transfers knowledge, information and technologies from older projects or from a base of collective palliative experience while other care projects are still in train. This requires continuous interactions and communications between teams and, in return, increases the efficiency of the design of care for patients (Nabeoka, 1995). Team membership is common and teams operate in parallel, with members moving between teams, so the ties between teams are strong. This requires at least a two-way interaction that can assimilate non-codified knowledge that is created because the nature of the teams' relationships and interactions invite and enable testing, mistakes and instruction, particularly using complex knowledge (Hansen, 1999).

The competences of selection and transformation are aimed at grasping the residual potential of knowledge. The former allow organisations to concentrate their resources and boost performance because they release resources from the development of old and well-defined competences, while the latter are used to perform the necessary incremental development to obtain and launch numerous applications from the same technological basis. These competences are important when an R&D project has been able to develop something not yet ready for the market, which can be selected to be put aside for future use (Garud and Nayyar, 1994). The purpose of creative competences is to assist in bringing about radically new products, processes and procedures. Often, this implies finding ways of breaking with established ideas to create room for the application of new perspectives, which can be facilitated by the use of strong metaphors that do not fit with existing frames of interpretation (Nonaka, 1994; Nonaka and Takeuchi, 1995), or by exposure to individuals or communities holding different perspectives. In palliative care teams the objective is the relief of distress, not the cure of disease. This means that care team members are enabled, in the methods and types of treatments they can use, to ensure a better end-of-life experience for the patient. So they are able to use their creative competences in ways not always available to other healthcare professionals.

Another key issue is the capability to recognise and exploit technological opportunities (Teece *et al.*, 1997). This is highly important for organisations running science-based businesses, where the strategic and economic performance is often related to R&D competences (Van de Ven, 1986;

Coombs, 1996) and to the capability of recognising and following new technological trajectories. However, it is also of critical importance in hospices, where the dynamic nature of care requires that activities similar to R&D activities, such as inter-project learning (Nabeoka, 1995) and the sharing of information across organisational boundaries (Hansen, 1999), are carried out quickly and sometimes within changing guidelines.

Linking organisational capacity to team-based competences in palliative care

As part of an ongoing study into innovation management in palliative care a series of focus groups are being conducted in hospices in Sydney. Review of previous research indicates that palliative care organisations can contain at least six organisational capabilities (Davison and Hyland, 2002):

- (1) managing knowledge;
- (2) managing information;
- (3) interdisciplinary operations;
- (4) collaborative operations;
- (5) managing technology; and
- (6) managing change and its effects.

Exploratory interviews with hospice management teams appear to confirm these capabilities.

With regard to competences, review of previous research indicates that up to seven sets of competences are utilised by multidisciplinary teams in palliative care (Davison and Sloan, 2002). These are:

- (1) use of organisational artefacts to create trust;
- (2) rapid patient inclusion in stable social structures;
- (3) address values-based issues;
- (4) understand the patient's situation as a basis for care;
- (5) working in teams;
- (6) collaboration; and
- (7) managing ambivalence.

Of these sets, the first three appear to be used by palliative professionals in relationships with patients and patient-based carers, for example families. The last three appear to be utilised between members of the multidisciplinary care teams. The fourth, understanding the patient's situation as a basis for care, is apparently used as a bridge linking for the other two groupings of competences. Interviews with multidisciplinary patient care teams have confirmed the existence and use of these competences.

The interviews carried out with multidisciplinary care teams also indicate that sets of competences can be bundled under particular capabilities. This information has emerged in the interview process and we will return to it as a specific focus at a future date in the research. However, at the time of writing it appears that competences are bundled under capabilities as indicated in Table I.

It is interesting to note the number of times that competences are related to more than one capability, indicating that sets of competence, at least in this environment, have multiple uses. In the palliative care organisations studied we have noted that patient care teams form, break down and reform from a multidisciplinary pool. The driver of team composition is the patient's situation. Knowing the patient and the patient's carers is described by Luker *et al.* (2000) as being core and pivotal to the successful provision of palliative care, and must happen as early in the palliative process as possible, but probably never stops during the duration of the end-of-life process. Individual patients bring individual care contexts into the palliative network. This means that each patient must be known individually. Each discipline involved in multidisciplinary palliative care teams is there with an operational connection to the major components of palliative care such as medicine, nursing, pastoral care, social care and physiotherapy. Each discipline contains its own specific knowledge and its component. Interviews with multidisciplinary teams about individual behaviours within the teams (Davison and Sloan, 2002), and their relationship to the management of innovation, have revealed a number of factors about learning within and between the teams. These can be expressed in terms of Henderson and Clark's (1990) concept of architectural knowledge, the knowledge of the links and relationships between organisational components that better enables the exploitation of components. During interviews healthcare professionals indicated, for example, that when interacting with patients individuals search for information about the patient's situation, as it might impact on the professional's discipline. At the same time, however, individual team members are also open to indications of the patient's situation that might impact, or be the concern of, other disciplines and they will readily communicate any information necessary to members of those disciplines (Davison and Sloan, 2002). This is, according to the teams, done to gather and communicate information, to generate knowledge, to ensure effective collaboration and to enable the effective management of change. This need, and willingness, to observe and report across professional boundaries for multiple purposes, is one of the drivers of the multiple occurrences of competences against different capabilities.

Exploiting a storehouse of technology requires firms to transfer technology over time. This is termed as transformative capacity by Garud and Nayyar (1994). Transformative capacity complements absorptive capacity, which is the ability to exploit external technological opportunities. Absorptive capacity alone is insufficient when an organisation operates in a continually changing

Capacity	Capability	Competence
Transformative	Managing knowledge Managing information	<p><i>Creating trust</i> quickly as a basis for generating and exchanging knowledge and information.</p> <p><i>Creating stable social structures</i> to facilitate the generation of understanding, knowledge and information in a time of distress.</p> <p><i>Understanding the patient's situation</i> as a basis for creating knowledge and information that can be exchanged between patients and patient-based carers, patients and palliative carers and the disciplines involved in care delivery.</p> <p><i>Addressing values-based issues</i> to enable the articulation of meaning in the end-of-life process.</p> <p><i>Collaboration</i> between patient and patient-based carers; patient and palliative carers; patient-based carers and palliative carers.</p> <p><i>Working in teams</i> that include all concerned with the care of an individual patient to facilitate and maintain trust, understanding, support and care delivery</p>
Combinative	Interdisciplinary operations Collaborative operations	<p><i>Creating trust</i> between disciplines represented in care teams and team members to facilitate delivery of care.</p> <p><i>Collaboration</i> between disciplines to provide care, communicate change and manage the generation of ongoing understanding.</p> <p><i>Understanding the patient's situation</i> as an indicator of the need for particular disciplines or combinations of disciplines in the care process.</p> <p><i>Working in teams</i> of multiple disciplines where membership changes with the situation, to deliver care.</p> <p><i>Managing ambivalence</i> between team members to reduce the impact of distrust on collaborative and interdisciplinary operations</p>
Configurative	Managing technology	<p><i>Creating trust</i> between disciplines and team members to facilitate and communicate the identification, understanding, use and adaption of technologies for use in the whole of the care process.</p> <p><i>Understanding the patient's situation</i> as an indicator of the efficacy of particular technologies.</p> <p><i>Collaboration</i> between disciplines to optimise the exploitation of technologies.</p> <p><i>Working in teams</i> to apply technologies.</p> <p><i>Managing ambivalence</i> between team members and disciplines to minimise the impact of distrust on the use of and understanding of technologies</p> <p style="text-align: right;"><i>(continued)</i></p>

Table I.
The relationship
between capacities,
capabilities and
competences

Capacity	Capability	Competence
	Managing change and its effects	<p><i>Creating trust</i> between disciplines, between disciplines and patients, between disciplines and patient-based carers as a basis communication of the need for or occurrence of change.</p> <p><i>Addressing values-based issues</i> to discern indicators of situational change on the part of the patient or patient-based carers.</p> <p><i>Understanding the patient's situation</i> as an indicator of the effectiveness of change management and the efficacy of change itself.</p> <p><i>Collaboration</i> between disciplines in the generation and exchange of information and knowledge about patient states and change.</p> <p><i>Working in teams</i> to create understanding of the need for and application of change and to monitor the effects of change over a wide range of contingent variables.</p> <p><i>Managing ambivalence</i> between team members and disciplines to minimise the impact of distrust on the interpretation and understanding of change</p>

Table I.

environment in which it does not just react to external changes, but instead creates them by its own actions. Organisations can maintain their vitality by developing transformative capacity. The development of such a capacity requires cumulative knowledge development, the acquisition of relevant experiences, time lags in the development of different knowledge bundles and the transferability of knowledge across time.

In palliative care the patient's situation is generally one of continual change, but the resourcing of care is fairly constant. Palliative care organisations studied appear to have a standing requirement to operate in this way. At the organisational level palliative care organisations understand the need for transformative capacities. This is reflected in the organisational capabilities described by palliative care management committees that have been interviewed. It would appear that each of these capabilities is necessary to enable transformative capacities. At the operational level, a number of the competences described in interview would seem appropriate. For example, understanding the patient as a basis for care could be a basis for the appropriate choice of care technologies, as could collaboration and working in teams. Maintenance and reactivation of technologies over time might also be dependent on these competences.

Garud and Nayyar (1994) argue that in choosing technologies the professionals involved need to be competent in overcoming ambiguity, which results from multiple, and at times conflicting, views or choices. A

second requirement is overcoming or dealing with the uncertainty created by incomplete information about the results of using the technology, or impact on the patient in palliative care. Although additional data reduce uncertainty, in palliative care the patient is in an end-of-life state and the professionals accept the uncertainty and use the best treatment technologies available to alleviate the patient's suffering. A third necessity is the skill to select a range of knowledge vectors in a systematic way that helps to configure the available choices. In this way choices are made concerning treatment using information that is familiar to, and available within, the palliative care team. However, to avoid competency traps organisations need to be capable of creating new resources from combinations of existing resources.

Combinative capacities aim at integrating complex, systemic, and often tacit knowledge. Again, it would seem that palliative organisations have developed and implemented this capacity by bundling together capabilities and competences. They are enabled by organisational capabilities such as managing knowledge, managing information and collaborative and interdisciplinary operations. At the operational level competences such as creating trust and stable social structures to enable understanding of tacit knowledge, and addressing values-based issues to create meaning would all seem capable of producing knowledge and information for integration, while collaboration in teams is the integrative competence.

Configuration capacities (Bessant and Boer, 2002), where organisations find configurations of processes, procedures, people, technologies and organisational arrangements that allow them to become continuously innovative, also seem to have application in palliative care. This is enabled by capabilities such as collaborative operations and managing technology and interdisciplinary operations. In operations competences such as working in teams, collaborating in patient care and understanding the patient's situation as a basis of care can be characterised as combinative.

With regard to the creation and use of knowledge, it appears that both occur on a regular and ongoing basis within palliative care teams. Interviews with multidisciplinary patient care teams provide evidence of constant communication within and between teams. For example, when discussing the issue of holistic care as a driver of the need to gather and exchange a broad range of information about patients and patient-based carers, a team member noted, "... constantly, formally and informally, probably definitely more informally than formally, you can see everyone's having these little conversations all over the place, bouncing ideas. Trying to decide if there are any more ideas. So that you are not doing it on your own, but it's a team." An outpatient team member reported, "There's constant talking. I think there's a big effort made, like when you've seen a patient, to, you know, fill in all the other people involved when you get back. Even if it's quick, for a couple of minutes." And another, "We all talk

among ourselves. I mean we'll sit down and talk about the troubles that a patient might be having at home. Is there something that can be done? Would this benefit the patient? Do you think that if you saw them this would help? So that's how we all talk together about these sorts of things." Members of individual disciplines observe aspects or requirements of care outside of their disciplines when dealing with patients and patient-based carers. One team member talked about observing "issues that might relate to another professional so that I could give that person an idea that they were needed. They have particular specialist skills and knowledge. We all have the overview." Collaboration appears to extend further than observation and reporting. When discussing teamwork one team contributed, "It's not a control thing, it's not like 'this is my patient'." There is a conscious willingness to share information and knowledge (Davison and Sloan, 2002).

The result of these communications is architectural knowledge, the knowledge of the relationships between the components of care, maintained and redeveloped as a patient's situation changes during the end-of-life experience. As for component knowledge, while it is developed within the individual disciplines it appears from the interviews that a second level of this type of knowledge is developed as a result of belonging to the multidisciplinary team. Team membership brings with it the responsibility for members to become familiar with components of disciplines other than their own, so that all eyes are on as many aspects of a patient's situation as possible, thus enabling as broad an understanding as possible.

Jassawalla and Sashittal (1999) offer a suggestion for the lack of understanding of the reasons for effective cross-functional new product development team performance: that these teams are developing faster than they can be studied. We do not argue with this, we add another suggestion. Perhaps important elements of the management and operation of cross-functional new product development teams are not well understood because of the multiplex nature of their relationships with one another and with the capabilities and capacities of their organisation.

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