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Multidisciplinary team working refers to a group of people with varied but complementary experience, qualifications and skills that contribute to the achievement of an organization's goals or objectives. There is an increasing realization in the workplace that productivity and effectiveness are linked to team-based work, and that focusing only on improving individuals within an organization is not an optimal strategy (Salas *et al.*, 2000). This drive toward team-based working is further complicated by the fact that organizations are increasingly evolving toward a multidisciplinary team-based environment. This challenge is most pronounced in the area of health care. The terms multidisciplinary, interprofessional, multifunctional and multiprofessional teamwork are used interchangeably to describe the collaboration of different health care professionals (physicians, nurses, technicians, etc.) who work together. While multidisciplinary team working is important in fields such as engineering (Denton, 1997) and information technology (Weinberg *et al.*, 2005), the present chapter will specifically focus on health care, where the majority of research and interventions are concentrated.

## Multidisciplinary Team Working in Health Care

The Institute of Medicine (IOM) has established the ability to work in interdisciplinary teams as one of its core competencies for health care professionals and recommends that all health care team members have a clear understanding of each other's roles and responsibilities (IOM, 2003). Demographic changes and the resultant changes in mortality/morbidity have increased the need for multidisciplinary team working in modern health care. Nancarrow *et al.* (2013) identified several important reasons that make it important in modern health care. First of all, the aging population that is associated with an increased number of patients with chronic diseases, requiring complex care provided by several health care professionals. Second, health care professionals need to develop complex skills and knowledge in order to provide adequate care to patients. Third, the increased specialization within health care professions makes it almost impossible for one professional to be able to provide a holistic care approach. Fourth, multidisciplinary teamwork is considered crucial for the continuity of care and continuous quality improvement.

However, multidisciplinary team working is particularly challenging for health care organizations. Health care workers perform interdependent tasks (e.g. a surgeon needs a patient to be anesthetized) while functioning in specific roles (e.g. surgeon, surgical nurse, anesthesiologist), but most clinical units continue to function as discrete and separate collections of professionals (Knox & Simpson, 2004). This is partially due to the fact that members of these teams are rarely trained together; furthermore, they often come from separate disciplines and diverse educational programs (Baker *et al.*, 2006). Challenges aside, multidisciplinary teamwork in health

care has been associated with benefits for the health care system, the patients and health care professionals. With regard to patient care, it has been associated with better quality of care (O'Leary *et al.*, 2012), improved clinical outcomes (Lemieux-Charles & McGuire, 2006; Xyrichis & Ream, 2008), patient safety (Manser, 2009; Salas *et al.*, 2011), continuity of care and a more holistic approach toward patients' needs (Fleissig *et al.*, 2006).

In the area of patient safety there has been a gradual movement towards a systems approach to medical error, and multidisciplinary approaches have the potential to dovetail with safety interventions/initiatives where shared activities, teamwork and effective communication among health care teams are considered crucial. With regard to health care professionals, multidisciplinary team working has also been associated with higher levels of job satisfaction (Körner, 2010), greater wellbeing (Koerner, 2011) and a lower risk of burnout and better team climate (Deneckere *et al.*, 2011). Finally, for the health care system, good team functioning can result in cost savings, workforce retention, reduced length of stay and reduced turnover (Grumbach & Bodenheimer, 2004; Xyrichis & Ream, 2008).

## Definition of Teamwork and Theoretical Models

In order to explore teamwork in the health care context, Xyrichis and Ream (2008) conducted a concept analysis and combined findings and knowledge from health care literature as well as other disciplines such as human resource management, organizational behavior and education. In this concept analysis they proposed the following definition of teamwork in the health care context:

A dynamic process involving two or more health professionals with complementary backgrounds and skills; sharing common health goals and exercising concerted physical and mental effort in assessing, planning, or evaluating patient care. This is accomplished through interdependent collaboration, open communication and shared decision-making.

(p. 238)

In their definition, it becomes clear that multidisciplinary team working is not a simple sum of different health care professionals working together as a group (Mathieu *et al.*, 2008; Salas *et al.*, 2000). Professionals need to work together for a common goal and they need to share common values (Atwal & Caldwell, 2006; Salas *et al.*, 2008). The interaction between team members creates additional values that are not simply the sum of individuals' competencies (Sandberg, 2004).

Several models of teamwork can be found in the literature. For example, Berlin *et al.* (2012) differentiate five models related to teamwork with regard to; (1) developmental phases of a team; (2) team integration; (3) the way members organize and coordinate their activities; (4) the way the team roles are established; and (5) type of team collaboration and goal orientation.

**Table 76.1** Models of teamwork identified by Berlin *et al.* (2012)

Development of a team	<p><i>Forming phase.</i> Members of the project team meet each other and learn about the tasks they will need to perform. Team members will try to see how they fit in with each other and understand what is expected of them.</p> <p><i>Storming phase.</i> Conflicts and polarization between team members may arise as team members tend to challenge each other.</p> <p><i>Norming phase.</i> Team members come together and focus more effectively on the project tasks and objectives.</p> <p><i>Performing phase.</i> Team members are comfortable with each other and accept group norms. Interpersonal and structural issues have been settled.</p> <p><i>Adjourning phase.</i> The team has developed close relationships and many of the team members will feel a sense of loss when the group project ends.</p>
Degree of internal integration	<p><i>Multiprofessional concept</i> describes when team roles are specialized; low levels of interactions exist between team members.</p> <p><i>Interprofessional concept</i> describes teams where roles are specialized but members collaborate to a higher degree compared to multiprofessional teams.</p> <p><i>Transprofessional concept</i> describes teams where team members have specialized roles but they are required not only to complement, but also to replace each other when necessary.</p>
Organization and coordination of activities	<p><i>Sequential processes</i> occur where assignments are divided in an assembly line. Every task is carefully planned; there is not much room for improvisation.</p> <p><i>Parallel processes</i> occur where team members work simultaneously but individually.</p> <p><i>Synchronous processes</i> occur where team members share the workload, work simultaneously and overlap in an organic and intuitive way.</p>
Establishment of team roles	<p><i>Differentiated teams</i> are where each member in the team has a specialized role. Tasks are performed in serial order controlled and standardized by the management.</p> <p><i>Integrated teams</i> are where different roles are specialized but the members of the team have to interact. The interaction is, however, planned and controlled.</p> <p><i>Complementary teams</i> are where team members are not just integrated but also complement each other.</p>
Team collaboration and goal orientation	<p><i>Immature teams</i> are where team members are loosely connected, subgroups exist within the wider team and team members work individually.</p> <p><i>Mature teams</i> are where team members share enthusiasm for the mission and the tasks and team is developed through the challenge entailed by completion of the mission.</p> <p><i>Override teams</i> are where team members are characterized by a lack of flexibility, rigid basic values and exclusion of new team members.</p>

Table 76.1 summarizes the different types of teamwork identified in the systematic review of Berlin *et al.* (2012). The review indicated that a synchronous, complementary or mature team is not necessarily optimal. More specifically, models with regard to the development of a team, the degree of internal integration, the organization and coordination of activities, the establishment of team roles and team collaboration and goal orientation are presented in a way to synthesize knowledge and give a critical overview on the topic.

### What are the Characteristics of a Good Multidisciplinary team?

Several studies have explored factors that can either enhance or inhibit team performance in multidisciplinary teams. For example, a literature review exploring factors that influence interprofessional team working in community and primary care identified *team structures* (e.g. size, composition) and *team processes* (e.g. meetings, objectives) as the most important factors (Xyrichis & Lowton, 2008). Congruently, the non-technical skills of team members and institutional support are important predictors of effective multidisciplinary meetings (Lamb *et al.*, 2013).

Nancarrow *et al.* (2013), combining results from a systematic review on interdisciplinary team working and data from a qualitative study with 253 health care professionals working in rehabilitation centers, proposed ten competencies that characterize a good interdisciplinary team. Those characteristics were: positive leadership and management attributes; communication strategies and structures; personal rewards, training and development; appropriate resources and procedures; appropriate skill mix; supportive team climate; individual characteristics that support

interdisciplinary teamwork; clarity of vision; quality and outcomes of care; and respecting and understanding roles.

Our discussion of effective team working will benefit from a review of the obstacles that hinder effective collaboration. The most commonly cited reasons include: differing perceptions of teamwork, different levels of skills acquisitions to function as a team member and the dominance of medical power that influenced interaction in teams (Atwal *et al.*, 2006). Moreover, Doyle (2008) has identified the following obstacles: separate documentation, poor working relationships, lack of awareness and appreciation of the roles and responsibilities of others, limited time and resources, overlapping of roles and duplication of services, poor communication, lack of information sharing, lack of collaboration, lack of trust and confidence in the abilities of other agencies, increased workload, lack of appropriately trained staff and constant re-organization. Hierarchical structures and a silo mentality of professional groups can also inhibit teamwork and collaboration (Angelini, 2011; Bleakley, 2006). All those barriers can lead to team members experiencing low morale, low motivation, decreased levels of planning and participation in decision-making and therefore reduce the sense of belonging in the team (Osabiya, 2015).

The aforementioned indicates that an initial taxonomy of enablers and obstacles exists for researchers. Most recently, Google investigated what makes its own teams effective via its *Project Aristotle* (Duhigg, 2016). The results of their investigation suggested that ‘psychological safety’ – whereby team members have a shared belief that it is safe to take risks and share a range of ideas without the fear of being humiliated – emerged as crucial. It’s reassuring for the field that research at the ‘coal face’ of industry is consistent with the considerable academic research indicating that psychological safety is a crucial factor in effective team working (Edmondson & Lei, 2014).

## Interventions to Promote Multidisciplinary Team Working in Health Care

Several studies have attempted to encourage and facilitate multidisciplinary team working by implementing interventions. Systematic reviews evaluating the effectiveness of interventions in hospital environments, either in acute or chronic care, report beneficial effects, but limitations with regard to study design and generalization of outcomes (Buljac-Samardzic *et al.*, 2010; Körner *et al.*, 2016; Zwarenstein *et al.*, 2009). The three aforementioned systematic reviews reveal considerable heterogeneity and a lack of high-quality studies.

Körner *et al.* (2016), in a systematic review of interventions concerning chronic care settings, found that only one study included a control group, and the majority of studies were single-group, non-randomized trials with a pre-post design. In addition, in this review most of the studies used staff-related (team climate, team or patient satisfaction, team performance) or organization-related outcome measures (reduced length of stay and discharge delay, decreased costs or organizational learning).

Buljac-Samardzic *et al.* (2010), exploring interventions aimed at improving team effectiveness, found that 37 out of the 43 intervention studies had low to medium quality. High-quality studies reported positive outcomes of teamwork training with regard to team behaviors, team attitudes, self-efficacy, individual effectiveness, burnout aspects and quality of provided care. In this review, interventions aimed to improve multidisciplinary team working used education and training of team members in interpersonal or technical and functional skills, standardized tools and checklists. In most types of interventions the outcomes were related to team effectiveness, teamwork attitudes, team satisfaction and less objective outcomes. The review concluded that the majority of studies yield positive outcomes in non-technical outcomes such as team communication, cooperation or leadership.

Zwarenstein *et al.* (2009) conducted a Cochrane Review of practice-based interprofessional collaboration (ICP) interventions. They included only randomized controlled trials (RCTs) that reported changes in objectively measured or self-reported (by use of a validated instrument) patient/client outcomes and/or health status outcomes and/or health care process outcomes and/or measures of interprofessional collaboration. They were able to identify only five intervention studies fulfilling these criteria. They categorized the studies into three main types of interventions: interprofessional rounds, interprofessional meetings and externally facilitated interprofessional audit. In terms of outcomes the results were mixed and varied across settings. For example, they found that daily interdisciplinary rounds in in-patient medical wards had a positive impact on length of stay in an acute hospital setting, but had no impact on length of stay in a community hospital ward. They also found that monthly multidisciplinary team meetings improved prescribing of psychotropic drugs in nursing homes and that meetings facilitated by an external facilitator, who used strategies to encourage collaborative working, was associated with increased audit activity and reported improvements to care.

The findings of the three systematic reviews indicate that investigating multidisciplinary team working is quite complex and challenging for researchers. The great variation in settings where interventions were implemented, in samples sizes, in context and duration of interventions as well as the variation of examined outcomes limit representativeness and generalizability of findings and make it difficult to draw causal relationships between interventions and outcomes.

Blackwood (2006) identified three key challenges with the evaluation of complex interventions. First, the relevant research evidence should be used systematically in developing the components of the intervention; second, the definition and measurement of complex intervention outcomes needs to be improved; and third, appropriate research designs must be used when evaluating complex interventions.

Brown *et al.* (2008) suggest that interventions aimed at improving team working can benefit from a mixed methods approach in order to explain the findings, contextualize the results and build new theories. In addition, it is important for the outcomes of interventions to be assessed at several time points by linking the interventions with team structures, processes and outcome indicators. Even though RCTs are considered the gold standard of empirical studies, interventions in complex and dynamic environments that cannot be duplicated could benefit by intervention designs using new methodologies. For example, experience-based co-design and TeamSTEPPS are promising approaches, which provide information about processes, social context, patient engagement, equity, and health literacy; such factors that are typically and explicitly eliminated from RCT designs as sources of bias and confounding. Experience-based co-design combines participatory and user experience design tools and processes via a 'co-design' process involving staff, patients and carers reflecting on their experiences to identify improvement priorities (Donetto *et al.*, 2015). TeamSTEPPS training is intended to clarify team roles and responsibilities and optimize the use of information, people and resources to achieve the best clinical outcomes for patients. TeamSTEPPS aims to increase team awareness through a shared mental model (King *et al.*, 2008).

An evaluation of a large community hospital system identified a positive relationship between TeamSTEPPS training (for both clinical and non-clinical staff) and perceptions of patient safety culture and teamwork among staff, the quantity and quality of presurgical procedure briefings, and the use of teamwork behaviors during cases (Weaver *et al.*, 2010). Evaluations of team training in the operating room environment have produced similar findings. Studies have shown improvement in error avoidance rates, and an increase in the properly timed administration of prophylactic measures (Awad *et al.*, 2005). Team training has also been shown to enhance communication, increase employee satisfaction and reduce turnover among nursing staff. Thus, process-oriented approaches have the potential to yield important data concerning the implementation success of interventions among team members.

## Conclusions

Even though the importance of multidisciplinary team working in health care has been recognized, implementing strategies to improve it is more challenging in practice. In terms of selection, health care organizations invest heavily in selecting the 'right person' for the job, but pay less attention to the constitution of teams. This chapter indicates that multidisciplinary team working provides benefits at all levels; however, several barriers exist to its implementation. Several interventions have yielded mixed results with regard to their effectiveness. The majority of researchers identify the following elements as important: positive leadership and management attributes; effective communication strategies and structures; training and development in the principles and practices of teamwork; appropriate resources and procedures to ensure good organization; appropriate skills mix; supportive team climate; individual characteristics that support interdisciplinary teamwork; clarity of vision;

clarity of what comprises quality and outcomes of care; and respecting and understanding roles and an overall climate of psychological safety (Duhigg, 2016; Fleissig *et al.*, 2006; Lamb *et al.*, 2013; Nancarrow *et al.*, 2013). However, interventions aimed at improving multidisciplinary team working so far present a highly heterogeneous picture, with the majority of the research characterized by study quality that ranges from low to medium. Given that interventions are developed for specific

contexts, and can adopt a wide range of intervention activities that vary in duration and evaluation rigor, drawing firm conclusions regarding which is the best way to improve multidisciplinary team working in health care settings is difficult. New methodologies adopting a participatory approach can raise awareness and information sharing among team members regarding team processes and can be beneficial for team functioning as well as patient care.

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# Service User and Lay involvement in Health Care

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## Introduction

This chapter introduces the reader to service user and lay involvement in health care services, research and industry. Many of the specific examples are drawn from the UK, including its National Health Service (NHS), but the approaches and lessons will apply to involvement globally. The chapter discusses key initiatives that have helped shape what service user and lay involvement is today. From here onwards we refer to service user and lay involvement as the simpler term ‘public involvement’, where ‘public’ can mean, depending on the context, people who use health and social care services, patients, carers, families of patients or members of the public (who may use services or be a patient in the future). We refer to ‘the public’ or ‘people’ rather than service users or lay people (see more under ‘Who to involve’ below). Involvement in health care services and research refers to professionals and the public working collaboratively (as equal partners) or to professionals consulting the public, and then acting on that input. We use the term ‘involvement’ throughout the chapter to distinguish it from research ‘participation’, which is where people take part in research studies and ‘engagement’,

which is where information about health care or research is communicated to the public.

## From Global to National

Internationally, literature on involvement is growing at a rapid pace (Evans *et al.*, 2014) and is becoming a significant pillar of health care policy. Many countries began to involve people in following the World Health Organization (WHO) declaration of Alma-Ata of 1978, which stated that: ‘people have the rights and the duty to participate individually and collectively in their health care’ (World Health Organization, 1978: 1). Involvement is also high on the agendas of governments and health organizations around the world, including in the UK, Australia (Saunders & Girgis, 2010), North America (Wale *et al.*, 2010), Canada (Forbat *et al.*, 2009) and Europe (Tritter, 2009). In the UK, involvement has two overarching principles: to improve the quality of public services and enhance accountability for public spending. Additionally it is a way of allowing ‘patients to drive the