Chapter 3
Learning to Work Together Through Talk: Continuing Professional Development in Medicine

Walter Eppich, Jan-Joost Rethans, Pim W. Teunissen, and Tim Dornan

3.1 Learning to Work Together Through Talk

Becoming a physician is a lengthy process. The trajectory begins after secondary school, may include a general university degree before entering 4–6 years of medical school, and ends with some form of structured graduate training program. The latter can last from 3 to more than 10 years, after which physicians must continue to learn throughout their professional lives. They need not only to stay abreast of the evidence that informs practice, but also to translate evidence into action within the social context of clinical environments. In discussing how all of this might progress, this chapter has three main sections. In the first one, we focus on learning from work when becoming a doctor and explore an emerging framework for practice-based learning in healthcare. We highlight the essential role of 'talk' as a mediator of

W. Eppich (✉)
Northwestern University Feinberg School of Medicine, Chicago, IL, USA

Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL, USA
e-mail: w-eppich@northwestern.edu

J.-J. Rethans
School of Health Professions Education (SHE), Maastricht University, Maastricht, The Netherlands

P.W. Teunissen
School of Health Professions Education (SHE), Maastricht University, Maastricht, The Netherlands

Department of Obstetrics and Gynecology, VU University Medical Center, Amsterdam, The Netherlands

T. Dornan
School of Health Professions Education (SHE), Maastricht University, Maastricht, The Netherlands

Queens University Belfast, Belfast, UK

S. Billett et al. (eds.), *Supporting Learning Across Working Life*,
Professional and Practice-based Learning 16, DOI 10.1007/978-3-319-29019-5_3

learning and how it informs communication practices. We address limitations of learning from work, including social structures that promote communication breakdowns. In the second section, we outline the current state of formal continuing professional development (CPD) in medicine, the stated goal of which is to maintain or further develop physicians' competence. In doing so, we highlight the paradox between: (a) how CPD is currently organized around activities that promote decontextualized knowledge and skill acquisition, and (b) the evolving understanding that learning and participation in authentic workplace activities are inextricably linked. We explore the limitations of formal CPD by addressing the primary factor that threatens patient safety: breakdowns in communication among healthcare professionals. Since current CPD models foreground individual competence, the competence of healthcare teams—and patient care—likely suffer. In the final section, we explore recent developments in healthcare education discourse relevant to clinical practice since collaboration and communication across professional and disciplinary boundaries are prerequisites for safe patient care. We then envision a world in which workplace learning plays a central role in certified CPD, and how foregrounding talk as a medium for collaboration and learning can enhance practice.

3.2 Section I: Becoming a Doctor

Medicine is one of many health professions. Undergraduate medical education consists of mostly uni-professional training programs, which are accredited by governmental and/or local medical regulatory bodies. These training curricula are not the focus of this chapter; see "Educating Physicians: A Call for Reform of Medical School and Residency" for an overview (Cooke, Irby, & O'Brien, 2010). After undergraduate medical studies, medical students emerge as doctors and enter the second phase of clinical training, or graduate medical education, termed 'residency'. After residency, doctors become independent practitioners (Cooke et al., 2010). In primary care settings, as well as in hospitals, they work in teams usually composed of several fully-trained doctors and a complement of nurses and other providers. In teaching hospitals, teams might also include a number of doctors in training (i.e. residents) and perhaps undergraduate medical students if the institution is affiliated with a medical school. A newly qualified doctor might enter a 1 or 2-year period of foundational training in a broad area such as internal medicine or surgery with the aim of pursuing focused training in general practice, internal medicine, obstetrics and gynaecology, surgery, paediatrics, or emergency medicine. Not infrequently, physicians pursue further specialized training to master the nuances of a specific area within their specialty (Cooke et al., 2010). Examples include:

- Internal medicine: e.g. endocrinology, cardiology, gastroenterology
- Surgery: e.g. colo-rectal surgery, heart surgery, neurosurgery
- Paediatrics: e.g. cardiology, critical care, neonatology, emergency medicine

3.2.1 *Practising Medicine Requires More Than Acquiring Knowledge*

We can apply two metaphors of learning to doctors' education: 'learning as acquisition' and 'learning as participation' (Sfard, 1998). Medical education requires learners to command large amounts of codified propositional knowledge. A 'knowledge as competence' discourse emphasizes knowledge mastery as an indicator of competence (Hodges, 2006) and foregrounds formal classroom learning, embodied by the metaphor 'learning as acquisition' (Sfard, 1998). Although learning from clinical practice alongside more experienced clinicians in a classic apprenticeship model (Dornan, 2005; Swanwick, 2005) is a time-honored form of physician training, recent trends towards the 'learning as participation' metaphor explicitly recognize the social nature of healthcare (Sfard, 1998). Lave and Wenger (1991) popularized the notion of learning by engaging in situated social activity in 'communities of practice'. Medical learners, thus, prepare for independent practice not only through acquiring knowledge by reading books or attending lectures, but by gaining access to healthcare communities—through legitimate peripheral participation—in order to work and learn with and from others, and consequently develop their professional identities (Lave & Wenger, 1991; Dornan, Boshuizen, King, & Scherpbier, 2007; Teunissen et al., 2007). There is, accordingly, a movement to promote earlier clinical experiences within undergraduate medical curricula (Diemers et al., 2007; Dornan & Bundy, 2004; Dornan, Littlewood et al., 2006; Littlewood et al., 2005).

In contrast to formal curricula focused on knowledge acquisition, Eraut (2004) outlines four categories of work-based learning: (a) participation in group activities; (b) working with others; (c) assuming challenging tasks; and (d) working with clients [or patients], all of which apply to healthcare. Eraut (2000) also proposes various forms of non-formal learning at work, including: (a) unconscious *implicit learning* that may never reach awareness, such as how to interpret social cues, (b) conscious *reactive learning* that is spontaneous and responds to emergent learning opportunities, such as unexpected changes in patients' conditions, and (c) *deliberative learning*, which involves actively reviewing past events and experiences and planning for future learning, as, for example, when debriefing after clinical events. As he notes, learning at work is mostly invisible and, thus, easily taken for granted (Eraut, 2004). Hence, the resulting knowledge is acquired without awareness and remains tacit (Eraut, 2000; Reber, 1989). Billett (2001c), however, views the differentiation between formal and informal learning critically since it suggests a situational determinism that de-emphasizes the role of human agency in the constructive processes of thinking-acting-learning. To the contrary, workplaces are characterized by participatory practices (Billett, 2004) that afford opportunities for individuals to engage in work activities (Billett, 2001b) within a guided learning workplace curriculum (Billett, 1996, 2000; Dornan, Arno, Hadfield, Scherpbier, & Boshuizen, 2006). Despite tendencies to emphasize formalized components of medical education, recognition that the social nature of clinical work environments affords both

tacit *and* explicit learning has refocused clinical training on authentic patient care experiences.

3.2.2 *Learning to Practise Medicine Involves Participating in Patient Care*

Sociocultural learning theories stress the importance of both context and social interactions within those contexts as prerequisites for individual and collective learning (Brown, Collins, & Duguid, 1989; Durning & Artino, 2011; Eraut, 2007; Lave & Wenger, 1991; Yardley, Teunissen, & Dornan, 2012) and highlight learning by doing, or experience-based learning (Ashley, Rhodes, Sari-Kouzel, Mukherjee, & Dornan, 2009; Dornan et al., 2007; Teunissen et al., 2007). Features of curricula, such as predetermined learning objectives on the one hand and, on the other hand, social interactions between medical learners and nurses, doctors, patients, and peers while engaged in supported participation in authentic environments, combine to promote competence and a sense of readiness for practice (Dornan et al., 2007). Importantly, feeling invited to participate and engage with a team is essential to initiate and maintain meaningful participation (Sheehan, Wilkinson, & Billett, 2005).

Indeed, Teunissen (2015) claims that the key strength of learning from practice is that it enables people to learn how to perform, think, and interact in ways appropriate for their specific work setting. Further, health care settings are particularly challenging as workplace learning environments since not only are they highly contextual, they are also structured primarily for patient care rather than learning. In exploring this tension, he outlines an empirically-based framework for practice-based learning in healthcare workplaces (Teunissen, 2015). In conceptualizing those who participate in healthcare, including patients, as learners, he also views learning as a process of constructing meaning that is both situated in specific contexts at individual and social levels. Learning may be visible if it leads to changes in future behaviour, making it easier to describe and study. However, learning often represents reinforcing or slightly modifying existing knowledge or behaviours, making it difficult to recognize or observe. The utility of Teunissen's experiences-trajectories-reifications (ETR) framework is to explore how individual and collective effects contribute to acting and learning in workplaces (Teunissen, 2015). First, learners engage in acts within specific situations embedded in social and cultural systems, select and make sense of information, and then adapt their behavior, which leads to personal *experiences*. They can be helped in this process when clinical teachers maximize the affordances of workplaces, support learning, and help create meaning from participation in clinical work activities (Bleakley, Bligh, & Browne, 2011). Of course, different learners will experience situations—and draw meaning from them—differently, because of their unique personal histories. These collections and combinations of personal experiences lead to *trajectories* over time—for

multiple individuals, whose trajectories intertwine as their professional and social identities evolve. Indeed, Teunissen also asserts that because many aspects of individuals' experiences and trajectories are shared with others, norms and conventions develop, hierarchies are established and exercised, and specific tools are invented, and a shared understanding of the situational requirements for performance emerges (Teunissen, 2015). Examples of these *reifications* are standard operating procedures, practice guidelines, tools, ways of talking, and structured communication strategies. Given the importance of talk and communication in healthcare workplaces for both learning and patient care, we will give these aspects special attention.

3.2.3 Talk Is Central to Learning from Clinical Practice

Learning from work can be seen as a by-product of engaging in work activities through social interactions with patients and other members of healthcare teams, highlighting the important role of talk in learning (Edmondson, 2012; Steven, Wenger, Boshuizen, Scherpbier, & Dornan, 2014). Both formal and informal opportunities to engage in conversation, including interactions over coffee with more experienced clinicians, contribute in important ways that promote learning and encourage professional thinking (Sheehan et al., 2005). Indeed, "learning to talk", represents the shift in modern societies away from "manual work to discourse work" (Scheeres, 2003, p. 332) in which talking has become one of the main components of the work (Iedema & Scheeres, 2003). Thus, although talk has always played a role in the work of healthcare, rather than a supporting role, we argue here that talk, as discourse, now plays a central role since it is a core activity in learning and in caring for patients.

Oral case presentations are a prominent example of healthcare talk through which medical students legitimately participate in patient care. During oral presentations, medical learners verbally summarize and present information gathered through interviewing patients/families, examining patients, and—importantly—interpret what it means in terms of diagnosis and/or management. In general, giving an oral case presentation to colleagues represents a fundamental communication skill for *all* physicians, not only to report key findings of patient assessments and diagnostic evaluations, but also to demonstrate an ability to process, prioritize, and synthesize information, formulate possible diagnoses, and outline steps in patient management. *The key is to include only what is relevant to the listener in a given setting.* Haber and colleagues used rhetorical analysis to explore how medical students learn oral case presentation skills (Haber & Lingard, 2001). Students struggle to tailor presentations to the context, in contrast to more experienced physicians who view the rhetoric of their presentations as fluid and dependent on patient, time, and situational factors (Haber & Lingard, 2001). In short, physicians *must* master oral case presentations. Lingard and colleagues (2003) note that socialization

involves learning to speak like other community members, both learning to talk *with* and *about* patients (Lingard, Schryer, Garwood, & Spafford, 2003). Indeed, professional identities are "constructed and co-constructed through talk" (p. 40) (Monrouxe, 2010). In addition to demonstrating an ability to synthesize and integrate patient information, medical students shape their professional identifies though oral case presentations, particularly in learning to deal with and convey uncertainty (Lingard, Garwood, Schryer, & Spafford, 2003). For example, students observe more experienced doctors using modal auxiliaries (e.g. can, could, may, might must, shall, etc.) and adverbs (e.g. perhaps, maybe, etc.) in oral case presentations to manage uncertainty in a skilful manner (Lingard, Garwood, et al., 2003). Thus, oral case presentations represent a textual form of talk that comprises a significant form of work for many physicians, one that has important implications for both learning and patient care in all career phases.

The discourse of clinical teaching is, like case presentations, an important example of talk in medicine for which learning is an explicit goal. Supervising or attending physicians are more experienced and fully qualified doctors who oversee medical trainees and are ultimately accountable for patients' care. These more senior physicians often use questions to assess trainee competence during oral case presentations (Kennedy & Lingard, 2007). For example, supervising physicians often pose clarifying questions to support their own understanding of the case. In addition, three other forms of question help assess trainee competence: (a) case-related probing questions to explore the trainee's understanding of diagnostic decision-making or management plans, (b) knowledge-related probing questions to assess medical knowledge, and (c) challenging questions to test the trainee's assumptions of shared knowledge that emerge during case presentations. Thus, oral presentations reflect a "regular discursive meeting place" (p. S14) for medical trainees and supervising physicians that plays an important role in how trainees develop and demonstrate evolving competence and thus earn progressive autonomy (Kennedy & Lingard, 2007). Further, a critical discourse analysis explored descriptions that both medical students and physician supervisors provided about their moments of interaction supplemented by follow-up student debriefing interviews (van der Zwet, de la Croix, et al., 2014). The authors identified various discourses within the Question-Answer dynamic between physician supervisors and medical learners. These included discourses related to a 'power game', 'distance' and 'equality and reciprocity' between educators and learners. Importantly, this analysis revealed affordances of student-doctor relationships conceptualized as 'developmental spaces' that generate positive learning momentum for students and doctors and 'developmental vacuums', which stifle learning. Another study examining the audio diaries of seven general practitioners (GPs) during a 10-week-long clinical placement uncovered trajectories of developing relationships through evolution of dialogue (van der Zwet, Dornan, Teunissen, de Jonge, & Scherpbier, 2014). Doctors in the study used dialogue to define and shape their discourses of good medical practice, both influencing *and* depending on students' learning trajectories.

Supervising physicians often view their questioning practices as activities that serve both teaching *and* patient care. However, Goldszmidt and colleagues (2012)

found that supervisors' interruptions to pose questions or make teaching points led to detours from the standard case presentation format that disrupt critical information sharing (Goldszmidt, Aziz, & Lingard, 2012). There is also a form of questioning known in medical circles as 'pimping', which is a slang term (Kost & Chen, 2015) referring to the practice of posing a rapid series of ever-more difficult questions (Brancati, 1989) in a manner that can be interpreted as intimidating or even humiliating to junior medical trainees (Martin & Wells, 2014). In 'pimping' we see an example of the 'power game' (van der Zwet, de la Croix, et al., 2014), which is, ultimately, pedagogically unproductive. Indeed, as a manifestation of inherent hierarchical structures within healthcare, 'pimping' may have negative impacts on medical students and junior doctors, such as fostering future disrespectful behaviour (as a doctor) towards nurses, trainees, colleagues, and patients (Leape et al., 2012). And, yet, both senior surgeons and resident physicians said that intimidation and harassment could have legitimate educational value (Musselman, MacRae, Reznick, & Lingard, 2005).

Talk plays a central a role in learning, identity formation, and socialization of doctors(-to-be) as well as being a core mechanism of patient care. The dialogical nature of interactions within healthcare teams and with patients has numerous positive benefits and in many ways reflects the shift to 'discourse work' seen in other professions. Given the complexity of healthcare settings in which it occurs, however, talk also has the potential to amplify less favourable social structures and practices that impede learning and patient care. These insights highlight the need to understand the positive and negative impact of talk in clinical practice so that we can better design strategies to improve communication for patient care *and* learning.

3.2.4 Shortcomings of Practice-Based Learning in Medicine: When Communication Breaks Down, Learning Breaks Down

The achievements of modern healthcare are, unfortunately, accompanied by errors that have the potential to harm patients. A majority of them result from breakdowns in communication, which we are only beginning to understand. These relate to a number of factors, including authority gradients and power differentials (Cosby & Croskerry, 2004; Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010), conflict (Janss, Rispens, Segers, & Jehn, 2012), incomplete information sharing (Manser, 2011; Maughan, Lei, & Cydulka, 2011), and failures to speak up about questions or concerns (Okuyama, Wagner, & Bijnen, 2014; Rainer, 2015). Team communication in operating rooms (ORs), for example, was characterized by 'high-tension' events that impacted whole teams including trainees (Lingard, Reznick, Espin, Regehr, & DeVito, 2002) and led trainees either to disengage from the communication or mimic their senior colleagues whose behaviour contributed to the

tension. Thirty percent of over 400 communication events in ORs reflected communication failures, which compromised patient safety (Lingard et al., 2004). These failures included not sharing information at all or giving inaccurate information, failing to take account of important contextual issues, and communication without clear purpose. Effects included delays, inefficiency, patient inconvenience, procedural error, and tension.

Accurate information sharing is particularly important at times of transition of care, such as patient handoffs or handovers, which are highly contextualized forms of oral case presentations. A handoff is the verbal exchange of information between health professionals when responsibility for patient care changes hands (Cohen & Hilligoss, 2010). This verbal communication occurs in person or by phone and is called handover or handoff—both are interchangeable terms. An example would be a physician or team of providers handing over care of patients at the end of a shift to a new physician or team before leaving the hospital, thus passing the baton of accountability. Handoffs are also essential when patients are transferred from one area of a hospital to another, such transfer from intensive care units to hospital wards when life-threatening illness has improved. Factors that predict handoff quality include conveying clear, reliable, and salient information, developing shared understanding, and having a supportive working atmosphere (Manser, Foster, Gisin, Jaeckel, & Ummenhofer, 2010). An effective handoff includes a clear assessment of a patient's status and anticipated problems (Manser, Foster, Flin, & Patey, 2013) with the goal of co-constructing a shared understanding of the patient (Cohen, Hilligoss, & Kajdacsy-Balla Amaral, 2012). In surveys, however, residents in emergency medicine report receiving little training in effective handoff practices, increasing the likelihood of communication errors; standardized handoff tools are rarely used (Kessler, Scott, et al., 2014; Kessler, Shakeel, et al., 2014). There are several essential needs: enhancing our conceptual understanding of handoff communication (Beach et al. 2012; Patterson & Wears, 2009, 2010) and then developing comprehensive strategies to promote effective communication (Cheung et al., 2010).

In high-risk settings of emergency departments (EDs), despite the best intentions, information can be erroneous or omitted altogether when one physician hands over patients to another at change of shift (Maughan et al., 2011). In addition to within-unit handoffs, which are generally planned and involve team members from the same unit who know each other, between-unit handoffs require particular negotiation and coordination skills, such as when patients require hospital admission from the ED to the ward for ongoing care. Patient admission handoffs are more complex due to differences between health professions in their orientations towards illness and treatment, unequal power distribution, and lack of established relationships (Hilligoss & Cohen, 2013; Nugus et al., 2010). During handoff from ED doctors to inpatient teams, a particularly crass discourse is 'selling' patients; in other words, to persuade the inpatient surgical or medical teams to accept patients for hospital admission by minimizing and/or embellishing aspects of their cases (Nugus, Bridges, & Braithwaite, 2009). The goal is procuring inpatient beds expeditiously in order to maintain the flow of patients out of EDs (Nugus et al., 2011), especially when waiting rooms are full of patients still needing care. Selling patients is but one

of four metaphors for handoffs between doctors in EDs, who are hospital gatekeepers, and physicians who care for patients after admission. Three others (Hilligoss, 2014) are:

1. Sports and games: handoffs as competition
2. Packaging: handoffs as expectation matching
3. Teamwork and conversation: handoffs as collaboration

These metaphors highlight that handoffs represent more than just information transmission. Handoffs are social interactions in which conversation partners co-construct meaning in the heat of clinical care (Cohen et al., 2012; Patterson & Wears, 2010). This explains why simple technical fixes such as handoff tools to structure information exchange are insufficient to prevent communication breakdowns. Importantly, the social nature of such dialogues develops professional identity (Burford, 2012) and a tribe mentality (Weller, Boyd, & Cumin, 2014). There is an interesting relationship, moreover, between those dialogues and the media through which they take place. In-person compared with telephone conversations, for example, are differently shaped by their social contexts in ways that are familiar to all physicians but currently ill-understood by researchers (Henn et al., 2012).

An insidious and pervasive communication deficit is a failure to 'speak up', or raise concerns to colleagues or supervisors (Okuyama et al., 2014); in other words giving 'voice' (Morrison, 2011) to information, ideas, and opinions (Van Dyne, Ang, & Botero, 2003). In contrast to communication lapses that represent honest mistakes (Reason, 2000), not speaking up and giving voice to concerns represent deliberate choices to remain silent (Maxfield, Grenny, Lavandero, & Groah, 2011) about poor and unsafe patient care or deficient actions by healthcare team members. Factors influencing whether or not providers speak up include (Okuyama et al., 2014): (a) being motivated by a perceived risk to patients depending on how clear the clinical situation appears and what needs to happen; (b) contextual factors such as relationships among team members, attitudes of leaders/supervisors, and organizational support; (c) individual factors such as confidence in skills and education and feelings of responsibility toward patients; (d) feeling that speaking up will make a difference, and (e) the perceived impact of speaking up, for example, fear of reprisals or being made to feel incompetent. The ability to ask questions, express concerns or admit mistakes—thus taking risks—is part of learning (Edmondson, 1999). An important counterpart to trainees feeling empowered to speak up is supervisors being sensitive to unease in colleagues, such as nursing staff, and creating spaces where concerns can be voiced (Edmondson, 2012). Being able to speak up is related to the climate of learning environments (Boor, Van Der Vleuten, Teunissen, Scherpbier, & Scheele, 2011) and the approachability of clinical supervisors (Boor et al., 2008), which influence willingness to seek support when help is needed (Kennedy, Regehr, Baker, & Lingard, 2009) and ask for feedback (Bok et al., 2013; Teunissen et al., 2009). When viewed through a lens of 'feeling safe to speak up', the harassment and intimidation that is regarded as legitimate and of educational value in surgery (Musselman et al., 2005), 'pimping' by clinical supervisors (Brancati, 1989; Kost & Chen, 2015), 'tense' communication in ORs (Lingard,

Reznick, Espin, et al., 2002), and witnessing rude behavior (Flin, 2010; Porath & Erez, 2009) are threats to learning and safe practice because they inhibit a workplace culture of speaking up. These factors influence the internal tension providers face when faced with choosing 'voice' over 'silence' (Eppich, 2015).

As an example of how social milieus contribute to communication breakdowns, we explore some factors that impacted the activation of rapid response teams (RRTs) in four Australian hospitals (Kitto, Marshall, et al., 2014). RRTs are comprised of physicians and nurses who provide expert support to colleagues when a patient's clinical status deteriorates. In one-third of patients whose clinical status warranted RRT activation, issues of hierarchy between treating physicians and nurses, discrepant perceptions about who makes ultimate decisions, and barriers to interprofessional communication prevented RRTs from being called (Kitto, Marshall, et al., 2014). The opposite also occurred: nurses activated RRTs as 'work arounds' to compensate for breakdowns in collaboration with doctors. Together, those two types of shortcomings represent collective incompetence (Kitto, Marshall, et al., 2014). Unfortunately, however, the dominant discourse of competence is an individualistic one, which deflects attention from relational issues like power dynamics or inability to adapt collaborative strategies to new or changing situations (Lingard, 2012).

To summarise, this section shows that learning to become a doctor is more than just acquiring knowledge. Learning and doing are part of the same process (Teunissen, 2015), and participating in authentic patient care within the social context of healthcare teams is essential for learning. Shared activities in these social contexts are structured through verbal and non-verbal communication (Lingard, Reznick, DeVito, & Espin, 2002) enacted during work activities. Thus, talk is the vehicle to co-construct the meaning of shared experiences and is central to learning from practice. Now that we have explored the role of talk in learning, we turn our attention to the current state of continuing professional development.

3.3 Section II: The Current State of Continuing Professional Development

After completing residency and subspecialty training, doctors become independent licensed practitioners alongside nurses and other health professionals. Doctors must, however, participate in educational programs for the rest of their careers. Continuing professional development (CPD) helps them acquire and maintain specialty-specific knowledge and skills, which meet the needs of their patients (Peck, McCall, McLaren, & Rotem, 2000). Participation in approved programs of CPD allows them to remain licensed (Sole et al., 2014), maintain their specialty certification (Campbell & Parboosingh, 2013; Hawkins, Lipner, Ham, Wagner, & Holmboe, 2013; Holmboe, 2013), and be 'revalidated' as practitioners who are fit for purpose (Archer & de Bere, 2013).

The United Kingdom's General Medical Council (GMC) defines CPD in this way:

> CPD is any learning outside of undergraduate education or postgraduate training that helps [physicians] maintain and improve [their] performance. It covers the development of… knowledge, skills, attitudes and behaviors across all areas of…professional practice. It includes both formal and informal learning activities. p. 7 (GMC, 2012)

Traditionally, CPD focuses on the maintenance and development of medical knowledge and skills that are specific to an individual doctor's specialty practice (Davis, Davis, & Bloch, 2008; O'Neil & Addrizzo-Harris, 2009; Peck et al., 2000) and takes various forms (Davis et al., 1999; Mazmanian, Davis, & Galbraith, 2009). Unfortunately, however, it targets relatively low order cognitive skills of remembering and understanding (Legare et al., 2015) rather than behaviour change, which is more likely to impact clinical practice. CPD is largely decontextualized from workplaces, thus divorcing learning from the social context of clinical practice and minimizing the complexity of the learning experience (Bleakley et al., 2011). 'Knowing in practice', which is an essential element of vocational expertise (Billett, 2001a), plays only a secondary role in CPD.

Likewise, interprofessional and multidisciplinary working, which is ubiquitous in clinical workplaces, is largely ignored by contemporary CPD. Current frameworks privilege individual over collective accomplishment because they are profession-specific, constrained by regulatory bodies (Barr, 2009) and removed from the talk between different health workers, which is necessary for safe, effective patient care. While the metaphor of 'learning as acquisition' (Sfard, 1998) has at least some place, traditional CPD foregrounds 'acquisition' over 'participation' disproportionately. The work of Lingard (2012), which contrasts individualist and collectivist discourses of medical competence, supports that interpretation. The individualist discourse views competence as a construct which individuals acquire and possess, is context-free, and represents a state to be achieved. In the collectivist discourse, competence evolves from participation in authentic situations, is situated across networks of persons and artefacts, and manifests in interconnected behaviours occurring within time and space (Lingard, 2012). Lingard notes that "competent individuals can come together to form an incompetent team" (p. 44). Therefore, individualistic CPD is not well aligned with patients' needs (Kitto et al., 2013; Rowland & Kitto, 2014). It does little to combat tribal conflict between providers from different disciplines, whose values and cultural norms diverge (Weller et al., 2014). It seems reasonable to conclude that siloed initial and ongoing health professions education (Kohn, Corrigan, & Donaldson, 2000) contributes to collective incompetence.

Collective incompetence is a serious problem because, according to the 2000 United States (US)-based Institute of Medicine (IOM) Report *To Err is Human* (Kohn et al., 2000), over 70 % of medical errors are caused by communication breakdowns within healthcare teams. Medical errors are a leading cause of death, estimated at 210,000–400,000 deaths/year in 2013 in the US (James, 2013). Communication within and amongst healthcare teams is a critical medium for enacting knowledge and forms the basis for teamwork (Salas, Cooke, & Rosen, 2008), interprofessional collaboration and learning (Hammick, Olckers, & Campion-Smith, 2009) and safe patient care. Communication breakdowns involve

verbal, non-verbal, and written communication during patient handoffs, communication with patients, and failures to speak up with concerns (Sutcliffe, Lewton, & Rosenthal, 2004).

Interprofessional education (IPE), enacted "when members (or students) of two or more health and/or social care professions engage in interactive learning activities to improve collaboration and/or the delivery of care" (p. xiv) (Reeves, Lewin, Espin, & Zwarenstein, 2010), is one potential antidote to collective incompetence. But it is, at best, a partial solution. IPE, continuing education, and workplace learning intersect (Kitto, Goldman, Schmitt, & Olson, 2014) as do quality improvement, patient safety, and continuing education (Kitto et al., 2015). In contrast to uniprofessional, off-the-job education, work is *the* primary medium for learning interprofessional collaboration and communication. The next section explores how physicians and other healthcare professional can enhance their clinical practice by the way they work, talk, and learn together around the central task of giving patients high quality care.

3.4 Section III: Aligning Workplace Learning, CPD, and Improved Care Quality

We now envision a world in which workplace learning plays a central role in certified CPD, and enhances practice through quality improvement. We focus on three examples of fundamental structural changes, which support collective team learning and enhance communicative practice. Each example exemplifies Teunissen's (2015) ETR framework by representing concrete experiences and trajectories of activities, shared between individuals and groups over time. Each structural change focuses on a mechanism for steering the talk of practice through reifications, which promote collective learning and are inextricably linked to patient care. In each instance, learning also benefited patients. These examples include: (a) interdisciplinary and family-centred rounds (b) patient handoffs in a children's hospital, and (c) use of checklists in surgery and for central venous catheter insertion.

3.4.1 Improving Patient Care Through Enhanced Interdisciplinary Collaboration on Ward Rounds

When patients are admitted to hospital, a team of physicians, nurses, and other allied health professionals cares for them. Each day, physicians review patients' status and responses to treatment, and modify care plans during what is known as a 'ward round'. It is in this setting that medical learners give oral presentations about their patients in order to inform the team about patients' status and contribute to plan care. Given the sheer number of providers involved, there is great potential for

miscommunication. Indeed, doctors and nurses may not communicate clearly with each other or even agree about the care plan (O'Leary, Thompson, et al., 2010). In response to these findings, O'Leary and colleagues re-engineered ward rounds into structured interdisciplinary rounds (SIDR) on both units with medical trainees (O'Leary et al., 2010) and those units without trainees (O'Leary et al., 2011). They standardised where and when SIDRs took place, who participated, and how long rounds lasted. Nurses' perceptions of collaboration and teamwork subsequently improved. Importantly, key safety measures got better (O'Leary et al., 2011): patients hospitalized on units with medical trainees had significantly lower rates of preventable adverse events. In a subsequent study, preparing physicians and nurses to share leadership within SIDRs improved teamwork and communication, as measured by a Safety Attitudes Questionnaire (O'Leary et al., 2014). Stein and colleagues (2015) built on this work and reorganized the workflow of a hospital ward to create what they call an accountable care unit. In doing so, they integrated: (a) unit-based teams, (b) structured interdisciplinary bedside rounds, (c) unit-level performance reporting, and (d) unit-level nurse and physician co-leadership. Similar to the work by O'Leary and colleagues (2014), Stein and team (2015) structured rounds to include interdisciplinary input and shared leadership structures. Dissimilar was the location of rounds themselves; Stein and team conducted rounds *at the bedside* with a standard communication protocol that also engaged the patient. All participants prepared in advance to promote efficient and accurate information exchange. A preset choreography allowed each actor to play their role, from unit charge nurse, bedside nurse, junior physician, medical students, to allied health professionals. The protocol included daily review of a quality safety checklist. Health professionals, patients and families all reviewed the plan of care together to ensure shared understanding. Importantly, restructuring the hospital ward into an accountable care unit enhanced communication and work climate whilst reducing unadjusted mortality rates by half (from 2.3 to 1.1 %). Examples of family-centred rounds exist also in paediatrics (Muething, Kotagal, Schoettker, Gonzalez del Rey, & DeWitt, 2007). These innovations worked in part because they brought together interprofessional teams in both time *and* space, which served to facilitate the talk of collaborative clinical practice and harmonize patient care.

3.4.2 Improving Patient Handoffs

Given the variable size, weight, and developmental stage of sick and injured children (Luten et al., 2002), paediatric units are at particularly high-risk of communication errors (Kohn et al., 2000). Some attempts to standardize handoffs, focusing solely on information transfer, have not yielded the expected benefits (Cohen et al., 2012) but more comprehensively designed handoffs have been successful. Starmer and colleagues (2012) developed a mnemonic to standardize verbal handoffs called I-PASS, whose elements were:

- I: Illness severity in terms of patient stability or potential for deterioration
- P: Patient summary of key events, ongoing assessment/plan
- A: Action list of key to-do items
- S: Situation awareness and contingency planning
- S: Synthesis by receiver to summarize key elements, ask questions, restate key to-do items

Beyond clear and accurate information transfer, this model encourages providers to process what they have heard, repeat back key elements, and speak up with questions or concerns. This process helps them understand what to anticipate and what tasks they must complete. In other words, *this form of handoff provides a space for co-constructing meaning*. Rates of medical error and preventable adverse events in hospitalized children fell significantly after the handoff tool was implemented, which also comprised training and structured changes to where handoffs occurred and who attended them (Starmer et al., 2013). The training included workshops, simulation exercises, faculty development tools, and materials to influence institutional culture. It addressed individual, organizational, and contextual factors linked to both care processes and patient outcomes (Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014). Involvement of nine hospitals in the research provided a multicentre view of how improved resident handoff could reduce medical errors, preventable adverse events, and communication failures (Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014). In 10,740 patient admissions, the rates of medical error and preventable adverse events decreased significantly without increasing the time required to complete handoffs. These results show how structured processes can shape social and organization culture, shift the discourse of a high-risk event, and improve patient outcomes. Similarly, adapting standardized handoff approaches to local practice in 23 children's hospitals significantly reduced handoff failures (Bigham et al., 2014), highlighting how important it is to contextualize such interventions to institutional cultures. Shared understanding among 'sender' and 'receiver' during ED patient handoffs and structuring the input of nurses provide space for dialogue is gaining traction (Gopwani, Brown, Quinn, Dorosz, & Chamberlain, 2015).

3.4.3 Maximizing the Potential of Using Safety Checklists

The use of checklists also improves patient safety. For example, a surgery safety checklist implemented in hospitals in many different countries reduced rates of death and complications significantly (Haynes et al., 2009), although social factors such as the collaborative competence of individual teams (Kitto & Grant, 2014) influence uptake and effectiveness. Similar contextual issues (Dixon-Woods, Bosk, Aveling, Goeschel, & Pronovost, 2011; Dixon-Woods, Leslie, Tarrant, & Bion, 2013) affect the uptake of measures to reduce the rate of potentially lethal bloodstream infections (Pronovost, 2008; Pronovost et al., 2006) associated with

insertion of long catheters into the veins of the neck or upper chest in patients in intensive care units to administer medications and fluids. As Bosk and colleagues (2009) note, it is a mistake to view checklists as simple technical solutions for complex sociocultural problems. Indeed, use of checklists may have unintended consequences when implemented in a top-down fashion. Building checklists for interprofessional contexts requires understanding of the politics and complex local power structures as well as cultural and relational factors of stakeholder groups (Kitto, 2010). We conclude that both handoff tools and checklists are powerful mechanisms to improve communication and practice-based learning if they are designed and implemented with local context and social factors in mind.

3.4.4 Common Themes Relevant for Workplace Learning, Quality Improvement, and CPD

The positive patient outcomes demonstrated in quality improvement initiatives linked to interdisciplinary rounds, handoffs, and the effective use of checklists highlight several key themes of practice-based learning. These include collective competence (Lingard, 2012), intersubjectivity (Billett, 2014; Teunissen, 2014) and reciprocal interdependence (Edmondson, 2012). Talk links these themes because it intertwines learning and working within the social fabric of workplaces. Collective competence involves making collective sense of workplace events, developing and using a collective knowledge base, and cultivating a sense of interdependency (Boreham, 2004). Thus, groups negotiate competence collectively through work and talk (Lingard, 2012). Viewing effective clinical practice through the lens of collective competence, it becomes clear that quality improvement work brings trainees and practicing clinicians together and nurtures meaningful collaboration and communication by focusing on patient outcomes achieved by the collective rather than on the competence of individuals. When teams have successfully implemented interdisciplinary rounds, an important component of their intervention has been co-leadership by physicians and nurses (O'Leary et al., 2014; Stein et al., 2015), which mitigated the tradition of dominance by doctors and made space for truly interprofessional care (Bleakley, 2013a). They shifted "multi-professionalism to interprofessionalism" (p. 461) (Bleakley, Boyden, Hobbs, Walsh, & Allard, 2006) and co-promoted collaborative learning and patient-centeredness (Bleakley et al., 2011). Although entailing communication between physicians only, the effective practices orchestrated by Starmer and colleagues (2012, 2013; Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014) reframed handoffs as collective events that integrated socio-cultural and adaptive elements of healthcare environments. When checklists are implemented as part of a care bundle, they promote dialogue by opening channels of communication that make health workers collectively responsible for outcomes.

The term intersubjectivity means that people working together share common understanding (Billett, 2014). This understanding involves sensing what others intend, think, and feel as well as imagining what impact their actions may have on those around them. Interactions are fundamental for creating shared realities (Teunissen, 2014). Further, intersubjectivity helps explain how members of established healthcare teams understand and make sense of individual preferences and idiosyncrasies. This makes constant negotiation for routine tasks unnecessary while reserving it for grappling with non-routine or novel problems (Sheehan et al., 2005). One can envision high degrees of intersubjectivity on medical wards with nurse-physician co-leadership and processes that promote collaboration. Billett (2014) highlights that intersubjectivity itself can be viewed as a desirable learning outcome among interprofessional teams.

Edmondson (2012) advocates reciprocal interdependence, which denotes a shared understanding that professionals cannot work and learn without each other. This notion is at the very core of interprofessional practice. Specifically, she states that healthcare is at times so complex that processes must constantly adapt to the unique needs of patients, providers, and workplace contexts. As all of these are in constant flux, providers need to work together to promote collective learning on a daily basis. Edmondson's conceptual model uses the term 'teaming' to highlight the behaviours rather than the people (Edmondson, 2012). Notions of complexity (Lingard et al., 2012) and team working (Bleakley, 2006) as 'liquid' and 'fluid' (Bleakley, 2013c) support this approach. Individuals coming together to solve collective problems should engage in 'teaming behaviours' to 'organize-to-learn' rather than 'learning to execute' (Edmondson, 2012). Those behaviours include:

- Explicitly framing activities as learning opportunities
- Making it safe to learn
- Learning from failure
- Spanning occupational and cultural boundaries

These behaviours are enacted through the discourse of workplaces; specifically, by asking questions, sharing information, seeking help, talking about mistakes, and seeking feedback. Leaders in Edmondson's 'teaming' model—lead nurses and doctors—frame their own roles in the process by espousing reciprocal interdependence and acknowledging their own fallibility in the service of psychological safety. Feeling safe to learn means feeling safe to disagree, to question, to be wrong (Edmondson, 2012), which is not typical of clinical practice. Indeed, even when we feel safe, we still engage in self-censorship and often remain silent, which inhibits knowledge sharing and group learning (Detert & Edmondson, 2011). Although we have focused on talk here, silence is discourse too (Lingard, 2013), especially when it comes to 'speaking up' and giving voice to ideas or concerns (Milliken & Morrison, 2003; Van Dyne et al., 2003; Eppich, 2015). The teaming behaviours outlined by Edmondson promote discourses of collective competence, intersubjectivity, and reciprocal interdependence. We now discuss ways forward by exploring how to enhance productive discourse in clinical practice to address communication breakdowns.

3.4.5 Use of Simulation to Promote Productive Discourse

The 2000 Institute of Medicine report recommended team training in simulated settings (Kohn et al., 2000), which promoted simulation-based education (Eppich et al., 2013). The team training literature, in general (Weaver et al., 2010) and simulation-based team training (SBTT) in particular (Weaver et al., 2010) is beginning to show that simulation is effective in domains such as obstetrics (Draycott et al., 2008). This work has supported the expanded use of SBTT to promote teamwork and interprofessional collaboration (Tofil et al., 2014). More robust needs assessment is required to ensure that simulation-based experiences align with the demands of clinical practices that depend upon interprofessional communication and collaboration (Eppich, Howard, Vozenilek, & Curran, 2011). Recent trends emphasize the importance of an interprofessional approach (Hammick, Olckers, & Campion-Smith, 2009; Thistlethwaite, 2012; WHO, 2010). We see potential for learners in team and interprofessional simulations to engage in types of talk that promote collaboration and team-working and the forms of communication that comprise substantive elements of the work (Iedema & Scheeres, 2003; Scheeres, 2003). Exploring simulation experiences in post-event debriefings (Cheng et al., 2014; Eppich & Cheng, 2015; Fanning & Gaba, 2007) prepares health care providers to reflect on critical events in clinical settings (Kessler, Cheng, & Mullan, 2014), which has been beneficial in paediatric intensive care units (Wolfe et al., 2014). Voices are emerging that call for the greater integration of simulation-based strategies in the educational paradigm of clinical practice (O'Leary & Woods, Woods, 2014; Weller et al., 2014), while ensuring that sufficient theory guides practice and integrates simulation within existing curriculum (Bleakley et al., 2011). So although healthcare simulation holds promise, it is not a panacea. How to best design and implement simulation-based activities during medical school and clinical training needs further study.

3.4.6 Aligning Simulation and Workplace Learning

It has been suggested that "learning by simulation can become a simulation of learning" (p. 606) and that simulation may, in some instances, no longer accurately reflect actual clinical practice (Bligh & Bleakley, 2006). These authors call for greater dialogue between practitioners in work-based learning and simulation-based learning, noting that advocates of work-based learning may glean important lessons from strategies simulation educators use to structure learning environments, integrate scaffolding, and facilitate feedback (Bligh & Bleakley, 2006). Team research could usefully address concerns about complexity including the need to study interprofessional teams in clinical settings during patient care (Salas et al., 2008). A pressing research agenda is to explore how healthcare providers learn collaborative practice and the personal and situational factors that influence this capability (Thistlethwaite, 2012).

Mechanisms to incorporate sociological factors such as hierarchy, power relations, professional identity, and interprofessional conflict (Kitto, Gruen, & Smith, 2009; Lingard, Reznick, DeVito, et al., 2002) in interprofessional team simulations are relatively underexplored. Some authors point out that current approaches to SBTT focus primarily on enhancing individuals' team orientation, and propose increased emphasis on collaboration, negotiation, and communication skills (Sharma, Boet, Kitto, & Reeves, 2011). One strategy to align simulation with workplace learning is to rely less on resource-intensive simulations using computer controlled manikins and expand the use of simulated patient methodologies. The latter approach uses real people trained to mimic patient conditions to recreate clinical events (Cleland, Abe, & Rethans, 2009). Using such trained people to serve as unannounced or 'incognito' simulated patients in real primary care practice (Rethans, Gorter, Bokken, & Morrison, 2007) and for phone consultations (Derkx, Rethans, Maiburg, Winkens, & Knottnerus, 2009) demonstrates promise. Unobtrusive data collection in actual clinical practice can serve as a starting point for simulation scenario building and inform subsequent feedback/debriefing. More targeted work is needed in this area; and it seems particularly promising to align the needs of practitioners and their patients with an educational strategy to improve discursive practice.

3.5 Summary

In outlining learners' paths towards becoming doctors, this chapter has highlighted the essential role of discourse in learning, identity formation, and patient care. Shared understanding and co-construction of clinical experiences—and learning—are mediated through talk. We have argued that most forms of CPD, which focus on the 'learning as acquisition' rather than the 'learning as participation' paradigm, are divorced from authentic clinical practice. We have provided examples of structures that strengthen collective learning processes--the space, the actors, the talk—and steer the discourse of practice in productive directions. Although adding structure may reduce agency (Teunissen, 2015), it likely augments learning from practice. We suggest that patient-focused quality improvement projects and simulations aligned to workplace needs could meet requirements for continuous professional development are both measurable and linked to authentic practice. Future work could usefully further explore how steering the talk of practice can promote learning.

References

Archer, J., & de Bere, S. R. (2013). The United Kingdom's experience with and future plans for revalidation. *Journal of Continuing Education in the Health Professions, 33*(Suppl 1), S48–S53. doi:10.1002/chp.21206.

Ashley, P., Rhodes, N., Sari-Kouzel, H., Mukherjee, A., & Dornan, T. (2009). 'They've all got to learn'. Medical students' learning from patients in ambulatory (outpatient and general practice) consultations. *Medical Teacher, 31*(2), e24–e31. doi:10.1080/01421590802464445.

Barr, H. (2009). An anatomy of continuing interprofessional education. *Journal of Continuing Education in the Health Professions, 29*(3), 147–150. doi:10.1002/chp.20027.

Beach, C., Cheung, D. S., Apker, J., Horwitz, L. I., Howell, E. E., O'Leary, K. J., et al. (2012). Improving interunit transitions of care between emergency physicians and hospital medicine physicians: A conceptual approach. *Academic Emergency Medicine, 19*(10), 1188–1195. doi:10.1111/j.1553-2712.2012.01448.x.

Bigham, M. T., Logsdon, T. R., Manicone, P. E., Landrigan, C. P., Hayes, L. W., Randall, K. H., … . Sharek, P. J. (2014). Decreasing handoff-related care failures in children's hospitals. *Pediatrics, 134*(2), e572–e579. doi:10.1542/peds.2013-1844.

Billett, S. (1996). Towards a model of workplace learning: The learning curriculum. *Studies in Continuing Education, 18*(1), 43–58.

Billett, S. (2000). Guided learning at work. *Journal of Workplace Learning, 12*(7), 272–285.

Billett, S. (2001a). Knowing in practice: Re-conceptualising vocational expertise. *Learning and Instruction, 11*(8), 431–452

Billett, S. (2001b). Learning through work: Workplace affordances and individual engagement. *Journal of Workplace Learning, 13*(5), 209–214.

Billett, S. (2001c). *Participation and continuity at work: A critique of current workplace learning discourses.* Paper presented at the Context, Power, and Perspective: Confronting Challenges to Improving Attainment in Learning at Work. Joint Network/SKOPE/TLRP International Workshop November 8–10, 2001., Sunley Management Centre, University College of Northampton. Retrieved from http://www.infed.org/archives/e-texts/billett_workplace_learning.htm

Billett, S. (2004). Workplace participatory practices. *Journal of Workplace Learning, 16*(6), 312–324.

Billett, S. R. (2014). Securing intersubjectivity through interprofessional workplace learning experiences. *Journal of Interprofessional Care, 28*(3), 206–211. doi:10.3109/13561820.2014.890580.

Bleakley, A. (2006). Broadening conceptions of learning in medical education: The message from teamworking. *Medical Education, 40*(2), 150–157. doi:10.1111/j.1365-2929.2005.02371.x.

Bleakley, A. (2013a). The dislocation of medical dominance: Making space for interprofessional care. *Journal of Interprofessional Care, 27*(Suppl 2), 24–30. doi:10.3109/13561820.2013.791672.

Bleakley, A. (2013b). Working in "teams" in an era of "liquid" healthcare: What is the use of theory? *Journal of Interprofessional Care, 27*(1), 18–26. doi:10.3109/13561820.2012.699479.

Bleakley, A., Bligh, J., & Browne, J. (2011). *Medical education for the future: Identify, power and location*. Dordrecht, The Netherlands: Springer Science+Business Media B.V.

Bleakley, A., Boyden, J., Hobbs, A., Walsh, L., & Allard, J. (2006). Improving teamwork climate in operating theatres: The shift from multiprofessionalism to interprofessionalism. *Journal of Interprofessional Care, 20*(5), 461–470. doi:10.1080/13561820600921915.

Bligh, J., & Bleakley, A. (2006). Distributing menus to hungry learners: Can learning by simulation become simulation of learning? *Medical Teacher, 28*(7), 606–613. doi:10.1080/01421590601042335.

Bok, H. G., Teunissen, P. W., Spruijt, A., Fokkema, J. P., van Beukelen, P., Jaarsma, D. A., et al. (2013). Clarifying students' feedback-seeking behaviour in clinical clerkships. *Medical Education, 47*(3), 282–291. doi:10.1111/medu.12054.

Boor, K., Teunissen, P. W., Scherpbier, A. J., van der Vleuten, C. P., van de Lande, J., & Scheele, F. (2008). Residents' perceptions of the ideal clinical teacher—A qualitative study. *European Journal of Obstetrics & Gynecology and Reproductive Biology, 140*(2), 152–157. doi:10.1016/j.ejogrb.2008.03.010.

Boor, K., Van Der Vleuten, C., Teunissen, P., Scherpbier, A., & Scheele, F. (2011). Development and analysis of D-RECT, an instrument measuring residents' learning climate. *Medical Teacher, 33*(10), 820–827. doi:10.3109/0142159x.2010.541533.

Boreham, N. (2004). A theory of collective competence: Challenging the neo-liberal individualisation of performance at work. *British Journal of Educational Studies, 52*(1), 5–17.

Bosk, C. L., Dixon-Woods, M., Goeschel, C. A., & Pronovost, P. J. (2009). Reality check for checklists. *Lancet, 374*(9688), 444–445.

Brancati, F. L. (1989). The art of pimping. *Journal of the American Medical Association, 262*(1), 89–90.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32–42.

Burford, B. (2012). Group processes in medical education: Learning from social identity theory. *Medical Education, 46*(2), 143–152. doi:10.1111/j.1365-2923.2011.04099.x.

Campbell, C. M., & Parboosingh, J. (2013). The Royal College experience and plans for the maintenance of certification program. *Journal of Continuing Education in the Health Professions, 33*(Suppl 1), S36–S47. doi:10.1002/chp.21205.

Cheng, A., Eppich, W., Grant, V., Sherbino, J., Zendejas, B., & Cook, D. A. (2014). Debriefing for technology-enhanced simulation: A systematic review and meta-analysis. *Medical Education, 48*(7), 657–666. doi:10.1111/medu.12432.

Cheung, D. S., Kelly, J. J., Beach, C., Berkeley, R. P., Bitterman, R. A., Broida, R. I., et al. (2010). Improving handoffs in the emergency department. *Annals of Emergency Medicine, 55*(2), 171–180. doi:10.1016/j.annemergmed.2009.07.016.

Cleland, J. A., Abe, K., & Rethans, J. J. (2009). The use of simulated patients in medical education: AMEE guide No 42. *Medical Teacher, 32*, 477–486.

Cohen, M. D., & Hilligoss, P. B. (2010). The published literature on handoffs in hospitals: Deficiencies identified in an extensive review. *Quality and Safety in Health Care, 19*(6), 493–497. doi:10.1136/qshc.2009.033480.

Cohen, M. D., Hilligoss, B., & Kajdacsy-Balla Amaral, A. C. (2012). A handoff is not a telegram: An understanding of the patient is co-constructed. *Critical Care, 16*(1), 303. doi:10.1186/cc10536.

Cooke, M., Irby, D. M., & O'Brien, B. C. (2010). *Educating physicians: A call for reform of medical school and residency*. San Francisco, CL: Josey-Bass.

Cosby, K. S., & Croskerry, P. (2004). Profiles in patient safety: Authority gradients in medical error. *Academic Emergency Medicine, 11*(12), 1341–1345. doi:10.1197/j.aem.2004.07.005.

Davis, D., O'Brien, M. A., Freemantle, N., Wolf, F. M., Mazmanian, P., & Taylor-Vaisey, A. (1999). Impact of formal continuing medical education: Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *Journal of the American Medical Association, 282*(9), 867–874.

Davis, N., Davis, D., & Bloch, R. (2008). Continuing medical education: AMEE Education Guide No 35. *Medical Teacher, 30*(7), 652–666. doi:10.1080/01421590802108323.

Derkx, H., Rethans, J. J., Maiburg, B., Winkens, R., & Knottnerus, A. (2009). New methodology for using incognito standardised patients for telephone consultation in primary care. *Medical Education, 43*(1), 82–88. doi:10.1111/j.1365-2923.2008.03177.x.

Detert, J. R., & Edmondson, A. C. (2011). Implicit voice theories: Taken-for-granted rules of self-censorship at work. *Academy of Management Journal, 54*(3), 461–488.

Diemers, A. D., Dolmans, D. H., Van Santen, M., Van Luijk, S. J., Janssen-Noordman, A. M., & Scherpbier, A. J. (2007). Students' perceptions of early patient encounters in a PBL curriculum: A first evaluation of the Maastricht experience. *Medical Teacher, 29*(2–3), 135–142. doi:10.1080/01421590601177990.

Dixon-Woods, M., Bosk, C. L., Aveling, E. L., Goeschel, C. A., & Pronovost, P. J. (2011). Explaining Michigan: Developing an ex post theory of a quality improvement program. *Milbank Quarterly, 89*(2), 167–205. doi:10.1111/j.1468-0009.2011.00625.x.

Dixon-Woods, M., Leslie, M., Tarrant, C., & Bion, J. (2013). Explaining Matching Michigan: An ethnographic study of a patient safety program. *Implementation Science, 8*, 70. doi:10.1186/1748-5908-8-70.

Dornan, T. (2005). Osler, Flexner, apprenticeship and 'the new medical education'. *Journal of the Royal Society of Medicine, 98*(3), 91–95. doi:10.1258/jrsm.98.3.91.

Dornan, T., Arno, M., Hadfield, J., Scherpbier, A., & Boshuizen, H. (2006). Student evaluation of the clinical 'curriculum in action'. *Medical Education, 40*(7), 667–674. doi:10.1111/j.1365-2929.2006.02507.x.

Dornan, T., Boshuizen, H., King, N., & Scherpbier, A. (2007). Experience-based learning: A model linking the processes and outcomes of medical students' workplace learning. *Medical Education, 41*(1), 84–91. doi:10.1111/j.1365-2929.2006.02652.x.

Dornan, T., & Bundy, C. (2004). What can experience add to early medical education? Consensus survey. *British Medical Journal, 329*(7470), 834. doi:10.1136/bmj.329.7470.834.

Dornan, T., Littlewood, S., Margolis, S. A., Scherpbier, A., Spencer, J., & Ypinazar, V. (2006). How can experience in clinical and community settings contribute to early medical education? A BEME systematic review. *Medical Teacher, 28*(1), 3–18. doi:10.1080/01421590500410971.

Draycott, T. J., Crofts, J. F., Ash, J. P., Wilson, L. V., Yard, E., Sibanda, T., et al. (2008). Improving neonatal outcome through practical shoulder dystocia training. *Obstetrics & Gynecology, 112*(1), 14–20. doi:10.1097/AOG.0b013e31817bbc61.

Durning, S. J., & Artino, A. R. (2011). Situativity theory: A perspective on how participants and the environment can interact: AMEE Guide no. 52. *Medical Teacher, 33*(3), 188–199. doi:10.3109/0142159x.2011.550965.

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*, 350–383.

Edmondson, A. C. (2012). *Teaming: How organizations learn, innovate, and compete in the knowledge economy*. San Francisco: Jossey-Bass: A Wiley Imprint.

Eppich, W. (2015). "Speaking up" for patient safety in the pediatric emergency department. *Clinical Pediatric Emergency Medicine, 16*(2), 83–89. doi:10.1016/j.cpem.2015.04.010.

Eppich, W., & Cheng, A. (2015). Promoting excellence and reflective learning in simulation (PEARLS): Development and rationale for a blended approach to health care simulation debriefing. *Simulation in Healthcare, 10*(2), 106–115. doi:10.1097/sih.0000000000000072.

Eppich, W., Howard, V., Vozenilek, J., & Curran, I. (2011). Simulation-based team training in healthcare. *Simulation in Healthcare, 6*(Suppl), S14–S19. doi:10.1097/SIH.0b013e318229f550.

Eppich, W., Nypaver, M. M., Mahajan, P., Denmark, K. T., Kennedy, C., Joseph, M. M., et al. (2013). The role of high-fidelity simulation in training pediatric emergency medicine fellows in the United States and Canada. *Pediatric Emergency Care, 29*(1), 1–7. doi:10.1097/PEC.0b013e31827b20d0.

Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology, 70*, 113–136.

Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education, 26*(2), 247–273.

Eraut, M. (2007). Learning from other people in the workplace. *Oxford Review of Education, 33*(4), 403–422.

Fanning, R. M., & Gaba, D. M. (2007). The role of debriefing in simulation-based learning. *Simulation in Healthcare, 2*(2), 115–125. doi:10.1097/SIH.0b013e3180315539 [doi] 01266021-200700220-00007 [pii].

Flin, R. (2010). Rudeness at work. *British Medical Journal, 340*, c2480. doi:10.1136/bmj.c2480.

GMC (2012). *Continuous professional development: Guidance for all doctors*. Retrieved from: http://www.gmc-uk.org/Continuing_professional_development___guidance_for_all_doctors_1114.pdf_56438625.pdf

Goldszmidt, M., Aziz, N., & Lingard, L. (2012). Taking a detour: Positive and negative effects of supervisors' interruptions during admission case review discussions. *Academic Medicine, 87*(10), 1382–1388. doi:10.1097/ACM.0b013e3182675b08.

Gopwani, P. R., Brown, K. M., Quinn, M. J., Dorosz, E. J., & Chamberlain, J. M. (2015). SOUND: A structured handoff tool improves patient handoffs in a pediatric emergency department. *Pediatric Emergency Care, 31*(2), 83–87. doi:10.1097/pec.0000000000000347.

Haber, R. J., & Lingard, L. A. (2001). Learning oral presentation skills: A rhetorical analysis with pedagogical and professional implications. *Journal of General Internal Medicine, 16*(5), 308–314.

Hammick, M., Olckers, L., & Campion-Smith, C. (2009). Learning in interprofessional teams: AMEE Guide no 38. *Medical Teacher, 31*(1), 1–12. doi:10.1080/01421590802585561.

Hawkins, R. E., Lipner, R. S., Ham, H. P., Wagner, R., & Holmboe, E. S. (2013). American Board of Medical Specialties Maintenance of Certification: Theory and evidence regarding the current framework. *Journal of Continuing Education in the Health Professions, 33*(Suppl 1), S7–S19. doi:10.1002/chp.21201.

Haynes, A. B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A. H., Dellinger, E. P., et al. (2009). A surgical safety checklist to reduce morbidity and mortality in a global population. *New England Journal of Medicine, 360*(5), 491–499. doi:10.1056/NEJMsa0810119.

Henn, P., Power, D., Smith, S. D., Power, T., Hynes, H., Gaffney, R., et al. (2012). A metric-based analysis of structure and content of telephone consultations of final-year medical students in a high-fidelity emergency medicine simulation. *BMJ Open, 2*(5), e001298. doi:10.1136/bmjopen-2012-001298.

Hilligoss, B. (2014). Selling patients and other metaphors: A discourse analysis of the interpretive frames that shape emergency department admission handoffs. *Social Science & Medicine, 102*, 119–128. doi:10.1016/j.socscimed.2013.11.034.

Hilligoss, B., & Cohen, M. D. (2013). The unappreciated challenges of between-unit handoffs: Negotiating and coordinating across boundaries. *Annals of Emergency Medicine, 61*(2), 155–160. doi:10.1016/j.annemergmed.2012.04.009.

Hodges, B. (2006). Medical education and the maintenance of incompetence. *Medical Teacher, 28*(8), 690–696. doi:10.1080/01421590601102964.

Holmboe, E. S. (2013). Maintenance of certification, revalidation, and professional self-regulation. *Journal of Continuing Education in the Health Professions, 33*(Suppl 1), S63–S66. doi:10.1002/chp.21204.

Iedema, R., & Scheeres, H. (2003). From doing work to talking work: Renegotiating knowing, doing, and identity. *Applied Linguisitics, 24*(3), 316–337.

James, J. T. (2013). A new, evidence-based estimate of patient harms associated with hospital care. *Journal of Patient Safety, 9*(3), 122–128. doi:10.1097/PTS.0b013e3182948a69.

Janss, R., Rispens, S., Segers, M., & Jehn, K. A. (2012). What is happening under the surface? Power, conflict and the performance of medical teams. *Medical Education, 46*(9), 838–849. doi:10.1111/j.1365-2923.2012.04322.x.

Kennedy, T. J., & Lingard, L. A. (2007). Questioning competence: A discourse analysis of attending physicians' use of questions to assess trainee competence. *Academic Medicine, 82*(10 Suppl), S12–S15. doi:10.1097/ACM.0b013e318140168f.

Kennedy, T. J., Regehr, G., Baker, G. R., & Lingard, L. (2009). Preserving professional credibility: Grounded theory study of medical trainees' requests for clinical support. *British Medical Journal, 338*, b128. doi:10.1136/bmj.b128.

Kessler, C., Scott, N. L., Siedsma, M., Jordan, J., Beach, C., & Coletti, C. M. (2014). Interunit handoffs of patients and transfers of information: A survey of current practices. *Annals of Emergency Medicine, 64*(4), 343–349.e345. doi:10.1016/j.annemergmed.2014.04.022.

Kessler, C., Shakeel, F., Hern, H. G., Jones, J. S., Comes, J., Kulstad, C., et al. (2014). A survey of handoff practices in emergency medicine. *American Journal of Medical Quality, 29*(5), 408–414. doi:10.1177/1062860613503364.

Kessler, D. O., Cheng, A., & Mullan, P. C. (2014). Debriefing in the emergency department after clinical events: A practical guide. *Annals of Emergency Medicine*. doi:10.1016/j.annemergmed.2014.10.019.

Kitto, S. (2010). Evidence-based checklists: Intended and unintended consequences for interprofessional care. *Journal of Interprofessional Care, 24*(6), 609–611. doi:10.3109/13561820.2010.527195.

Kitto, S., Bell, M., Peller, J., Sargeant, J., Etchells, E., Reeves, S., et al. (2013). Positioning continuing education: Boundaries and intersections between the domains continuing education, knowledge translation, patient safety and quality improvement. *Advances in Health Sciences Education, 18*(1), 141–156. doi:10.1007/s10459-011-9340-1.

Kitto, S., Goldman, J., Etchells, E., Silver, I., Peller, J., Sargeant, J., et al. (2015). Quality improvement, patient safety, and continuing education: A qualitative study of the current boundaries and opportunities for collaboration between these domains. *Academic Medicine, 90*(2), 240–245. doi:10.1097/acm.0000000000000596.

Kitto, S., Goldman, J., Schmitt, M. H., & Olson, C. A. (2014). Examining the intersections between continuing education, interprofessional education and workplace learning. *Journal Interprofessional Care, 28*(3), 183–185. doi:10.3109/13561820.2014.906737.

Kitto, S., & Grant, R. (2014). Revisiting evidence-based checklists: Interprofessionalism, safety culture and collective competence. *Journal of Interprofessional Care, 28*(5), 390–392. doi:10.3109/13561820.2014.916089.

Kitto, S., Marshall, S. D., McMillan, S. E., Shearer, B., Buist, M., Grant, R., et al. (2014). Rapid response systems and collective (in)competence: An exploratory analysis of intraprofessional and interprofessional activation factors. *Journal of Interprofessional Care, 29*(4), 340–346. doi:10.3109/13561820.2014.984021.

Kitto, S. C., Gruen, R. L., & Smith, J. A. (2009). Imagining a continuing interprofessional education program (CIPE) within surgical training. *Journal of Continuing Education in the Health Professions, 29*(3), 185–189. doi:10.1002/chp.20034.

Kohn, L., Corrigan, J., & Donaldson, M. (2000). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.

Kost, A., & Chen, F. M. (2015). Socrates was not a pimp: Changing the paradigm of questioning in medical education. *Academic Medicine, 90*(1), 20–24. doi:10.1097/acm.0000000000000446.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Oxford University Press.

Leape, L. L., Shore, M. F., Dienstag, J. L., Mayer, R. J., Edgman-Levitan, S., Meyer, G. S., et al. (2012). Perspective: A culture of respect, part 1: The nature and causes of disrespectful behavior by physicians. *Academic Medicine, 87*(7), 845–852. doi:10.1097/ACM.0b013e318258338d.

Legare, F., Freitas, A., Thompson-Leduc, P., Borduas, F., Luconi, F., Boucher, A., et al. (2015). The majority of accredited continuing professional development activities do not target clinical behavior change. *Academic Medicine, 90*(2), 197–202. doi:10.1097/acm.0000000000000543.

Lingard, L. (2012). Rethinking competence in the context of teamwork. In B. Hodges & L. Lingard (Eds.), *The question of competence* (pp. 42–69). Ithaca, NY: ILR Press.

Lingard, L. (2013). Language matters: Towards an understanding of silence and humour in medical education. *Medical Education, 47*(1), 40–48. doi:10.1111/medu.12098.

Lingard, L., Espin, S., Whyte, S., Regehr, G., Baker, G. R., Reznick, R., et al. (2004). Communication failures in the operating room: An observational classification of recurrent types and effects. *Quality and Safety in Health Care, 13*(5), 330–334. doi:10.1136/qhc.13.5.330.

Lingard, L., Garwood, K., Schryer, C. F., & Spafford, M. M. (2003). A certain art of uncertainty: Case presentation and the development of professional identity. *Social Science & Medicine, 56*(3), 603–616.

Lingard, L., McDougall, A., Levstik, M., Chandok, N., Spafford, M. M., & Schryer, C. (2012). Representing complexity well: A story about teamwork, with implications for how we teach collaboration. *Medical Education, 46*(9), 869–877. doi:10.1111/j.1365-2923.2012.04339.x.

Lingard, L., Reznick, R., DeVito, I., & Espin, S. (2002). Forming professional identities on the health care team: Discursive constructions of the 'other' in the operating room. *Medical Education, 36*(8), 728–734.

Lingard, L., Reznick, R., Espin, S., Regehr, G., & DeVito, I. (2002). Team communications in the operating room: Talk patterns, sites of tension, and implications for novices. *Academic Medicine, 77*(3), 232–237.

Lingard, L., Schryer, C., Garwood, K., & Spafford, M. (2003). 'Talking the talk': School and workplace genre tension in clerkship case presentations. *Medical Education, 37*(7), 612–620.

Littlewood, S., Ypinazar, V., Margolis, S. A., Scherpbier, A., Spencer, J., & Dornan, T. (2005). Early practical experience and the social responsiveness of clinical education: Systematic review. *British Medical Journal, 331*(7513), 387–391. doi:10.1136/bmj.331.7513.387.

Luten, R., Wears, R. L., Broselow, J., Croskerry, P., Joseph, M. M., & Frush, K. (2002). Managing the unique size-related issues of pediatric resuscitation: Reducing cognitive load with resuscitation aids. *Academic Emergency Medicine, 9*(8), 840–847.

Manser, T. (2011). Minding the gaps: Moving handover research forward. *European Journal of Anaesthesiology, 28*(9), 613–615. doi:10.1097/EJA.0b013e3283459292.

Manser, T., Foster, S., Flin, R., & Patey, R. (2013). Team communication during patient handover from the operating room: More than facts and figures. *Human Factors, 55*(1), 138–156.

Manser, T., Foster, S., Gisin, S., Jaeckel, D., & Ummenhofer, W. (2010). Assessing the quality of patient handoffs at care transitions. *Quality and Safety in Health Care, 19*(6), e44. doi:10.1136/qshc.2009.038430.

Martin, G. C., & Wells, D. M. (2014). Nothing artful about the term 'pimping'. *Medical Education, 48*(10), 1028. doi:10.1111/medu.12528.

Maughan, B. C., Lei, L., & Cydulka, R. K. (2011). ED handoffs: Observed practices and communication errors. *American Journal of Emergency Medicine, 29*(5), 502–511. doi:10.1016/j.ajem.2009.12.004.

Maxfield, D., Grenny, J., Lavandero, R., & Groah, L. (2011). *The silent treatment: Why safety tools and checklists aren't enough to save lives*. Retrieved from: http://www.silenttreatmentstudy.com/

Mazmanian, P. E., Davis, D. A., & Galbraith, R. (2009). Continuing medical education effect on clinical outcomes: Effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. *Chest, 135*(3 Suppl), 49s–55s. doi:10.1378/chest.08-2518.

Milliken, F. J., & Morrison, E. (2003). Shades of silence: Emerging themes and future directions for research on silence in organizations. *Journal of Management Studies, 40*(6), 1563–1568.

Monrouxe, L. V. (2010). Identity, identification and medical education: Why should we care? *Medical Education, 44*(1), 40–49. doi:10.1111/j.1365-2923.2009.03440.x.

Morrison, E. W. (2011). Employee voice behavior: Integration and directions for future research. *Academy of Management Annals, 5*(1), 373–412.

Muething, S. E., Kotagal, U. R., Schoettker, P. J., Gonzalez del Rey, J., & DeWitt, T. G. (2007). Family-centered bedside rounds: A new approach to patient care and teaching. *Pediatrics, 119*(4), 829–832. doi:10.1542/peds.2006-2528.

Musselman, L. J., MacRae, H. M., Reznick, R. K., & Lingard, L. A. (2005). 'You learn better under the gun': Intimidation and harassment in surgical education. *Medical Education, 39*(9), 926–934. doi:10.1111/j.1365-2929.2005.02247.x.

Nugus, P., Bridges, J., & Braithwaite, J. (2009). Selling patients. *British Medical Journal, 339*, b5201.

Nugus, P., Greenfield, D., Travaglia, J., Westbrook, J., & Braithwaite, J. (2010). How and where clinicians exercise power: Interprofessional relations in health care. *Social Science & Medicine, 71*(5), 898–909. doi:10.1016/j.socscimed.2010.05.029.

Nugus, P., Holdgate, A., Fry, M., Forero, R., McCarthy, S., & Braithwaite, J. (2011). Work pressure and patient flow management in the emergency department: Findings from an ethnographic study. *Academic Emergency Medicine, 18*(10), 1045–1052. doi:10.1111/j.1553-2712.2011.01171.x.

O'Leary, K. J., Buck, R., Fligiel, H. M., Haviley, C., Slade, M. E., Landler, M. P., et al. (2011). Structured interdisciplinary rounds in a medical teaching unit: Improving patient safety. *Archives of Internal Medicine, 171*(7), 678–684. doi:10.1001/archinternmed.2011.128.

O'Leary, K. J., Creden, A. J., Slade, M. E., Landler, M. P., Kulkarni, N., Lee, J., et al. (2014). Implementation of unit-based interventions to improve teamwork and patient safety on a medical service. *American Journal of Medical Quality*. doi:10.1177/1062860614538093.

O'Leary, K. J., Haviley, C., Slade, M. E., Shah, H. M., Lee, J., & Williams, M. V. (2011). Improving teamwork: Impact of structured interdisciplinary rounds on a hospitalist unit. *Journal of Hospital Medicine, 6*(2), 88–93. doi:10.1002/jhm.714.

O'Leary, K. J., Thompson, J. A., Landler, M. P., Kulkarni, N., Haviley, C., Hahn, K., et al. (2010). Patterns of nurse-physician communication and agreement on the plan of care. *Quality and Safety in Health Care, 19*(3), 195–199. doi:10.1136/qshc.2008.030221.

O'Leary, K. J., Wayne, D. B., Haviley, C., Slade, M. E., Lee, J., & Williams, M. V. (2010). Improving teamwork: Impact of structured interdisciplinary rounds on a medical teaching unit. *Journal of General Internal Medicine, 25*(8), 826–832. doi:10.1007/s11606-010-1345-6.

O'Leary, K. J., & Woods, D. M. (2014). Making the potential benefit of teamwork training a reality. *Journal of Hospital Medicine, 9*(3), 201–202. doi:10.1002/jhm.2142.

O'Neil, K. M., & Addrizzo-Harris, D. J. (2009). Continuing medical education effect on physician knowledge application and psychomotor skills: Effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. *Chest, 135*(3 Suppl), 37s–41s. doi:10.1378/chest.08-2516.

Okuyama, A., Wagner, C., & Bijnen, B. (2014). Speaking up for patient safety by hospital-based health care professionals: A literature review. *BMC Health Services Research, 14*, 61. doi:10.1186/1472-6963-14-61.

Patterson, E. S., & Wears, R. L. (2009). Beyond "communication failure". *Annals of Emergency Medicine, 53*(6), 711–712. doi:10.1016/j.annemergmed.2008.07.014.

Patterson, E. S., & Wears, R. L. (2010). Patient handoffs: Standardized and reliable measurement tools remain elusive. *Joint Commission Journal on Quality and Patient Safety, 36*(2), 52–61.

Peck, C., McCall, M., McLaren, B., & Rotem, T. (2000). Continuing medical education and continuing professional development: International comparisons. *British Medical Journal, 320*(7232), 432–435.

Porath, C. L., & Erez, A. (2009). Overlooked but not untouched: How rudeness reduces onlookers' performance on routine and creative tasks. *Organizational Behavior and Human Decision Processes, 101*(1), 29–44.

Pronovost, P. (2008). Interventions to decrease catheter-related bloodstream infections in the ICU: The Keystone Intensive Care Unit Project. *American Journal of Infection Control, 36*(10), S171.e171–S171.e175. doi:10.1016/j.ajic.2008.10.008.

Pronovost, P., Needham, D., Berenholtz, S., Sinopoli, D., Chu, H., Cosgrove, S., et al. (2006). An intervention to decrease catheter-related bloodstream infections in the ICU. *New England Journal of Medicine, 355*(26), 2725–2732. doi:10.1056/NEJMoa061115.

Rainer, J. (2015). Speaking up: Factors and issues in nurses advocating for patients when patients are in jeopardy. *Journal of Nursing Care Quality, 30*(1), 53–62. doi:10.1097/ncq.0000000000000081.

Reason, J. (2000). Human error: Models and management. *BMJ, 320*(7237), 768–770.

Reber, A. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology, 118*(3), 219–235.

Reeves, S., Lewin, S., Espin, S., & Zwarenstein, M. (2010). *Interprofessional teamwork for health and social care*. Chichester, UK: Blackwell Publishing Ltd.

Rethans, J. J., Gorter, S., Bokken, L., & Morrison, L. (2007). Unannounced standardised patients in real practice: A systematic literature review. *Medical Education, 41*(6), 537–549. doi:10.1111/j.1365-2929.2006.02689.x.

Rowland, P., & Kitto, S. (2014). Patient safety and professional discourses: Implications for interprofessionalism. *Journal of Interprofessional Care, 28*(4), 331–338. doi:10.3109/13561820.2014.891574.

Salas, E., Cooke, N. J., & Rosen, M. A. (2008). On teams, teamwork, and team performance: Discoveries and developments. *Human Factors, 50*(3), 540–547.

Scheeres, H. (2003). Learning to talk: From manual work to discourse work as self-regulating practice. *Journal of Workplace Learning, 15*(7/8), 332–337.

Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher, 27*(2), 4–13.

Sharma, S., Boet, S., Kitto, S., & Reeves, S. (2011). Interprofessional simulated learning: The need for 'sociological fidelity'. *Journal of Interprofessional Care, 25*(2), 81–83. doi:10.3109/13561820.2011.556514.

Sheehan, D., Wilkinson, T. J., & Billett, S. (2005). Interns' participation and learning in clinical environments in a New Zealand hospital. *Academic Medicine, 80*(3), 302–308.

Sole, M., Panteli, D., Risso-Gill, I., Doring, N., Busse, R., McKee, M., et al. (2014). How do medical doctors in the European Union demonstrate that they continue to meet criteria for registration and licencing? *Clinical Medicine, 14*(6), 633–639. doi:10.7861/clinmedicine.14-6-633.

Starmer, A. J., O'Toole, J. K., Rosenbluth, G., Calaman, S., Balmer, D., West, D. C., et al. (2014). Development, implementation, and dissemination of the I-PASS handoff curriculum: A multisite educational intervention to improve patient handoffs. *Academic Medicine, 89*(6), 876–884. doi:10.1097/acm.0000000000000264.

Starmer, A. J., Sectish, T. C., Simon, D. W., Keohane, C., McSweeney, M. E., Chung, E. Y., et al. (2013). Rates of medical errors and preventable adverse events among hospitalized children following implementation of a resident handoff bundle. *Journal of the American Medical Association, 310*(21), 2262–2270. doi:10.1001/jama.2013.281961.

Starmer, A. J., Spector, N. D., Srivastava, R., Allen, A. D., Landrigan, C. P., & Sectish, T. C. (2012). I-pass, a mnemonic to standardize verbal handoffs. *Pediatrics, 129*(2), 201–204. doi:10.1542/peds.2011-2966.

Starmer, A. J., Spector, N. D., Srivastava, R., West, D. C., Rosenbluth, G., Allen, A. D., et al. (2014). Changes in medical errors after implementation of a handoff program. *New England Journal of Medicine, 371*(19), 1803–1812. doi:10.1056/NEJMsa1405556.

Stein, J., Payne, C., Methvin, A., Bonsall, J. M., Chadwick, L., Clark, D., et al. (2015). Reorganizing a hospital ward as an accountable care unit. *Journal of Hospital Medicine, 10*(1), 36–40. doi:10.1002/jhm.2284.

Steven, K., Wenger, E., Boshuizen, H., Scherpbier, A., & Dornan, T. (2014). How clerkship students learn from real patients in practice settings. *Academic Medicine, 89*(3), 469–476. doi:10.1097/acm.0000000000000129.

Sutcliffe, K. M., Lewton, E., & Rosenthal, M. M. (2004). Communication failures: An insidious contributor to medical mishaps. *Academic Medicine, 79*(2), 186–194.

Swanwick, T. (2005). Informal learning in postgraduate medical education: From cognitivism to 'culturism'. *Medical Education, 39*(8), 859–865. doi:10.1111/j.1365-2929.2005.02224.x.

Teunissen, P. W. (2014). When i say … intersubjectivity. *Medical Education, 48*(4), 349–350. doi:10.1111/medu.12299.

Teunissen, P. W. (2015). Experience, trajectories, and reifications: An emerging framework of practice-based learning in healthcare workplaces. *Advances in Health Sciences Education*, *20*(4):843–856. doi:10.1007/s10459-014-9556-y.

Teunissen, P. W., Scheele, F., Scherpbier, A. J., van der Vleuten, C. P., Boor, K., van Luijk, S. J., et al. (2007). How residents learn: Qualitative evidence for the pivotal role of clinical activities. *Medical Education, 41*(8), 763–770. doi:10.1111/j.1365-2923.2007.02778.x.

Teunissen, P. W., Stapel, D. A., van der Vleuten, C., Scherpbier, A., Boor, K., & Scheele, F. (2009). Who wants feedback? An investigation of the variables influencing residents' feedback-seeking behavior in relation to night shifts. *Academic Medicine, 84*(7), 910–917. doi:10.1097/ACM.0b013e3181a858ad.

Thistlethwaite, J. (2012). Interprofessional education: A review of context, learning and the research agenda. *Medical Education, 46*(1), 58–70. doi:10.1111/j.1365-2923.2011.04143.x.

Tofil, N. M., Morris, J. L., Peterson, D. T., Watts, P., Epps, C., Harrington, K. F., et al. (2014). Interprofessional simulation training improves knowledge and teamwork in nursing and medical students during internal medicine clerkship. *Journal of Hospital Medicine, 9*(3), 189–192. doi:10.1002/jhm.2126.

van der Zwet, J., de la Croix, A., de Jonge, L. P., Stalmeijer, R. E., Scherpbier, A. J., & Teunissen, P. W. (2014). The power of questions: A discourse analysis about doctor-student interaction. *Medical Education, 48*(8), 806–819. doi:10.1111/medu.12493.

van der Zwet, J., Dornan, T., Teunissen, P. W., de Jonge, L. P., & Scherpbier, A. J. (2014). Making sense of how physician preceptors interact with medical students: Discourses of dialogue, good medical practice, and relationship trajectories. *Advances in Health Sciences Education, 19*(1), 85–98. doi:10.1007/s10459-013-9465-5.

Van Dyne, L., Ang, S., & Botero, I. C. (2003). Conceptualizing employee silence and employee voice as multidimensional constructs. *Journal of Management Studies, 40*(6), 1359–1392.

Weaver, S. J., Lyons, R., DiazGranados, D., Rosen, M. A., Salas, E., Oglesby, J., et al. (2010). The anatomy of health care team training and the state of practice: A critical review. *Academic Medicine, 85*(11), 1746–1760. doi:10.1097/ACM.0b013e3181f2e907.

Weaver, S. J., Salas, E., Lyons, R., Lazzara, E. H., Rosen, M. A., Diazgranados, D., et al. (2010). Simulation-based team training at the sharp end: A qualitative study of simulation-based team training design, implementation, and evaluation in healthcare. *Journal of Emergencies, Trauma, and Shock, 3*(4), 369–377. doi:10.4103/0974-2700.70754.

Weller, J., Boyd, M., & Cumin, D. (2014). Teams, tribes and patient safety: Overcoming barriers to effective teamwork in healthcare. *Postgraduate Medical Journal, 90*(1061), 149–154. doi:10.1136/postgradmedj-2012-131168.

WHO (2010). Framework for action on interprofessional education and collaborative practice., pp. 1–64. Retrieved from http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf?ua=1

Wolfe, H., Zebuhr, C., Topjian, A. A., Nishisaki, A., Niles, D. E., Meaney, P. A., et al. (2014). Interdisciplinary ICU cardiac arrest debriefing improves survival outcomes*. *Critical Care Medicine, 42*(7), 1688–1695. doi:10.1097/ccm.0000000000000327.

Yardley, S., Teunissen, P. W., & Dornan, T. (2012). Experiential learning: AMEE Guide No. 63. *Medical Teacher, 34*(2), e102–e115. doi:10.3109/0142159x.2012.650741.