Representing complexity well: a story about teamwork, with implications for how we teach collaboration

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OBJECTIVES In order to be relevant and impactful, our research into health care teamwork needs to better reflect the complexity inherent to this area. This study explored the complexity of collaborative practice on a distributed transplant team. We employed the theoretical lenses of activity theory to better understand the nature of collaborative complexity and its implications for current approaches to interprofessional collaboration (IPC) and interprofessional education (IPE).

METHODS Over 4 months, two trained observers conducted 162 hours of observation, 30 field interviews and 17 formal interviews with 39 members of a solid organ transplant team in a Canadian teaching hospital. Participants included consultant medical and surgical staff and postgraduate trainees, the team nurse practitioner, social worker, dietitian, pharmacist, physical therapist, bedside nurses, organ donor coordinators and organ recipient coordinators. Data collection and inductive analysis for emergent themes proceeded iteratively.

RESULTS Daily collaborative practice involves improvisation in the face of recurring challenges on a distributed team. This paper focuses on the theme of ‘interservice’ challenges, which represent instances in which the ‘core’ transplant team (those providing daily care for transplant patients) work to engage the expertise and resources of other services in the hospital, such as those of radiology and pathology departments. We examine a single story of the core team’s collaboration with cardiology, anaesthesiology and radiology services to decide whether a patient is appropriate for transplantation and use this story to consider the team’s strategies in the face of conflicting expectations and preferences among these services.

CONCLUSIONS This story of collaboration in a distributed team calls into question two premises underpinning current models of IPC and IPE: the notion that stable professional roles exist, and the ideal of a unifying objective of ‘caring for the patient’. We suggest important elaborations to these premises as they are used to conceptualise and teach IPC in order to better represent the intricacy of everyday collaborative work in health care.
INTRODUCTION

In a recent paper, Regehr asserted a new imperative for research into the education of health professionals: to represent complexity well. For those who study health care teams, this imperative is indeed timely because complexity is the sine qua non of health care teamwork. Every day, clinicians face the challenges involved in providing good patient care in the context of a system in which the dimensions of the system itself grow increasingly complex, in which measures of success grow increasingly vague, and in which an atmosphere of crisis grows increasingly pervasive. It seems unlikely that any headway can be made by health care providers in the face of such burgeoning chaos and yet it is. In fact, health care teams improvise in response to complexity, making care happen often despite the systems in which they work. These strategies are not always elegant or friendly or efficient, but, in a manner that negotiates competing demands, organisational hypocrisies and interprofessional tensions, health care teams regularly win the game with whatever cards they are dealt.

Unfortunately, existing teamwork research does not represent this complexity well. Recent critiques of research on teams suggest significant limitations. Firstly, much of the existing research on teamwork relies on survey and interview methods; much less common are observational methods that capture teamwork firsthand. Secondly, observational work that has been conducted has mostly been limited to confined geographical spaces, such as the operating room, the general medicine ward or the intensive care unit. Such localised studies of teamwork fail to reflect the highly permeable inter- and intradisciplinary boundaries between hospital and community health care providers. Only rarely do observers follow members of health care teams to document collaborative interactions between teams. Thirdly, theoretical frameworks are often lacking, limiting a field’s ability to develop robust explanations of teamwork that can be elaborated and refined in future research. Finally, qualitative studies of teamwork have tended to use an analytic process that involves thematic abstraction from the data through constant comparative analysis methods. Although this popular analytical approach provides insight into recurring patterns and abstract principles or values, it can strip away the richest aspect of a specific story: the meaningful sense of human interaction derived from consideration of the inter-relationships among a series of activities accumulating over time and space.

In light of these limitations, there is a growing need for a new generation of empirical and theoretical work that does justice to the complexity of health care teamwork. This need is real because our conceptions of teamwork have a powerful influence on what we think is possible and where we focus our attention as clinicians, quality advocates and educators. To press the point where education is concerned, interprofessional collaboration (IPC) and interprofessional education (IPE) are on the rise in health professional education curricula. To the extent that IPC and IPE initiatives are based on under-theorised or under-contextualised models of teamwork, they risk inadequately preparing trainees for sophisticated collaborative practice. Recent concerns regarding the scenarios currently in use in simulated team training, particularly with respect to their lack of context and their failure to effectively reflect the lived realities of different professionals, highlight the dangers of using oversimplified models to train for collaboration. As Soubhi et al. have recently argued, the greatest resources for improving collaborative learning and practice are ‘the knowledge, wisdom, and energy of professionals who adapt to challenging situations in their everyday work’. Research in this domain needs to start doing a better job of capturing, in all its complexity, such everyday adaptiveness on health care teams. The research and the curriculum around teamwork cannot affect teamwork if they do not reflect complexity.

The present study

Reviews of teamwork have noted the need to provide details about the context of the team, including number of team members, nature of team members, types and frequency of interactions, the clinical and organisational context in which the team works, and so forth. We conducted an ethnographic study of teamwork in a solid organ transplant unit in a tertiary care hospital in a Canadian academic health sciences setting. To preserve participant anonymity, the precise type of transplantation performed by this team is not described. Similarly, doctor team members are referred to generically as ‘medicine consultants’ or ‘surgeons’.

The purpose of the study was to produce a rich description of how distributed teamwork happens, with attention to how a team improvises in the face of everyday collaborative challenges. The study was approved by the university and hospital research ethics boards.
Complexity in teamwork

METHODS

Solid organ transplantation is a health service involving complex logistical structures, high-stakes decisions and necessary IPC. The transplant team’s patient load includes out-patients seeking transplant assessments, pre-transplant or post-transplant out-patients attending regular clinic meetings, and in-patients recovering from transplantation or recent clinical interventions. The research setting included the in-patient transplant unit, a three-room transplant clinic space, a conference room, and the various hospital units to which shadowed team members would travel throughout the day (e.g. the radiology unit, the intensive care unit, etc.).

Our ethnographic observations focused on the daily work activities of 39 health care professionals who consented to participate in the study. They included consultant medical and surgical staff and postgraduate trainees, the team nurse practitioner, social worker, dietician, pharmacist, physical therapist, bedside nurses, organ donor coordinators and organ recipient coordinators. During a 4-month study period, trained observers conducted observation sessions of 2–3 hours in duration, three to five times per week. Observers attended team meetings, shadowed team members, conducted formal and informal interviews, and observed out-patient meetings. A ‘marginal participant role’ was adopted, which enabled the study group to focus on observing interactions while allowing for informal discussions with team members as necessary. These discussions were used to clarify issues arising from the observations or to raise questions. Observers did not participate in any aspect of patient care delivery.

The study was informed by activity theory, a model that has particular relevance for studying teamwork. Originating in the work of Vygotsky and Leont’ev, and extended by Engeström, activity theory offers the construct of an ‘activity system’ to represent the complex interactions between individual human actors and the social, technological and physical structures involved in their work. An activity system is theorised to have six dimensions: the individuals involved in an activity; the tools they use; their objectives; the communities in which they participate; the rules that govern their actions, and the division of labour. Within this model, the concept of ‘knotworking’ highlights the ways in which team members improvise to negotiate everyday challenges in the activity system. According to Engeström, knotworking emerges from a particular medium or base, which he characterises as a fluid, web-like, horizontal formation of ‘heterogeneous participants working symbiotically without strictly defined membership criteria’ and in ways that are both ‘mutually beneficial and exploitative’. In a knotworking situation, a team faces a complex challenge or barrier to which its members must respond. In such instances, a constellation of improvisational strategies through which team members navigate their way across or around barriers often emerges. Finally, the activity theory concept of ‘boundary’ offers a language for considering how collaborative interactions are shaped by the many professional and organisational boundaries that crisscross the fabric of the transplantation team. Boundary ‘crossing’, boundary ‘conflicts’ and boundary ‘objects’ are all concepts that have recently been fruitfully applied to the study of interprofessional collaborative practice in health care.

In total, 162 hours of observation, 30 field interviews and 17 formal interviews were conducted. During observations, researchers recorded standardised, hand-written ethnographic field notes. Field interviews were reconstructed in reflective, hand-written field notes according to standard ethnographic conventions. Formal interviews were semi-structured, recorded and transcribed. Formal interviews involved a purposive sample of transplant team members, including consultant staff and resident doctors, surgery staff and resident doctors, the team nurse practitioner, the team social worker and recipient coordinators. The interview guide emerged through early analysis of observational field notes.

Field notes and interview transcripts were analysed inductively for recurring patterns using NVivo Version 9.2 (QSR International Pty Ltd, Doncaster, Vic, Australia) qualitative data analysis software. Data analysis was an iterative process conducted alongside data collection, according to qualitative analytical principles of rigor. One researcher read the field notes and interview transcripts as they were collected and gradually coalesced recurrent patterns into a set of open ‘codes’ that were regularly reviewed and discussed with three other researchers in group meetings throughout the study timeline. From these discussions, a thematic coding structure was created to capture dominant, recurring themes in the ethnographic dataset; this coding structure was then applied to the entire dataset to identify all instances of these themes.

Following activity theory’s orientation to ‘follow the object’ as a way of capturing fluid and distributed
social interactions, we also conducted an analysis by patient case (n = 52). This analytical approach allowed us to trace knotworking threads through the data which reflected the chronological development of team problem solving as challenges emerged and evolved over the course of the team’s involvement with a patient. This patient case coding also provided insight into the dynamic nature of these challenges, which Kerosuo calls the constant ‘transformations due to internal contradictions emerging between [an activity system’s] elements and contradictions between the entire activity system and its environment’.

Both the thematic and patient case analyses were verified with members of the transplant team through a series of interviews with key informants or collaborators and three return-of-findings (member checking) group discussions with the entire transplant team. The purpose of these was to increase the authenticity of our analysis by ensuring that it both resonated with team members’ lived experiences and grappled with issues of concern to them as a group seeking to understand and improve both its care practices and the ways in which it teaches these practices to novice team members. As part of their process of contributing their insights to the results of our data analysis, team members were also provided with draft manuscripts, several passages of which became subject to negotiation and revision in order to ensure accuracy in tone and content of the portrayal of the team.

The rigor of the study was ensured and the quality of the data enhanced in a number of ways. We convened an interdisciplinary research group, consisting of social scientists, communication experts and frontline clinicians from the transplant service. Our study design was derived from negotiations with the transplant team in two group meetings and was intended to ensure the acceptability of the methods and ethical procedures to these key stakeholders. Interview and observational data were combined iteratively across the data collection period to pursue early themes and threads. We maintained an audit trail that included researchers’ reflections on their roles in shaping the data collected, their emerging relationships with study participants and the influence of those relationships on data collection.

RESULTS

Early analysis revealed that challenges and the knotworking that arises in response to these challenges can be categorised according to where they occur in the distributed activity system of transplant care. Three main categories of challenge were identified: ‘core team’ challenges involved transplant clinicians, patients and family members; ‘interservice’ challenges involved the core transplant team and clinicians in other services in the hospital, and ‘outside’ challenges involved the core transplant team and clinical, social or administrative supports outside the hospital. The labels we assigned to these categories reflect the prominent yet fluid roles of professional and organisational boundaries in the team’s collaborative practices. ‘Core team’ challenges, for instance, emerged during collaboration practices that crossed professional boundaries (e.g. the boundary between nursing and medicine); organisational boundaries, however, were less salient in these challenges as the core team shared an organisational mandate of transplantation care. ‘Interservice’ challenges, by contrast, emerged at the intersection of organisational and specialty boundaries within the professional landscape of medicine; for instance, radiology’s organisational mandate differs from that of transplantation, which leads to conflict at the intersection of radiology and transplantation. Challenges emerged as these boundaries were crossed in collaboration and multiple territories or sources of authority were brought together. Knotworking became particularly visible at these boundaries, at which negotiation and reconciliation among different individuals, tools, objectives and rules are required.

What follows is a brief story about the complexity of teamwork that emerges from the second thematic category of ‘interservice’ challenges. Although we productively employed thematic analysis procedures to excavate key patterns in our data, we do not believe that this is the most powerful way of relating our results. Therefore, we have eschewed the traditional genre of reporting qualitative results – the description of thematic categories – for the rich and situated detail of story. A story’s power resides not in its generalisability, but in its resonance, its ability to transport readers to their own teamwork moments and to produce a sense of déjà vu that signals shared social experience and prompts deep reflection. In the discussion, we use this story of the team’s knotworking – its members’ improvised responses to challenges related to collaboration between the core team and other hospital services – to consider implications for how we currently approach the teaching of ‘collaborative practice’. What follows is a representative story of a patient whose care presented a series of challenges for the transplant team; we selected this story because of its representativeness.
in terms of degree of complexity and because it is one of the more complete stories in the dataset because observers were present for the patient’s admission, in-patient care and eventual transplantation.

The story

‘Mr Hearn’ was a 56-year-old man with end-stage disease (some details have been altered to protect the patient’s anonymity). He was admitted to the transplant unit for a transplant assessment. During his admission, he was assessed by appropriate members of the transplant team from the departments of medicine, surgery and anaesthesia regarding his suitability as an organ recipient. In addition to his organ failure (which was non-cardiac), Mr Hearn had a heart stent, which caused the anaesthesia department to be cautious about the appropriateness of adding him to the list of patients awaiting an organ. The consulting anaesthesiologist told the nurse practitioner on the transplant team that the patient needed a left-sided heart catheterisation before transplant could be considered. Mr Hearn was discharged home with the goal of building him up nutritionally. On the day of discharge, the team remained unsure about whether he should be added to the list of patients waiting for transplantation; they planned to consult further among the anaesthesia, cardiology and cardiovascular surgery services.

Just over a week later, Mr Hearn was admitted to the intensive care unit. On the morning following his admission, he was characterised by the transplant team at rounds as ‘crashing’, although the team was not sure why: there was no overt infection or obvious crisis event, and appropriate tests were ordered to rule out common causes of decompensation. The transplant team expressed a sense of urgency about putting him on the list; they were worried that if they waited, he would become too haemodynamically unstable to safely undergo a transplant procedure. Before transplantation, however, the residual issue from the last admission required resolution: could his heart withstand the surgery? This was the exigency, or challenge, that the team was required to work through or work around.

Achieving an answer to this question required the consultant staff to facilitate a process of negotiation between the conflicting clinical opinions of the anaesthesiology and cardiology services. As one specialty resident doctor summarised the situation:

‘There was anaesthesia, cardiology and us, and ourselves and anaesthesia felt that the patient needed a left-sided heart cath [catheterisation] prior to listing for transplant, and cardiology disagreed with that.’ (Resident 1, formal interview)

Another medicine consultant (Consultant 1) explained that the transplant service was ‘stuck in the middle’ of divergent opinions between a consultant cardiologist and a consultant anaesthesiologist about whether or not the patient required left heart catheterisation. Both the cardiology and anaesthesiology services have relevant, and highly respected, expertise that the transplant team must consider in its decision on whether or not to list a patient for transplantation. However, the two services were differently positioned in terms of their proximity to – and accountability for – the actual decision to operate on Mr Hearn in his current state. The transplant coordinator on the team that week said:

‘Sometimes the comment is made by cardiology that anaesthesia is being overly cautious and anaesthesia’s saying, “Well, cardiology’s not in the OR [operating room] and they don’t know everything that we have to deal with.”’ (Coordinator 3, formal interview)

The transplant team wanted to see this patient transplanted if his cardiac status was appropriate, but, to reach consensus, its members were required to effectively broker the disagreement between the cardiology and anaesthesiology services. This brokering consisted of multiple stages, in part because trainee doctors take the lead in initiating consultations in a teaching hospital. A nurse practitioner on the team said:

‘[It can be] frustrating to get the opinion and get across the meaningful information to the consultants of those various groups that make the final decision because [the patient is] seen by residents and fellows.’ (Nurse practitioner 1, formal interview)

The transplant resident doctors made a number of attempts to establish an agreement between the anaesthesiology and cardiology services, which included a series of telephone conversations and face-to-face conversations with both residents and staff from these services. When these attempts failed, the staff consultant on call for the transplant service decided to call the cardiology service himself and to explain why the question they continued to ask was important and worth more cardiology resources. However, the cardiologist on call was not the cardiologist who had conducted the first consultation, which meant that the discussion had to begin again;
with no history of the previous discussion, meaningful negotiation was made more difficult.

In Mr Hearn’s case, the accumulating conversations meant that the team was robbed of one of its standard improvisational strategies for dealing with tricky consultations, namely, ‘selection’:

‘We select our consultants where we’ll say, gee … we think it’s fine, so we’re going to ask Cardiologist 1 to see them because Cardiologist 1 is going to say, “It’s fine.” Whereas if we ask for Cardiologist 2, he’s going to say, “No, I need to do 18 tests.” If we’re worried and we think this is a real problem, I’ll get Cardiologist 2… or let Cardiologist 1 know we are very concerned; please make sure if I don’t think we should be doing it, Cardiologist 2 will be far more critical about that.’ (Consultant 3, formal interview)

This example also illustrates a second strategy used in tandem with selection: the manner of presenting the problem (i.e. as ‘real’ or not) is tailored to the consultant’s anticipated response. In Mr Hearn’s case, however, the strategy of consultant selection was not an option because multiple consultants from a service had become involved and, given their shared values and principles regarding their discipline, they were unlikely, and understandably reluctant, to second-guess one another’s decisions. In another attempt to resolve the impasse, the transplant team consulted the radiology service. According to one of the transplant resident doctors:

‘…the compromise between all three services is to order a CT [computed tomography] angiogram which is performed in radiology. But then the radiologists wanted the heart rate to be much better controlled prior to doing a CT coronary angiogram because they felt that the false positive rating would be too high with a high heart rate, and so they didn’t want to do the scan.’ (Resident 1, formal interview)

As this description suggests, the knotworking process is an iterative one, as apparent solutions spark new challenges.

There are more chapters to this story, which extended over 5 days. For our purposes, it is sufficient to end Mr Hearn’s story at this point and to report that the team persisted in employing new communication and collaboration strategies until an agreement was reached. They never gave up, although their patience was sorely tried and their improvisational strategies repeatedly tested. In the end, Mr Hearn’s transplantation proceeded successfully.

DISCUSSION

Readers may be tempted to view this as a story about dysfunctional teamwork. It is not. It is a story of everyday complexity; it describes how an apparently simple collaborative act – seeking expert opinions from multiple services in order to make a decision about care – may require an elaborate series of strategic actions on the part of team members. This is not simply a matter of individuals on the team being short on clinical expertise or disinterested in good patient care. Far from it. This is knotworking – improvising strategically to get a job done in the face of emergent challenges in the activity system – and it happens hundreds of times a day at the boundaries of the many services in tertiary care hospitals and, indeed, in all health care systems. The Mr Hearn story illustrates vividly the nature of the medium that supports knotworking: it is a fluid, horizontal web of symbiotic transactions and translations in the transplantation team that are neither readily bounded nor entirely elusive. This web can be traced, but it will not hold still; it is vulnerable, but difficult to eradicate; its centre cannot be precisely pinpointed, but it exerts agency. What is this medium underpinning knotworking in the transplantation team constellation? Although Engeström recognizes that it ‘will not have strictly defined criteria of membership’, he asserts that its ‘members can be identified by their activism’, in which case the core team seems an essential aspect of the base from which knotworking emerges, evidenced in its members’ continuous, improvisational exertions to keep the work moving forward.

Knotworking in the Mr Hearn story emerges in response to boundary negotiations at various points in the transplant activity system. In the interests of brevity, we will discuss only two of these: division of labour, and objectives. We discuss each of these and consider their implications for adding complexity to current approaches to ‘collaborative practice’.

Division of labour influences the Mr Hearn story in terms of both structural divisions and the distribution of accountability. Team members’ different work schedules and physical locations in the hospital – their distribution across time and space – create conditions that often render consultation requests and responses inefficient and confusing. Knotworking strategies that emerge in response to this include making requests in person rather than by telephone and targeting requests to a limited cadre of experienced specialists from other services. As the story
Complexity in teamwork

unfolds, however, this structural complexity is exacerbated by a further issue: the division of labour in terms of roles and authority. In fact, the Mr Hearn case presents an iconic instance of knotworking in that there is no stable locus of control or authority: each service (transplant, cardiology, anaesthesia) has some authority to shape the course of action, but each must also respect the others’ authority. How these threads of expertise and authority are drawn together into a collaborative decision is both a mundane and a potent process of negotiation that the core transplant team must facilitate. To do so, the core team has developed its own, largely tacit rules for prioritising among the threads of authority in order to work through the ‘knot’. As one team member explained:

‘If push comes to shove we [the core transplant team] have to please the anaesthesiologist. They’re the last group that we’ve got to please to go forward, so if they say, “No, we want a right heart cath,” and the cardiologist said they don’t think they need it, it’ll come down to what the anaesthesiologist tells us, because they’re going to give the anaesthetic.’ (Surgeon 1, formal interview)

The core team needs to respect the division of authority inherent in medical specialisation, whereby the cardiologist has the last word on the workings of the patient’s heart and the anaesthesiologist has the last word on the patient’s ability to survive the transplant operation; however, the core team also needs to act when these sources of authority are in conflict. The surgeon’s comment suggests the tacit logic that governs knotworking in this complex situation.

In addition to division of labour, multiple objectives contribute to the complexity of the Mr Hearn case. A whole host of objectives motivate the actions of team members, each of which is appropriate and relevant. These objectives include the goal of protecting scarce cardiology resources, the need to guard against adverse intraoperative events, the desire to provide timely care to the patient, and the mandate to give trainee doctors the opportunity to coordinate care plans before attending doctors take over. The competition among these objectives is part of what turns an apparently straightforward consultation request into a complex knotworking activity. These objectives are constantly being repositioned in terms of priority by individual team members and the knotworking involves some degree of trade-off among them. For instance, the most efficient route to a clinical decision is through personal communication among staff; however, the training mandate requires that resident doctors be given the chance to participate in these communications. Navigating these two equally valuable objectives, the core transplant team will often use the knotworking strategy of modelling the language a resident doctor should use, including by telling him or her to say ‘Dr [staff person] wanted you to ask…’ as a way of invoking a staff-to-staff link without cutting out the resident’s learning opportunity.

Our consideration of how these two factors – division of labour and objectives – shape knotworking in the Mr Hearn story provides insight into the complexity of everyday collaborative practice on this team. We believe these insights are important because they complicate two key assumptions that underpin current models of collaborative practice and the education based on these models.

Firstly, we tend in IPC to talk about professional roles as though they are stable. Roles, such as those of cardiologist, nurse practitioner and radiologist, are based on scopes of practice and regulated areas of expertise, which implies that they are neither context-specific nor in flux. From this implication arises our current approach to IPE, which is predicated, at least in part, on the notion that team members can, and should, come to understand one another’s roles.30–32 A recent paper proposed, in fact, that role understanding is one of two essential competencies for collaborative practices.33 There is good sense in this; health professionals should have some sense of the scopes of practice of the professionals with whom they interact to provide care. Yet, we also need to explicitly introduce in the curriculum the counter notion that roles are fluid and subject to the influences of particular situations, and that collaborate expertise involves being attuned and responsive to this fluidity. However, the tendency in the IPC literature has been to warn of the risk of conflict associated with fluidity or ‘role blurring’34 and to call for ‘the need to set clear boundaries and demarcations’ between roles in order to avoid conflict.35 Our brief analysis of the division of labour in the Mr Hearn case calls the assumption of stability into question. Who is the ‘heart expert’ in relation to the question of whether Mr Hearn’s cardiac status is acceptable for transplant surgery? Is it the anaesthesiologist or the cardiologist? Although they share an object – Mr Hearn’s heart – they construct it differently; when the edges of their territory or authority meet, the heart becomes a boundary object that must be negotiated. Which is the ‘most responsible service’ in terms of ensuring the safety of the
decision to operate on Mr Hearn in his current state? In one sense, transplant is the most responsible service, but, in another sense, as the surgeon’s comment suggests, anaesthesiology is the most responsible. The fluidity of roles, and the shifting and overlapping of the locus of authority are among the factors that create complexity and give rise to the need for extensive knotworking in the Mr Hearn case. Although the fluidity and overlap in roles create conflict among the team, this conflict is not ‘avoidable’ per se; it is the sine qua non of collaboration and knotworking strategies allow the team to work through the conflict productively.

Secondly, IPC’s governing rhetoric of collaborative patient-centred practice has at its core the assumption of a global and stable objective: ‘to provide the best care for the patient.’ The Mr Hearn story illustrates that the objectives that underpin teamwork are multiple and they are constantly being repositioned in terms of priority by individual team members in particular situations. The oft-cited call for collaborative solidarity – ‘at the end of the day, we’re all here for the patient’ – may be widely embraced and irrefutable as a value, but as a motivation for collaborative action it is in constant tension with other relevant motives, such as appropriate resource allocation and trainee education. Multiple equally valuable and competing objectives are part of the complexity of health care teamwork; currently, IPC and IPE models do not sufficiently reflect this complexity.

We have purposefully approached knotworking from an appreciative perspective; that is, for the insight it can provide into the everyday improvisations that teams enact in order to achieve their goals within a complex – and problematic – system. We do not intend to pretend that the system itself isn’t problematic. Certainly, the system needs critical analysis and remodelling to promote maximally effective collaborative practice. However, until that happens, it behoves educators to understand how teams currently navigate the system to achieve everyday goals in order that we can articulate these collaborative strategies, improve them when possible, and teach them to novices.

CONCLUSIONS

In order to be relevant and impactful, our research into health care teamwork needs to reflect the inherent complexity of such teamwork. This paper used the richness of a single story derived from ethnographic data to portray the complexity of collaborative practice in a transplant team, employing the theoretical lens of activity theory, with its concepts of boundary and knotworking, to better understand the nature of that complexity. Our results suggest important elaborations to current ways of conceptualising and teaching IPC that would better represent the intricacy of everyday collaborative work in health care.

Contributors: LL served as principal investigator and was responsible for the research design, ethics approval, data collection, data analysis and authorship of the manuscript. AM served as the project research associate and assisted in all steps of the project, including manuscript drafting and revision. ML and NC are clinical experts who contributed to data analysis and manuscript revisions. CS and MMS were also intimately involved in data analysis and manuscript revision. All authors approved the final version of the manuscript for submission.

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REFERENCES


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