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## A grounded theory of interprofessional learning and paramedic care

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### ABSTRACT

Interprofessional learning (IPL) is a dynamic process. It incorporates adult learning principles and requires active participation. Contemporary paramedic care typically involves collaboration with other health-care professionals. However, little is known about how paramedics work and construct meaning within this interprofessional milieu. Rural areas, where professional collaboration is well illustrated, provide an opportune setting from which to conduct the examination of IPL and paramedic care. Twenty-six participants took part in this investigation. Participants were paramedics and other professionals involved in collaboration in rural locations across the state of Tasmania, Australia. Rural Tasmania provided a diverse range of paramedic practice for investigation, including traditional (pre-hospital) care, extended care, volunteer services, and hospital-based practices. A grounded theory approach was adopted, and semi-structured interviews used to collect critical incidents in which participants described effective and less effective episodes of collaboration. Memos were kept during the research process. Analysis of data followed a process of initial and then focused coding from which the main concepts could be determined. From 75 episodes of collaboration, three main concepts emerged to create a theory of IPL and paramedic care. Relationships included reciprocity and respect, as well as professional acknowledgment. Cooperation recognized professionals as interdependent practitioners adopting open communication. Operational barriers identified contextual features under which professionals work, with constituent categories of protecting turf, and workplace culture. The findings provide new insight into IPL and paramedic care. Hierarchy, professional dominance, and gender disparity emerged as barriers to IPL. Knowledge and skills were shared between professions and this influenced how individuals interacted within interprofessional teams. A successful collaboration produced a clinical environment where patient care was informed by contributions from all team members.

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### Introduction

Paramedics work with several other professionals (Mulholland, Barnett, & Spencer, 2013). This creates an environment conducive to interprofessional learning (IPL), which acknowledges both formal and informal methods of learning in order to improve service delivery. IPL may be the 'product of interprofessional education or happen spontaneously in the workplace or educational settings' (Freeth, Hammick, Reeves, Koppel, & Barr, 2005, p. xv).

In western countries, the work of paramedics has evolved from the provision of pre-hospital care often in isolation from other services, to incorporate close alliance with other professions. Paramedic emergency care has advanced in areas such as cardiac, respiratory, or trauma care, but paramedics are also involved in extended scopes of practice, working closely with members of other health professions, often in rural areas where health-care resources can be thinly stretched. Early evidence from the USA documented how remote area paramedics learned and practiced new skills such as health screening, chronic care, and immunizations in collaboration with other medical staff (Garza, 1994a, 1994b; Shoup, 1995). More recent programs in the USA and Canada, for example,

provide further examples of interprofessional health services incorporating paramedics in both urban and rural settings (Halter & Ellison, 2008; Martin-Misener, Downe-Wamboldt, Cain, & Girouard, 2009; Shah et al., 2010). Several Australian-based studies have reported similar practices, with paramedics actively collaborating with other professionals to provide patient care ranging from assistance in hospital emergency departments to care of patients with chronic conditions in the home environment (Mulholland, O'Meara, Walker, Stirling, & Tourle, 2009; Mulholland, Stirling, & Walker, 2009; Stirling, O'Meara, Pedler, Tourle, & Walker, 2007).

Whilst these examples offer descriptions of where paramedics have undertaken training and participated in collaborative practice with other health-care colleagues, the link to interprofessional learning has not been explored. There is evidence that interprofessional practice involving paramedics can increase satisfaction among community members (Martin-Misener et al., 2009; Shah et al., 2010); however, little is known about the interprofessional interactions involved. Although highlighting community benefits, papers describing paramedic interprofessional programs fall short when compared to other works which describe how interprofessional

collaboration can empower community groups (Goodrow & Meyers, 2000), how interprofessional interaction can stimulate teamwork and collaboration (Charles, Bainbridge, Copeman-Stewart, Art, & Kassam, 2006), or how the concept of power influences the relationship between different interprofessional groups (Paradis & Whitehead, 2015).

Such evidence around paramedics working with other professionals is limited. We know what paramedics do, but little about the ways by which diverse groups involved in paramedic care interact and construct meaning about an interprofessional approach. The literature to date has been largely descriptive, detailing specific procedures and programs; with sparse attention given to the interactions of various professions involved. This paper reports on a study that adopts a grounded theory approach to examine the collaborative partnerships of paramedics and other professionals, and how these interactions contribute to IPL. The study advances a theory of paramedic practice that places patient care central to collaborative practice and interprofessional learning.

## Methods

This study used constructivist grounded theory to examine how the interactions between paramedics and other professionals inform IPL. The intent of grounded theory is the generation of rich, interpretive understanding or theoretical accounts of social phenomenon grounded in the studied data (Charmaz, 2006; Glaser & Strauss, 1965). Grounded theory was developed by sociologists Barney Glaser and Anselm Strauss in 1967. Since this time grounded theory has been recognized as a systematic research methodology employed in the health and social sciences, to examine and explain processes and interactions in the social world (Charmaz, 2006).

A constructivist approach to grounded theory, developed by Kathy Charmaz (2000), is rooted in the assumption that the researcher constructs data and theories, rather than discovers them. A reflexive stance to the research processes and products considers how theory evolves through the interpretation of meaning and action (Charmaz, 2006). A constructivist approach sees the researcher approaching data with an open mind but acknowledges any preconceptions rather than denying them. In constructivist grounded theory, both data and the researcher form a research process located within historical, social and situational conditions (Charmaz, 2006).

Grounded theory is well suited to generating theoretical understandings of paramedic care and IPL. The approach has been used to examine collaborative practices and relationships amongst other health professions ranging from mental health workers (Ren, Wang, & Zhang, 2016); and general practitioners and pharmacists (Rieck, 2014); to nurse practitioners (Hurlock-Chorostecki, Forchuk, Orchard, Van Soren, & Reeves, 2014), palliative care workers, patients and families (Ho, Jameson, & Pavlish, 2016).

To our knowledge, the use of constructivist grounded theory to investigate paramedic care and IPL has not previously been reported. It is particularly relevant for this study, as it obtains first-hand accounts from participants of paramedic practice and enables interprofessional learning to be

theorized on the basis of their lived experiences and interactions with other health-care workers and service providers.

## Setting

This study was set across eight rural locations in the state of Tasmania, Australia. Rural settings were chosen, as paramedics in such areas have been involved with interprofessional care situations that have a high level of community involvement (Mulholland, O'Meara, et al., 2009; Mulholland, Stirling, & Walker, 2009; O'Meara et al., 2006), interprofessional education, and both formal and informal practice with other health professionals (Mulholland et al., 2013). Rural Tasmania provided a diverse range of types of paramedic practice for investigation (Table 1). This included extended care paramedics (ECPs), who manage patients in the home environment where possible; hospital-based health professions other than paramedics, e.g. nurses; ambulance volunteers; and salaried paramedics.

From a historical perspective, ambulance services in Tasmania were one of the first in Australia to move from a sole volunteer basis under St John Ambulance, to the Government run Tasmanian Ambulance Service (now Ambulance Tasmania) (Howie-Willis, 2009). However, several rural localities still ran hospital-based ambulance services independent of Ambulance Tasmania. At the time of this study, only one rural site represented this type of service, and overall management of the service and training of hospital staff to provide pre-hospital care was the responsibility of Ambulance Tasmania. Some rural and remote areas maintained a presence of volunteer coverage, sometimes with the assistance of paramedics. The ECP program commenced in Tasmania as part of the Federal Government initiative to trial this model of paramedic practice (Thompson et al., 2014).

All the rural ambulance sites included in this study exhibited potential for collaboration with other health professionals. Ambulance stations were situated at or near rural hospitals. Paramedics and ambulance volunteers were independent practitioners in the pre-hospital arena, operating under different sets of guidelines. Due to the isolated nature of practice, they would sometimes call on other professionals and community members for assistance. This could also be reciprocated, and hospital staff could call on paramedics for help and advice for patients with both acute and chronic illness.

**Table 1.** Types of rural paramedic practice.

Type of practice	Description
Extended care paramedics (ECP)	Manage patients in the home/pre-hospital environment where possible. Work in close collaboration with others e.g. nurses
Hospital-based	Provision of pre-hospital care from local hospital staff (e.g. nurses, some volunteers, maintenance staff)
Ambulance volunteers	Provide pre-hospital care: <ul style="list-style-type: none"> <li>● Independent from other support</li> <li>● As part of paramedic/volunteer crew</li> <li>● Backed up by paramedic crew</li> </ul>
Salaried paramedics	Provide pre-hospital care: <ul style="list-style-type: none"> <li>● Independently, providing back up to volunteers</li> <li>● As part of a paramedic/volunteer crew</li> </ul>

Purposeful sampling of sites was conducted to ensure representation of the four distinct types of rural paramedic practice found in Tasmania.

**Ethics approval**

This study gained ethics approval from The Tasmania Health and Medical Research Ethics Committee (H00130350) and from Ambulance Tasmania. Permission was obtained from local hospital directors to approach and recruit potential participants.

**Participants and recruitment**

Recruitment of participants occurred via distribution of a general information poster to ambulance stations and hospitals/medical centers at the selected sites. Those interested in the project contacted the primary researcher via phone or e-mail. A total sample of 26 participants volunteered for the study (Table 2).

**Data collection and analysis**

Stories about IPL and paramedic care were obtained through interviews with participants, and via memos made during the research process. The main form of data collection involved semi-structured interviews based on the use of Critical Incident Technique (CIT), a research method aimed at improving practice, and suited to the examination of significant behaviors. A ‘critical incident’ is a defined event, the person involved is able to judge positive or negative elements of the event, and the behavior observed makes a significant contribution to the aim of the activity (Flanagan, 1954). Participants were asked to describe episodes (‘critical incidents’) where they had collaborated with other professionals.

Participants were provided collaboration reporting forms six months prior to the interview so they could note episodes of collaboration. The reason for using these forms was that one element of the critical incident technique is reliance on memory, and this is usually most satisfactory when the incidents are recent. Table 3 provides examples from collaboration reporting forms.

Conformity with completing collaboration reporting forms was low with only four forms completed and returned. Two participants did record their own notes and used these to assist the interview process. Despite poor compliance with the forms, there is an argument that despite the passage of time between the incident and its recall, high profile accounts can nevertheless be vividly remembered (Schluter, Seaton, & Chaboyer, 2011).

**Table 2.** Participants by profession and gender (n = 26).

Profession	Gender (n)
Extended care paramedics (ECP)	M(2)
Paramedics	F(1), M(6)
Ambulance volunteers	F (3), M (3)
Nurses	F (9)
Doctor	M (1)
Other (State Emergency Service)	M (1)

**Table 3.** Examples from collaboration-reporting forms.

Collaborative situation	Personnel involved	Effective aspects	Less-effective aspects
Car Accident	Paramedic SES Fire Nurse Doctor	Communication Quick extrication	Handover at hospital too long
Training session	Nurse Paramedic	Clear delivery Easy to understand	Subject matter at a different level than qualifications of most participants

Flanagan (1954), noted that accuracy in reporting of the critical incident is derived from how full and precise the description of the event is. With this in mind and as a contingency for potential poor compliance with the forms, criteria were developed that could be applied to describe the components of a ‘rich’ critical incident. For this study ‘rich’ critical incidents were characterized by cases in which:

- The incident described how participants worked together
- There was context around the incident
- There was evidence that the participant had reflected on the incident
- The participant could identify a learning from the incident

An example of these steps appears in Table 4.

The interviews ranged from 10 min to 56 min in duration with an average of 35 min. Interviews were audiotaped and took place at a time and place suitable to participants. Twenty-two interviews were conducted face-to-face and four by phone. The primary researcher transcribed all interviews and their participants was invited to review and check their own transcript. Only three participants took up the offer to

**Table 4.** Examples of ‘rich’ critical incident determinants.

Critical Incident name and description	Context	Reflection	Learning
<b>Airway training</b> Paramedic at new station requested by hospital staff to demonstrate basic airway management.	Hospital staff unaware of paramedic guidelines	Raised profile of ambulance. Less effective was the limited time to achieve training. No pre-warning. One nurse thought training was encouraging hospital staff to use ambulance protocols.	Hospital staff and GP learnt more about ambulance roles and guidelines. Need to be clear to avoid confusion around purpose of such training.
<b>Chronic patient</b> Paramedic care administered to chronic patient with blood pressure problems fed back to community nursing.	Hospital staff unaware of some paramedic treatments in the patient’s home environment	Paramedic care at home often fed back to hospital staff for follow up. Allows all staff the be aware of conditions and treatment. Similar feedback is often not forthcoming in larger urban areas.	Responsibility of paramedic staff to give feedback to enhance overall patient care.

review transcripts, and one participant requested minor changes. Interview transcripts were de-identified and labels such as Paramedic1, etc. assigned.

Critical Incidents were the main form of data in this study, however other data were collected. The relevance of memos has been suggested as a crucial part of grounded theory, and a way of maintaining involvement in the analysis, helping to progress from the reality of codes to theoretical constructs (Charmaz, 2006). The primary researcher kept memos throughout the data collection and analytical process. Additional to memos, information from interviews other than 'rich' critical incidents was used to help inform the development of theoretical constructs. This combination provided a multiple methods approach building a comprehensive picture of paramedic care and IPL and enhancing the credibility of this study (Lincoln & Guba, 1985).

Following constructivist grounded theory this study adopted stages of first (initial) and second cycle coding, from which main concepts and categories could be determined. Initial coding was iterative and incorporated process coding to denote action, and in vivo coding to preserve the language used by participants (Charmaz, 2006).

Second cycle, focused coding, further refined these initial codes, merging those conceptually similar, and discarding any deemed marginal or redundant in order to condense material to develop relevant categories and concepts (Charmaz, 2006). All researchers participated in a review of interview data to obtain consensus on critical incidents and coding. Initially conducted on an independent basis, then followed by group discussion, this process allowed for new ideas to emerge and provided a means by which to resolve potential differences in opinion.

Strengthening the coding process was a procedure of constant comparison of similarities and differences in data. Tied to this constant comparison was theoretical sampling, where developing concepts from ongoing data collection and analysis drove the investigation to seek further information that could either strengthen or refute emerging theory (Charmaz, 2006). In illustration of this, the extended care paramedic cohort were not part of initial recruitment but were later included under theoretical sampling because their close collaboration with community and hospital health providers could provide further insight to emerging concepts.

An important part of the coding process was researcher reflexivity, where memos, field notes, and extensive working experience as a paramedic (PM) combined to add credibility to the findings (Charmaz, 2006). Findings do not present as 'facts' but as 'constructed truths' where defensibility depends on the capacity to present the constructions in a meaningful and useful way (Thorne, Kirkham, & O'Flynn-Magee, 2004).

## Results

Initially, 102 critical incidents were identified and subjected to confirmation by all authors. Twenty-seven critical incidents were determined to not meet 'rich' critical incident inclusion criteria. A total of 75 incidents were subject to further analysis. Of these, four were concerned with training exercises between different professionals and the remaining 71 incorporated episodes of patient care.

**Table 5.** Summary of main concepts and categories.

Main Concepts	Category
Relationships	<b>Professional Acknowledgement</b> – <i>How acknowledgement of the roles and practices of others will aid collaboration.</i> <b>Reciprocity &amp; Respect</b> – <i>The willingness to share knowledge and skills across professions, along with positive and active individual contribution builds working relationships.</i>
Cooperation	<b>Interdependence</b> – <i>A reliance on other professionals to help complement patient care.</i> <b>Communication</b> – <i>The importance of effective communication and feedback in breaking down barriers and promoting collaboration.</i>
Operational Barriers	<b>Protecting Turf</b> – <i>How some professionals wishing to collaborate find themselves restricted from equal participation.</i> <b>Workplace Culture</b> – <i>Where aspects such as hierarchy of gender can obstruct team interactions.</i>

First and second stage coding resulted in 18 focused codes, which were subject to further analysis to develop categories and main concepts. Examination of similarities and differences in focused coding revealed six categories. These were then grouped to create three theoretical concepts: relationships, cooperation and operational barriers.

Table 5 outlines the categories and main concepts, with each unpacked in the following sections. In line with a constructivist-grounded theory approach, the next sections draw on responses from participants to present findings in a way that preserves the intention and language of those participants.

### Concept 1 – relationships

In the main, individuals reported episodes of working together as building collegial working relationships. Two categories of professional acknowledgment and reciprocity and respect helped provide the setting for an advance toward interprofessional learning.

#### Professional acknowledgment

Professionals developed familiarity with each other's roles over time. This sometimes commenced with something as simple as just an introduction but would invariably lead to interaction at more complex levels and extend to sharing knowledge around roles and work practices.

The following response demonstrates how a paramedic could adopt an approach whereby patients were simply delivered to hospital, but instead chose to interact with hospital staff, getting to know how each other would work to provide patient care.

*Shouldn't even bother. Just take them [patients] to the hospital, drop them there and bugger off! But I am trying to be helpful ... they [hospital staff] usually come to us and we share [knowledge and skills] (Paramedic 9).*

A range of professional relationships outside of the traditional doctor, nurse, paramedic was especially evident as part of a diverse rural health community. One paramedic participant noted that 'allied health, physiotherapists or radiologists, pharmacists are all included' (Paramedic 1).

Staff would often attend social events outside of work, and one paramedic gave the example of how he bought some chocolates for the nursing staff after one particularly difficult case. Such relationships would strengthen the basis for



interprofessional interaction, with one nurse even describing paramedics as part of a health care ‘family’.

*Ambulance they were just like colleagues to us. Like we knew them all really well, used to socialise with the ambos, part of the family. It was very close knit (Nurse 9).*

Evolving relationships included the acknowledgment that various members of the rural community could be utilized in the provision of patient care. Several paramedics actively worked within the local community to build awareness of their roles. As the paramedic participant below suggested, this had the effect where some people within the community would assist with manual or first aid tasks when required.

*I love working in a rural area, you have got so many resources available you can use and work with ... the other thing is that you have no professional back up ... it is usually you, but there is always in the local community lots of people you can call on that will assist (Paramedic 8).*

### **Reciprocity and respect**

Reciprocity and respect developed over time and were important to interprofessional interaction. In the response below, a paramedic described building a more positive working relationship with a doctor who was known amongst his colleagues as being difficult to work with. The paramedic made a concerted effort to approach the doctor on a personal and professional level and build up trust and respect. This approach resulted in a congenial rather than obstructive relationship, providing a footing for future interprofessional practice.

*I earned a hell of a lot of brownie points when I first started there, saying hopefully we can work through together and have a team approach and all that kind of stuff ... [This was] compared to some paramedics [who think] I am a paramedic I know what I am doing type thing. As a result, with this particular GP [doctor] I never had any issues with him (Paramedic 5).*

Paramedics could comfortably lead complex medical care situations in a rural hospital environment, or equally so, would accept the leadership roles of others in similar situations. Professionals were not controlling, but seen to enhance communication processes, contributing to outcomes within an interprofessional team.

Such individual effort would not always involve immediate clinical care. Due to the remoteness of some rural locations, some paramedics and volunteers sought to reinforce their professional knowledge by traveling to other areas. Others involved themselves in the education of different professionals which, as in the example below of a paramedic conducting education sessions for nursing staff, led to mutual respect and appreciation.

*I was really worried that we would lose some of those [critical care] skills. I had a conversation with [paramedic] ... he was really happy to share like a 15 minute or half hour [training] session, or, he's done other little things when he's been here, that's probably been fantastic. The nurses have appreciated it (Nurse 7).*

As professional respect strengthened, so did the willingness to share knowledge and skills. The community nurse in the response below had previously attended an information session informing her of the role of extended care paramedics and because of this, a collaborative partnership between the nurse and paramedic ensued.

*I went to a patient ... the community nurse was there. Spoke to her about one of the residents there. I wanted to speak to her ... introduced myself as the ECP. She opened up and was just willing to talk about things (Paramedic 2).*

When paramedics knew of those who had qualifications across several fields, such as paramedicine/nursing, there was willing recognition of these additional skills and knowledge. The following example illustrates where an ambulance volunteer who was also a nurse could assist by setting up intravenous infusions, a skill not practiced by all volunteers.

*I knew how to set up infusions and stuff they [other volunteers/paramedics] were very grateful for my help (Volunteer 2).*

Respecting the value of previous experience was paramount. For example, one paramedic who had previously worked as a community nurse, felt that her past roles enhanced her ability in being able to liaise effectively with other professionals:

*For ten years I worked as a community nurse in a rural area, volunteers and police and hospital, and so you have to work with everyone ... a wound care person, you were everyone ... you had to liaise ... occupational therapists, you would liaise with them in town ... you got the local builder to organise the putting the [hand]rails on, might speak with veterans affairs to get funding for it. So, you coordinated all of that. I suppose I am used to working with lots of people (Paramedic 9).*

### **Concept 2 – cooperation**

The development of personal or professional relationships alone, however, does not necessarily imply a correlation with interprofessional practice. Along with relationships, the ability and willingness of participants to cooperate with each other was an essential feature of interprofessional interaction. Rather than simply work alongside each other, professionals in the areas of this study were interdependent practitioners adopting open communication in collaborative practice.

### **Interdependence**

Interdependence of professions appeared integral to the rural context of this study. In rural hospitals limited numbers of medical staff were available, and paramedics offered extra assistance when required. One nurse participant described how paramedics would assist in the hospital setting:

*They will do it in the hospital if they can. One of the ambos [paramedics] might happen to walk through ... they do bend the rules a bit out in the rural bit. There is only one doctor. They will call the ambulance just for back up (Nurse 9).*

This professional interdependence was more than a proxy solution for limited staffing, and, as the doctor participant expressed, a strong message of mutual reassurance and trust was present:

*I trust the paramedics up here, never been a question of do I trust any of the paramedics, it's really reassuring this far away (Doctor 1).*

It was this mutual reassurance and trust that allowed a transfer of leadership, regardless of profession, to the most appropriate person within an interprofessional team. As one paramedic stated:

*I was able to help. The hospital staff is very good. They don't seem to take offence, someone walking in and taking a leadership role (Paramedic 9).*

With interdependence, evidence also pointed to an extension beyond clinical care to the broader aspects of care. The doctor participant in this study, noted the reassuring effect interdependent working had on providing a holistic approach to patient care:

*Paramedic showed up quickly ... more of the relationship they were working with him ... it was more we will keep the guy calm ... that is something I have noticed ... not just the medical aspect of it (Doctor 1).*

### Communication

Interdependent practice did not just happen and the skill to convey instructions and communicate at a basic level was essential to cooperation. In the following example, during one particularly stressful clinical episode in a hospital, one paramedic managed to calm the situation by bringing everyone back to basic elements of treatment.

*Asked if I could help ... getting back to basics. The patient was ok with airway, breathing circulation, they were talking so that was good ... what they [nurses] were doing was not going so well so I made a suggestion ... and then they did that, and they managed the care part [effectively] (Paramedic 6).*

Critically important in a communication process was the feedback both given and received by different professionals. This would sometimes appear in the format of a formal debrief around patient care:

*The other thing that happens on the island if there is something like that [difficult case] either "lan" or "Jan" [nurses] will often call for a debrief, a team debrief. Which is quite good (Volunteer 5).*

Informal components of IPL were also important. One positive consequence of effective communication and feedback between professionals was the ability to break down potential barriers such as the use of hierarchy as a form of control between colleagues. One rural doctor was identified as especially difficult to deal with, but the paramedic, by adopting a go-slow approach and involving the doctor in a feedback loop of patient care, resulted in a more cooperative approach. In another case, illustrated below, both a paramedic and rural doctor would sometimes question different approaches to treatment, but by informed discussion were able to reach consensus regarding patient care.

*Bounce things off one another ... don't know whether I really agree with it, then he [paramedic] tells me why. I will do some research on that, we both research and come back ... bounce things of each other all the time (Doctor 1).*

### Concept 3 – operational barriers

Building professional relationships and cooperative partnerships encouraged collaborative practice and supported IPL. Operational barriers was a concept used to describe contextual features under which professionals worked and that could restrict interprofessional interaction. Two principal categories included protecting turf and workplace culture.

### Protecting turf

The term protecting turf describes how one group would establish boundaries by which to exclude full participation or joint decision-making by another group.

This often appeared at the ambulance volunteer level, and here language was used to set 'real' paramedics aside from 'volunteers'. One volunteer offered the following statement to this effect:

*Lawyers have their language, medicos have their language, it is exclusive language ... I mean there were abbreviations and I thought I don't know what that is (Volunteer 2).*

As suggested by another participant, this exclusivity of language, without explanation, or context, could serve to alienate and keep a distance between volunteer and salaried paramedic staff:

*It didn't have a context. I thought if you didn't have a background, if you didn't have any idea of the language, you would struggle (Volunteer 2).*

Some health-care professionals wishing to assist with paramedic care found their participation restricted by others, or by operational rules and procedures. In several incidents, some found their existing experience and knowledge commonly ignored, rather than accepted as complementary to paramedic practice. This would often appear when nurses undertook ambulance volunteer training. As one nurse participant stated, there was a reluctance to recognize or acknowledge previous health-care experience when participating as an ambulance volunteer:

*It [training] is only addressing the [volunteer] protocols. There is nothing for Registered Nurses. Like you can't even give ... an aspirin, stuff like that (Nurse 2).*

No profession appeared immune to this, as the following incident that required a doctor to undertake volunteer training illustrates. Despite the extensive medical experience, the doctor was required to undertake a full training course when practicing as a volunteer.

*We have even had a doctor who wanted to do one weekend in six ... after consultation we have had to say, no ... there is no recognition of prior learning with Ambulance Tasmania. Would have to work under the ambulance volunteer protocols. Well, that is an insult to someone who is a surgeon! (Volunteer 3).*

Attempts made to rectify such situations such as the interdisciplinary meeting mentioned below often met with a stalemate regarding recognition of prior learning.

*We did have a big meeting; we had a couple of meetings and I don't think anything has been resolved ... So there is still this gap (Nurse 4).*

This gap further represented protecting turf, that is, of ambulance as a unique practice, and had the consequence of erecting a barrier to IPL. A failure to understand the roles and responsibilities of other professions ignored the contributions each could bring to ambulance practice.

With protecting turf came a disconnect between policy and guidelines and what was happening in practice. Some non-ambulance nursing staff expressed a desire to assist paramedics outside of their hospital working environment but reported being restricted by protocol and policy of both

their own hospital and the ambulance service. Such assistance could be in the form of attending a known incident to assist ambulance volunteer personnel or, as in the following comment, providing patient transfer from one medical facility to another.

*It is outside my scope of practice to transport ... our Director of Nursing will not allow us to transfer. We could go with the ambulance administer morphine or whatever, I can't step outside of the doors of the hospital. I hate that part of working over there! I feel very limited* (Nurse 6).

Although the rationale for this was to ensure hospital staffing levels were not depleted, a participant from one site reported that these rules were extended to medical staff when out of hours, where participation as ambulance volunteers was not permitted.

Paramedics were equally frustrated with operational barriers. For example, requests for helicopter assistance was at times a difficult procedure, and on occasion, paramedics doing so were upset by a lack of respect for their judgment in favor of operational procedure. One paramedic in mentioning this was particularly aggrieved as he was in a stressful situation trying to manage patient care whilst organizing other staff resources:

*I told comms [communication department] to maybe have the helicopter on standby, in the end they didn't ... managing the patient, looking after the volunteers trying to communicate with them, maybe they could just at times respect your judgement a little bit* (Paramedic 9).

A lack of clarity between professions existed regarding operational guidelines. Nurses working on an ambulance as part of their hospital employment could only operate to ambulance volunteer levels. In a hospital environment, for example, a nurse could administer advanced pain relief such as morphine. When participating in ambulance care, pre-hospital guidelines restricted that same nurse to more basic measures. In some cases, these rules would be 'worked around' by nurses consulting with local doctors but this activity was not sanctioned by ambulance protocol.

While a lack of clarity around operational guidelines would restrict the interprofessional practice, such 'work arounds' could be formalized with the help of interprofessional collaboration. The extended care paramedic group, for example had to manage considerable red tape for acceptance on equal footing with other health-care colleagues and to be able to learn new skills, such as urinary catheter care, in the hospital setting.

### Workplace culture

The category workplace culture describes various overlapping areas and cultural aspects of team interaction and practice. Participants revealed areas including gender disparity, hierarchy and bullying/harassment which they perceived to obstruct both intra and interprofessional collaboration.

Gender disparity took either utilitarian or threatening forms. In two separate incidents, female participants cited where males would use driving an ambulance to either terrify (through dangerous driving) or criticize (by saying they were not driving fast enough) their female colleagues:

*... opened the door and I fell out, in a bundle of tears* (Volunteer 5).

*This other man [paramedic], he was like he had small man syndrome! You are not going fast enough; you are holding up the traffic! I was getting really scared* (Nurse 9).

In other incidents, female participants found themselves in situations of dependence. Collaborative working took the form of reliance on physical assistance from male colleagues. Two female hospital-based volunteers, both nurses, attended a violent patient, while male police officers and a paramedic chatted outside the residence.

*It was me and [another female volunteer], we were women going into that scenario! And I would like a little bit more sort of remember that we were women going into that unsafe situation* (Nurse 3).

In contrast, a male paramedic in a similar situation had immediate support.

*Routinely, psych[iatric] patients up here. I get police attendance ... I don't have problems. I won't go to a psych without police at least* (Paramedic 4).

Underlying such incidents was a reported lack of resources in rural areas. In separate events, nurses stated they would call on male paramedics to provide a sense of protection when violent patients presented at the emergency department.

*It is just, it is more of a protective thing. [Paramedic] is nice and tall and strong [laughs]* (Nurse 9).

*I felt safe and secure knowing they [male paramedics] were there* (Nurse 6).

Offering a different perspective to gender disparity, one rural hospital used a male paramedic to teach a local doctor intravenous cannulation, for fear he may be embarrassed if female nursing staff did this. As stated by the nurse participant, 'the RNs [registered nurses] can cannulate, but we didn't want him [doctor] to feel bad' (Nurse 2).

As well as these gender differences, common statements among participants were around those in positions of rank. Positions of rank were often open to misuse. Here, some degree of harassment or bullying could be inferred, where a paramedic had verbally threatened ambulance volunteers, rather than offer constructive advice.

*The paramedic jumped out of the bus, the last one on scene, [she demanded] "put your safety vests on or you will be fired!!" I will never forget who she was* (Volunteer 1).

The impact on interprofessional collaboration could have serious implications. The following response is from an incident which described how poor regard for staff relations by the management of a local rural hospital had led to multiple resignations.

*The bosses in there now have got rid of most of the locals. Resigned on mass, totally bloody officious* (Volunteer 6).

## Discussion

Adopting a rural perspective and asking participants to reveal effective and less effective aspects of collaboration between



paramedics and other professionals, the data from this study generated three main concepts: relationships, cooperation and operational barriers. Each was developed from critical incidents where there was context around that incident, reflection had taken place and participants could identify a learning process. Most incidents described episodes of clinical care. This study extends the definition of IPL from collaborative working through purposeful interaction with service users, acknowledging various methods of learning (Freeth et al., 2005), to include detailed elements of collaboration and interaction.

Findings contribute to an explanation or theory of IPL and paramedic care (Figure 1). Interprofessional learning links to paramedic care in a dynamic process where operational barriers, relationships and cooperation can promote or restrict the learning process. To progress toward interprofessional learning a contextual awareness of operation barriers is paramount. Building cooperative and trusting relationships then helps set the foundations for an environment conducive to interprofessional learning. Within this setting, rather than act in a status quo of siloed response to care, professionals are interdependent, willing to effectively communicate needs in a process of shared practice. This inclusion and common purpose promote an outcome of interprofessional learning and contribute to quality patient care.

The finding of operational barriers is particularly relevant to IPL and helped identify issues that are deeply rooted in paramedic culture. For paramedics, the value of patient care is highly weighted in favor of high acuity and dramatic type work, such that non-emergency care has been referred to as a waste of time by some paramedics (Reynolds, 2008). Along with this is the propensity to measure paramedic effectiveness in terms of response times to cases rather than patient care

outcomes (McCann, Granter, Hyde, & Hassard, 2013; Price, 2006). The establishment of profession-specific language as observed in this study helps reinforce this emergency response culture, but specific language is not unique to paramedic care. Since the eighteenth century, physicians have sought exclusivity in the development of profession-specific knowledge and application (Foucault, 1977). Certainly, such measures help establish professional identity, but these cultural philosophies can also present barriers to interprofessional practice.

Although paramedic professional identity links to acute care, several sub cultures can exist, from operations, to management, to call taking and dispatch (Schein, 1996; Waks, 2008; Wankhade & Brinkman, 2012). Gender disparity represents one unique subculture identified in this study. This is perhaps not surprising, as ambulance practice in Australia has evolved from a male-dominated profession (Howie-Willis, 2009). This study treads new ground in that the role of gender in interprofessional learning is a concept usually investigated in terms of how male or female health-care students differ in their views on interprofessional teamwork (Falk, Hammar, & Nystrom, 2015; Tamas, Edelbring, Hjelm, Hult, & Gimm, 2017), or perform on the Readiness for Interprofessional Learning Scale (RIPLS) (Wilhelmsson, Ponzer, Dahlgren, Timpka, & Faresjo, 2011). The findings from this present study approach gender from a different perspective and suggest both threatening and utilitarian aspects from a working professional standpoint rather than student based. The gender-based observations of some participants help direct future conversation toward suggestions that a primary mechanism hindering interprofessional collaboration is the broader status differences between men and women (Bell, Michalec, & Arenson, 2014).

Professional status pervaded the findings of this study in other ways, including the hierarchy of position, and the

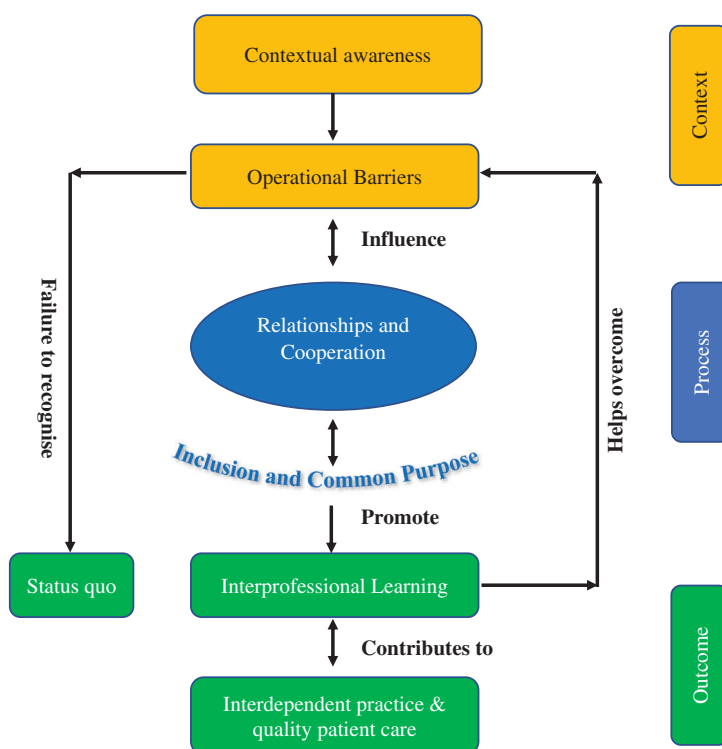


Figure 1. Grounded theory of interprofessional learning and paramedic care.

protection of turf. All point to an awareness of power in IPL. The concept of power is something not previously seen in the investigation of paramedic care and IPL, and indeed, is rarely investigated in terms of interprofessional activity in general (Paradis & Whitehead, 2015). By proposing a theory of IPL and paramedic care where different elements impact IPL, the presence of power, that is, the ability to exercise influence (Lukes, 1974), is multifaceted. An operational context, for example may not always imply barriers to IPL. Political and institutional support for interprofessional initiatives, or the planning and leadership of such initiatives have been noted as imperative when considering the development of successful formal interprofessional programs (Oandasan & Reeves, 2005). So too, clinical governance frameworks attend to professional standards, including issues such as harassment or conflicts of interest (Lennox, 2010) so that interprofessional interaction can be managed positively at an operational level.

The ability to exercise influence extends to other findings. Collaborative relationships require cooperation and it is from this premise, the findings of reciprocity and respect, interdependence and communication play out in a process of IPL. The work that various individuals put into building amicable and workable professional relationships was a powerful adjunct to IPL. Rather than professional control, there existed a shared idea of the value each profession could contribute in the delivery of patient care. Such was the strength of this interdependence that leadership could be transferred to team members based on active cooperation rather than professional hierarchy.

Findings support the valuable link of sharing to interprofessional learning. Sharing incorporates activities by which to develop common goals, increase the effectiveness of leadership, and establish mutual respect and understanding (Smith, Reade, Maar, & Jeeves, 2017). Shared learning opportunities have been behind the development of different paramedic programs where paramedics work in close conjunction with several different health professionals (Mulholland, O'Meara, et al., 2009; Mulholland, Stirling, & Walker, 2009). Sharing of information between professionals is greater than a clinical learning experience and can influence organizational decisions. In rural areas, this has resulted in the implementation of sustained community based medical interventions (Charles et al., 2006; Suchdev et al., 2007). The importance of IPL as part of an interdependent collaborative environment is reflected in the words of one paramedic participant who stated that 'outside agencies are a key part of my role. They are as important as my clinical practice guidelines' (Paramedic 2).

## Limitations

This study was limited to paramedic practice in selected rural settings of Tasmania. Although findings represent various models of paramedic practice and different professions, only one medical practitioner volunteered to participate. Opportunities exist for further investigation outside of Tasmania with larger samples and in other settings, including urban locations.

## Conclusion

The findings of this study have provided new insight to IPL and paramedic care. Presence of operational barriers, development of interprofessional relationships and cooperation combine in a grounded theory of IPL with a central focus of patient care. The concept of power threads its way through the theory and introduces not only ideas of hierarchy or professional dominance but that of gender disparity in IPL. Power is also present in a positive sense, with the sharing of knowledge and skills between different professions influencing how individuals interact within interprofessional teams. While a great deal of work is undertaken in Australia toward the promotion of IPL in undergraduate training, further research could be conducted into the policy framework required to enable collaborative practice between different professionals; the processes involved in establishing relationships and cooperation among health-care providers; and interprofessional differences between models of paramedic practice. Using this theory as fertile ground for further investigation, the research could extend to an exploration of patient outcome based on the trilogy of concepts presented.

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## Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the writing and content of this paper.

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