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### Article abstract

**Background:** During rotations, post-graduate medical residents must learn about interprofessional teamwork and collaboration. Our study examined the role of non-physician healthcare team members in such education, from the perspectives of both residents and team members themselves.

**Methods:** This qualitative study took place in the intensive care unit (ICU) of a teaching hospital in a Canadian city. We conducted semi-structured individual and focus group interviews with both residents (n = 6) and the team members with whom they collaborated: pharmacists, nurses, respiratory therapists, and a social worker (n = 19).

**Results:** We developed a number of themes about interprofessional education (IPE) in this context from the data, including the presence of planned, unplanned, and tacit teaching; the influence of contextual factors like ICU culture, work demands, resident motivation, power hierarchies, and perceptions of 'good' and 'bad' residents; the gap between team member perceptions of their contribution to residents' IP education and residents' own perceptions; and concerns about the transferability of IPE to other contexts.

**Conclusions:** The influence of non-physician team members on residents' IPE in the clinical environment is an understudied topic. While our study was limited to one ICU, the themes that emerged may be of interest to others in similar contexts.



# The perceived contributions of non-physician team members to residents' interprofessional education during a critical care rotation

Les contributions perçues des membres non-médecins de l'équipe à la formation interprofessionnelle des résidents lors d'une rotation en soins intensifs

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## Abstract

During rotations, post-graduate medical residents must learn about interprofessional teamwork and collaboration. Our study examined the role of non-physician healthcare team members in such education, from the perspectives of both residents and team members themselves.

**Methods:** This qualitative study took place in the intensive care unit (ICU) of a teaching hospital in a Canadian city. We conducted semi-structured individual and focus group interviews with both residents ( $n = 6$ ) and the team members with whom they collaborated: pharmacists, nurses, respiratory therapists, and a social worker ( $n = 19$ ).

**Results:** We developed a number of themes about interprofessional education (IPE) in this context from the data, including the presence of planned, unplanned, and tacit teaching; the influence of contextual factors like ICU culture, work demands, resident motivation, power hierarchies, and perceptions of 'good' and 'bad' residents; the gap between team member perceptions of their contribution to residents' IP education and residents' own perceptions; and concerns about the transferability of IPE to other contexts.

**Conclusions:** The influence of non-physician team members on residents' IPE in the clinical environment is an understudied topic. While our study was limited to one ICU, the themes that emerged may be of interest to others in similar contexts

## Résumé

**Contexte :** Au cours des stages, les résidents en médecine doivent apprendre le travail d'équipe et la collaboration interprofessionnelle (IP). Notre étude examine le rôle des membres non-médecins de l'équipe soignante dans cette formation, de leur point de vue et du point de vue des résidents.

**Méthodes :** Cette étude qualitative a été réalisée dans l'unité de soins intensifs (USI) d'un hôpital universitaire dans une ville canadienne. Nous avons mené des entretiens individuels et des groupes de discussion semi-structurés avec les résidents ( $n = 6$ ) et les membres de l'équipe avec lesquels ils collaboraient : des pharmaciens, des infirmières, des inhalothérapeutes et un travailleur social ( $n = 19$ ).

**Résultats :** À partir des données, nous avons dégagé un certain nombre de thèmes sur la formation interprofessionnelle (FIP) dans ce contexte, notamment la présence d'un enseignement planifié, non planifié et tacite; l'influence de facteurs contextuels tels que la culture des soins intensifs, les exigences du travail, la motivation des résidents, les hiérarchies et la perception des résidents comme étant « bons » ou « mauvais »; le décalage entre les perceptions des membres de l'équipe quant à leur contribution à la formation interprofessionnelle des résidents et celles des résidents eux-mêmes; et les préoccupations concernant la transférabilité de la FIP dans d'autres contextes.

**Conclusions :** L'influence des membres non-médecins de l'équipe soignante sur la FIP des résidents en milieu clinique est un sujet peu étudié. Bien que notre étude se limite à une seule unité de soins intensifs, les thèmes qui en sont ressortis pourraient être généralisés à des contextes similaires.

## Introduction

To offer quality patient care, healthcare providers must learn and engage in interprofessional (IP) practice, which is defined as collaboration, partnership or teamwork between two or more different professionals engaged in care.<sup>1,2,3</sup> Interprofessional education (IPE) is defined as “occasions when two or more professions learn with, from and about each other to improve collaboration and quality of care.”<sup>1</sup> While IPE in undergraduate medical programs are well documented, IPE in post-graduate medical education (PGME) in clinical contexts is less well understood.<sup>1,4</sup>

Most PGME occurs in the workplace, where residents (physicians-in-training) are expected to learn both from attending physicians who supervise them and through their participation in healthcare teams.<sup>5,6</sup> Workplace literature suggests that learning often occurs informally, socially or opportunistically.<sup>7,8,9</sup> Non-physicians in teams may thus contribute significantly to IPE, whether formally, informally or tacitly – in a manner that is not currently recognized by PGME literature.

In this study, we sought to address this gap, conducting qualitative interviews and using social constructivist and sociomaterial lenses from workplace learning literature in order to 1) explore how non-physician members of an ICU health care team perceived their contributions to residents’ IPE during the ICU rotation, and 2) explore how residents themselves perceived these contributions.

## Methods

### Setting

We conducted the study in a 32-bed ICU in an urban academic hospital in Ontario. Care was provided by an IP healthcare team including physicians, residents registered nurses (RN), respiratory therapists (RT), pharmacists, dietitians, physiotherapists and a social worker. We obtained REB approval prior to the commencement of research, from both the authors’ university and the hospital.

### Participants

We recruited participants from several professions. Table 1 shows their professional designations and data collection methods. Informed consent was obtained in writing from each participant prior to data collection.

*Table 1. Participants and data collection methods*

Individual interviews	#	Data collection method
Pharmacist	2	Individual interviews
Social Worker	1	Individual interview
Dietician	0	n/a
Physiotherapist	0	n/a
Medical Resident	6	One focus group
Registered nurse	5	One individual interview, one focus group
Registered respiratory therapist	11	Two focus groups
<b>Total</b>	<b>25</b>	<b>8</b>

### Study design and data analysis

We employed a qualitative approach; participants’ perceptions were shared in four semi-structured individual interviews (average 40 minutes) and four semi-structured focus group interviews (average 47 minutes). Representative examples of the questions are provided in Table 2 below. We analyzed data in accordance with Creswell’s inductive thematic analysis, first reviewing transcripts to gain a general sense of the data and then coding and categorizing using NVivo software.<sup>10</sup> As described above, we used social constructivism and sociomaterial learning theory as frames to interpret these qualitative data.

### Findings

Our analysis showed that participant data clustered around two general topics related to the perceived contribution of team members to residents’ IPE: How IPE was taught and contextual influences. Themes related to these topics are illustrated with brief quotations.

*Table 2. Sample representative interview questions.*

All participants were asked the same questions, which were adapted to apply to their respective roles. The questions were grouped into three topics: *Context*, *Medical Education*, and *Collaborative Practice*. One representative example of questions asked under each topic are provided below.

**Context:** Participants were asked to describe the ICU as well as their role within the health care team.

**Medical Education:** Tell me what comes to mind when you hear “During the ICU rotation [RNs, RT, social workers, pharmacist] contribute to the residents’ education by...” (Probes: How, in what way, give examples)

**Collaborative Practice:** What strategies do you use to decide whether to ‘trust’ a [resident or team member]?

### How IPE was taught

Non-physician team members believed they taught residents important IP knowledge and skills, such as role clarification, trust and communication. As one nurse

emphasized to residents, “[y]ou got to talk to us; I can’t read your mind” (RN-6). Residents did not, however, explicitly recognize these IPE contributions. Instead, they focused on ICU-specific skills and capabilities that non-physicians taught them such as “intubation, central lines... management of acutely ill patients...” (Resident-5) and “what the capabilities are of the ICU and the monitoring as compared to the floor” (Resident-3).

Team members’ IPE teaching strategies took three general forms: Planned teaching sessions, unplanned teaching during practice, and tacit teaching or guidance.

Planned teaching sessions occurred during interprofessional patient rounds. For instance, “pharmacists talk about drugs, dieticians talk about nutrition” (PharmD-1). These sessions served both to supplement residents’ knowledge base and to clarify professional roles: “I think even after one day of being on rounds and being on service, you pick up very quickly on what everyone’s roles are” (Resident-3).

Participants often took advantage of unplanned opportunities to deliver explicit but informal teaching during practice: “I find questions on ventilation [from residents] normally are in a circumstance where we might be having difficulty ventilating the patient” (RT-3).

Tacit IPE teaching took several forms. One was team members’ modelling of IP practice. Several team members observed, however, that even more influential than their own behavior was that of senior physicians, who modelled “being receptive to every profession” (RT-4). Tacit teaching of collaboration also occurred when team members helped residents accomplish tasks such as discharge planning. As the social worker explained, “[if] I help them discharge a patient...then they’re like, ‘look you got to go use [names self].”

### Contextual influences

Apart from how IPE was taught, our analysis revealed the importance – for understanding and supporting IPE – of contextual factors like ICU culture, work demands, resident motivation, power hierarchies and perceptions of ‘good’ and ‘bad’ residents.

Team members explained that the strong culture of collaborative IP practice in the ICU is born out of necessity: “[T]here’s so many things happening; you need more than one set of hands” (RN-6). Residents concurred: “I think it’s almost the perfect example of interprofessional collaboration, because it’s so important that all of these

perspectives are involved in decision making...missing one would harm to [sic] your patient” (Resident-6).

Team-members noted a tension between engaging residents in IPE and getting work done safely: “[I]t’s just so much easier for me just to do it for you than to teach you how to do it” (PharmD-1). This was especially critical at the beginning of rotations when residents were least experienced.

Residents were motivated to learn and participate in IP practice if they saw the relevance for their future career plans: “[It] depends upon where they’re headed in their life, and whether they see it as valuable” (SW). Residents’ motivation also influenced efforts to teach them: “Well if you got somebody who is eager to learn and is asking questions, you spend...more positive energy trying to encourage them” (RN-4). The imperative of preparing for rounds provided residents with motivation to work collaboratively. When asked if any team member helped them prepare for rounds, one focus group of residents replied in unison: “Nurses.”

Resident-4 added: “If you don’t talk to them, you’re in trouble. They’ll tell you where rounds are going to go. They pretty much know ahead of time because they’re so experienced. They can make you or break you here.”

Both residents and team members stated that IP hierarchies within the ICU were minor: “I think it [the hierarchy] is relatively flat and I think that’s one of the reasons I like working in this environment ...all individuals’ opinions [are] valued” (PharmD-2); “There’s no right answer so it becomes who’s the person speaking more strongly” (Resident-4). Some power tensions were evident, though. For example, there was some evidence of alliance formation [“we (RN and RT) are kind of a unified front to discuss with the resident” (RT-6)] and disengagement, such as when an RT remained silent after an inexperienced resident insisted on performing an intubation themselves.

Finally, the perceived receptiveness of residents to IPE affected non-physician teaching efforts. Team members perceived ‘good residents’ as being comfortable “admitting they don’t know,” “asking for help,” “taking suggestions” (RN-2), or “asking me the right questions” (RT-9). They were more willing to collaborate with such ‘good residents.’ Conversely, team members were hesitant to collaborate with ‘bad residents’ who were “not open to input from myself or the bedside nurse, who actually has more experience...at the jeopardy of the patient’s care” (PharmD-2). Such confident behavior was, however,

tolerated from experienced residents if they “really, really, really know their stuff” (RN-6).

## Discussion

This study explored how non-physician ICU team members contributed to residents’ IPE, from both their perspectives and those of the residents. We did so in order to investigate the often neglected role of IP social interactions, context and other aspects of the “hidden curriculum” in PGME.

In line with both the practical nature of PGME and existing workplace learning literature,<sup>7,8,9</sup> we found that much of the IPE occurred through unplanned, informal and tacit interactions—often referred to as the “hidden curriculum.”<sup>11</sup> Unfortunately, residents tended not to recognize IPE that occurred through these interactions, focusing instead on technical ICU skills.

Team members’ perceptions of residents also played a significant role in IPE opportunities: Being receptive to team member input (thus being a ‘good’ resident) led to more opportunities for collaborative learning.

Residents are expected to demonstrate teamwork, collaboration and leadership skills during their rotation. But such skills are evaluated only by attending physicians. Team members may indirectly influence these evaluations—not necessarily in an unbiased manner—but their influence is absent in the literature.<sup>12</sup>

We speculate that this lack of appreciation of the value, for IPE, of tacit and informal interactions with team members is related to traditional assumptions about learning as a commodity that must be acquired and transferred in formal settings. Alternative perspectives that characterize learning in more informal and interactional terms have emerged; these may help medical educators rethink how PGME is understood and evaluated.<sup>7,8,9,13</sup>

Power dynamics play an important role in IPE.<sup>2</sup> A more nuanced, fluid understanding of power may also help improve IPE in PGME, one that acknowledges the effect, on *learning*, of issues like alliance formation and disengagement.

A final issue that arose concerned transferability of IPE in the ICU. Social constructivist and sociomaterial theories assert that people’s learning can be seen as adaptation or attunement to local norms, tools and practices; learning therefore cannot be easily separated from the particular contexts in which it arises.<sup>9,12,14</sup> From these theoretical perspectives, then, we question whether residents who

experience IPE in the ICU will be able to easily transfer this learning and collaborate effectively in different contexts.

## Conclusion

The contribution of non-physician team members to the residents’ IPE is an under-researched topic. Our study was limited to one ICU and the perceptions of a limited number [25] of health professionals. Even so, we were able to articulate a number of themes and tensions that may be of interest to others in similar contexts.

**Conflicts of Interest:** Nothing to disclose.

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