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Research paper

Team dynamics in a COVID-19 intensive care unit: A qualitative study

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Abstract

Background: During the COVID-19 pandemic, new intensive care units (ICUs) were created and clinicians were assigned or volunteered to work in these ICUs. These new ICU teams were newly formed and may have had varying practice styles which could affect team dynamics. The purpose of our qualitative descriptive study was to explore clinician perceptions of team dynamics in this newly formed ICU and specifically understand the challenges and potential improvements in this environment to guide future planning and preparedness in ICUs.

Methods: We conducted 14 semistructured one-on-one interviews with six nurses and eight physicians from a newly formed 36- to 50-bed medical ICU designed for COVID-19 patients in a teaching hospital. We purposively sampled and recruited ICU nurses, medical/surgical nurses, fellows, and attending physicians (with pulmonary/critical care and anaesthesia training) to participate. Participants were asked about team dynamics in the ICU, its challenges, and potential solutions. We then used a rapid analytic approach by first deductively categorising interview data into themes, based on our interview guide, to create a unique data summary for each interview. Then, these data were transferred to a matrix to compare data across all interviews and inductively analysed these data to provide deeper insights into team dynamics in ICUs.

Results: We identified two themes that impacted team dynamics positively (facilitator) and negatively (barrier): interpersonal factors (individual character traits and interactions among clinicians) and structural factors (unit-level factors affecting workflow, organisation, and administration). Clinicians had several suggestions to improve team dynamics (e.g., scheduling to ensure clinicians familiar with one another worked together, standardisation of care processes across teams, and disciplines).

Conclusions: In a newly formed COVID ICU, interpersonal factors and structural factors impacted the team’s ability to work together. Considering team dynamics during ICU reorganisation is crucial and requires thoughtful attention to interpersonal and structural factors.

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1. Introduction

Since March 2020, hospitals and healthcare systems have been forced to rapidly create and/or reconfigure care environments, particularly intensive care units (ICUs), to manage the overwhelming surges of COVID-19 patients.1,2 The massive influx of critically ill adults also required healthcare systems and hospitals to redeploy nurses, physicians, and other clinicians from many care settings, with or without ICU experience, to work in these newly formed ICUs.3

In the ICU, interprofessional teams and their ability to work together are integral to high-quality patient care.12 Clinicians must work together to manage sedation and provide haemodynamic monitoring and treatment and ventilator management to support the patient and their multiorgan failure. The ability of the ICU team to work together effectively to provide high-quality care has been challenging, even before the COVID-19 pandemic.5,6,7 A high-intensity, fast-paced environment, clinicians who change every shift,
and rapidly evolving patient care needs make it difficult for teams to form effectively and then for these teams to work together effectively and deliver high-quality patient care. Additionally, demands that impacted the ability of teams to work together may have been introduced during COVID-19 and with the associated restructuring of care teams and care settings that occurred as a result. Since it is likely that other stressors will continue to impact healthcare systems (e.g., pandemic or otherwise), understanding what healthcare systems, hospitals, administrators, and clinicians can do to enhance opportunities for ICU teams to work together in rapidly changing environments is imperative.

Thus, our primary research question in this qualitative descriptive study was, how were team dynamics impacted during the development of new ICUs to care for COVID-19 patients? What were the challenges to team dynamics and what are some possible solutions? To answer this question, we examined the rapid development of a 36- to 50-bed ICU in spring 2020 in a single teaching medical centre to explore clinician perceptions of team dynamics in this newly formed ICU and specifically understand the challenges and potential improvements to guide future planning and preparedness in ICUs.

2. Methods

2.1. Design

Our team conducted a qualitative descriptive study, conducting semistructured interviews, consistent with our research question to examine team dynamics in a newly formed ICU from clinicians' perspectives. We followed the consolidated criteria for reporting qualitative research (COREQ) guidelines for reporting of qualitative data.15

2.2. Setting

Our study site was a newly formed 36- to 50-bed ICU designed specifically to care for COVID-19 adult patients in a teaching hospital in the United States. The teaching hospital is a large quaternary care hospital, with adult and paediatric services.

2.3. Participants

We conducted semistructured interviews with 14 clinicians (6 nurses [3 ICU registered nurses (RNs) and 3 moderate care RNs] and 8 physicians) who worked in our study ICU. Moderate care RNs are nurses who have medical-surgical nursing (or similar) experience but who do not have ICU experience or training. Clinicians working in this unit had volunteered or were assigned to work there from their primary work setting (another unit or service in the teaching hospital). Those without ICU experience received a brief orientation to the unit but otherwise received no formal training. Inclusion criteria included nurses working in the COVID-19 designated ICU, 18 years of age or older, English speaking, and agreed to participate. Participants were identified from a convenience sample (all participants in the study ICU) to include nurses and physicians who volunteered or were assigned to work in this new unit from other settings, such as ICU nurses, medical/surgical nurses, pulmonary critical care fellows, anaesthesia fellows, and attending physicians (pulmonary critical care and anaesthesia); our sample did not include other clinician types such as physiotherapists or social workers. After emailing all the clinicians in the study ICU, we communicated with a total of 22 clinicians, eight of whom declined our invitation to participate.

2.4. Procedure

Research team members (D.K.C. and N.W.) emailed ICU clinicians explaining the project and its purpose. Once participants were identified as eligible and agreed to participate, interviews were conducted via a virtual meeting platform and lasted approximately 45 min. All interviews were conducted by one co-author (N.W.), a male masters prepared anthropologist (no clinical training) with 6 years of experience conducting qualitative research who was working as a research associate; no other individuals were present during the interviews. Participants may have met or been familiar with the research of PI (D.K.C.) from other studies conducted at the site hospital. Informed consent was obtained from each participant at the time of their interview. Interview questions followed an interview guide and asked clinicians to reflect on topics such as team dynamics in the ICU, potential issues and/or areas of interpersonal conflict, and possible solutions to challenges (see Supplementary Material). All interviews were audio recorded and lasted approximately 30–45 min, and brief field notes were taken during the interviews by the interviewer (N.W.). All participants who agreed to participate completed an interview; no participants dropped out, and we did not conduct any repeat interviews. We conducted interviews with our first 8 participants to ensure that we had reached saturation and were not identifying any additional themes or new information.10–12 Due to funding constraints, we did not provide tokens of appreciation for participation. This study was determined to be exempt from approval after review by the University of Michigan Institutional Review Board (HUM00180571).

2.5. Data analysis

To ensure prompt integration of our findings into the clinical setting as well as more rapid dissemination of our results to the broader critical care community facing similar challenges, our study team used a rapid analytic approach to explore clinicians' perspectives on team dynamics in the newly formed ICU.15,24 Our rapid analytic approach involved two independent research team members listening to the audio files of each interview15 and then generating a data summary for each interview.6 For each data summary, data from each interview were deductively categorized into themes based on our interview guide by two research team members working independently (see Supplementary Material for data summary template). We created two data summaries and data categorisations per interview; this step was completed by three research team members (N.W., A.M.P., and O.H.). A third research team member (N.W.) then merged the two data summaries for each interview to ensure all data were captured. This merging process consisted of combining the content from the two summaries into a larger, more detailed summary, combining categories or data that were similar or the same and making sure that any differences in data categorisation were discussed by research team members. Using a similar approach to reduce data and generate digestible data summaries as others have done,16 we then transferred these data into a summary matrix which allowed researchers to compare data across all interviews and to synthesise the data to create succinct and actionable data reports. After concluding all interviews, all data summaries were then reanalysed inductively by one study team member (N.W.) and reviewed in a team meeting with multiple research team members (N.W., A.M.P., O.H., and D.K.C.) to provide deeper insights into clinicians' unique perspectives and suggested solutions for improving team dynamics in the COVID ICU. This rapid analytic approach, of first deductive and then inductive coding, has been shown to generate rigorous findings compared to traditional qualitative methods.15,17
Rigour and trustworthiness of our methods was addressed in several ways. First, to address credibility, our data analysts were team members who had experience conducting qualitative research and had familiarity with the critical care environment (N.W. and D.K.C. each had 6 years of qualitative research experience, and O.H. and A.M.P. had worked as research assistants collecting and analysing qualitative data in ICUs for at least 1 year). As a team, we debriefed about the interviews and analysis during team meetings, which included a discussion of reflexivity and our positoriality, and we maintained field notes from all interviews. To address confirmability, we included three independent data analysts—one who conducted the interviews (N.W.) and two others not involved in data collection (O.H. and A.M.P.). Data analysis and matrices were shared with the research team and discussed at team meetings. Through field notes and during team meetings, we discussed our positionalitity and how that may impact data collection and/or findings. To address dependability, we maintained detailed notes of data collection and analytic processes; we also describe our data collection and analytic process in detail. To address transferability, we recruitment participants with different experience in the teaching hospital (e.g., ICU nurses vs. moderate care nurses) to receive input from various perspectives.

3. Results

We conducted 14 interviews (6 nurses and 8 physicians); three (50%) nurses identified as ICU nurses and three (50%) identified as moderate care nurses in some interviews but otherwise known as ward nurses.

From analysis of these interviews, we identified two themes that affected team dynamics in this newly formed ICU—interpersonal and interprofessional factors described as individual character traits and relationships between clinicians that affected team dynamics and structural factors—and more specifically how the unit was organised, functioned, and maintained through changes in processes, administrative methods, and protocols/guidelines. Within these two themes, there were several subthemes that either facilitated or hindered team dynamics (see Table 1). Clinicians also provided specific suggestions as to how to improve ICU team dynamics in this ICU and in this context (see Table 2).

3.1. Theme #1: Interpersonal factors between clinicians affected team dynamics

Interpersonal factors were individual character traits and relationships between clinicians and different clinical roles that affected team interactions and professional relationships. We found several subthemes that were facilitators and/or barriers to team dynamics: communication and teamwork, familiarity, attitude and personality, team satisfaction, team nursing model, and other processes, administrative methods, and protocols/guidelines. Within these two themes, there were several subthemes that either facilitated or hindered team dynamics (See Table 1). Clinicians also provided specific suggestions as to how to improve ICU team dynamics in this ICU and in this context (see Table 2).

3.1.1. Communication and teamwork

Clinicians described how positive experiences, while in the newly formed ICU, communicating and working with other team members reinforced positive team dynamics. For example, respondents described attending physicians making a concerted effort to support staff through explicit communication and discussion that reinforced the positive team dynamics.

3.1.2. Familiarity

Familiarity was identified as both a facilitator and barrier to team dynamics. Clinicians described that knowing one another enabled them to carry out their job more effectively (facilitator) or alternatively and that not knowing another impacted their team’s ability to function (barrier). Nurses and physicians that previously worked together in the same home unit, prior to being deployed to the newly formed COVID ICU, were reported to help support positive team dynamics. For example, nurses and physicians described how familiarity was helpful. A physician indicated that,

“Fortunately, a good number of the nurses were [from] our normal ICU so I knew them personally, they knew me. So that kind of, that definitely helped. They knew how we kind of manage our patients so that was helpful when we’d have one of our own nurses” (MD1).

In contrast, when clinicians were working together that either did not know another or did not know one another’s practice styles (i.e., medical ICU nurses working with surgeons as ICU attendings), this led to reduced levels of trust and, at times, conflict which impacted team dynamics. For example, nurses described instances in which physicians entered orders that the nurses viewed as inappropriate or increases a nurse’s risk to exposure, which led to conflict.

“there was a doctor who wrote in orders ... and they refused to do something that we standardly do when someone is dying and instead, they ordered something in a way that would put me in the room every single hour. And we are trying to limit our exposure for time in the room. And I brought that concern up two different times and they wouldn’t budge” (RN1).

Lack of familiarity among nurses was described as problematic as well.

“There’s always one charge RN who, who’s the leader on the unit. And, and that’s also hard because you have to communicate with them and you don’t even know them. You know you’re not really familiar with them. (RN4)

3.1.3. Attitude and personality

An individual clinician’s attitude or personality traits impacted how the other team members viewed the clinician which, in turn, helped facilitate how they could work together (Table 1). A positive attitude towards the team in the COVID ICU was a helpful approach to supporting team dynamics. When individuals were approachable and provided space for the team members to share and express discomfort, fear, or grief, the team was able to work together effectively.

3.1.4. Team satisfaction

Clinicians reported an overall satisfaction and belief that the team did their best to adapt to the rapidly changing environment which further reinforced positive team dynamics.

“I think, we’ve had a lot of camaraderie, especially on nights where we’re just kind of all in this together, we’re all in this crisis and we’re just doing the best that we can and that’s helped us come together. (RN4)

3.1.5. Team nursing model

Like many COVID-19 ICUs, this unit transitioned to a team nursing model, where experienced ICU nurses were paired with “moderate care” nurses (in other words, nurses who had stepdown or general ward nursing experience) and patient care technicians.
### Table 1
Facilitators and barriers to team dynamics in a newly formed COVID-19 ICU.

| Subtheme | Definition | Example |
|----------|------------|---------|
| **Facilitators** | | |
| Communication & Teamwork | Positive experience in communicating with team members and working with one another effectively | - Attending physicians made effort to support staff through explicit communication and discussion “… most of the time the team, the attendings, or residents … you couldn’t even tell the difference between the attending and the residents because they were all just really laid back and willing to teach you and all of the attendings that I have experienced were really open and willing.” (RNS) - Existing familiarity between MDs and RNs from same home unit was a positive facilitator “… fortunately a good number of the nurses were [from] our normal ICU, so I knew them personally, they knew me. So that kind of, that definitely helped. They knew how we kind of manage our patients so that was helpful when we’d have one of our own nurses…” (MD1) |
| Familiarity | Knowing one another enables clinicians to carry out responsibilities more effectively | - Individuals being approachable and providing space for staff to express any discomfort/fear “… but in nursing especially, if you have one person whose really just doesn’t have a good personality type to work with it can kind of create problems in all of the teamwork … but here everybody really wants to be there … I think everyone’s very positive and just generally has a positive personality.” (RNs) |
| Attitude & Personality | Individual’s attitude and/or personality traits that affect how others perceive them and how they work with colleagues | |
| Team Satisfaction | Positive feeling towards the team and its approach to working in the COVID environment | - Overall attitude that everyone did their best to adapt to changing and difficult environment “I think it’s important to note how much everybody has done. And the positives. Like the negatives are so few, and the challenges, although they are great, I think it’s remarkable and absolutely impressive how much people have really stepped up to the plate.” (RNs) |
| **Barriers** | | |
| Familiarity | Lack of clinicians knowing one another and knowing the different practice styles caused tension and conflict among RN and MD and affecting patient care and team function | - Lack of familiarity with clinician practice style meant reduced levels of trust E.g., MDs placing orders RNs find inappropriate for their patients and increasing RNs exposure within rooms “… there was a doctor who wrote in orders … and they refused to do something that we standardly do when someone is dying and instead they ordered something in a way that would put me in the room every single hour. And we are trying to limit our exposure for time in the room. And I brought that concern up two different times and they wouldn’t budge.” (RN1) |
| Team Nursing Model | Lack of understanding of the implications of team nursing on unit function and confusion about differing RN roles within team nursing model | - Expectation levels of RNs were not feasible from the start - ICU RNs finding it hard to delegate tasks not knowing from whom or how they are supposed to receive help with care “I mean everyone was basically a sharpshooter in the first few weeks or two weeks or whatever it was. So, every single person there was qualified to take, you know, anything, basically. And so, super strong nurses, absolutely jumping on whatever needed to be done. But when we switched to team nursing then of course you have peds, general care, and any person that comes from ambulatory care, that is the floats, and then moderate care nurses are the assistants and then the ICU nurses take the team. So then now you have this drastically changed team of, instead of one hundred percent rock star ICU nurses there are those that are afraid, and those that are timid, and those that are amazing.” (RNs) |
| Other RN Roles and Outside Services | Complementary RN roles unique to new unit that affect unit operations and additional outside services coming to unit and disrupting unit function | - Biomedical engineer directing RN from outside patient room on how to troubleshoot a malfunctioning machine - Tension directed towards travel RNs due to variation in standards of care (travel nurses are agency or temporary staff nurses that are contracted to work at the hospital a pre-specified contract length (e.g., 6–12 weeks)) “So one thing that has… been difficult for me to understand is some of the travel nurses that they have brought in … they are like blatantly disrespectful of our institution … I’ll hear them openly saying poor things about the providers and the decisions that they’re making … and I find that their level of care is not up to our standards … But it’s like a not pleasant work environment when they’re like always late or always on their phone. Not spending times in their rooms. And then they expect more work from me…” (RN1) |

### Structural factors: Unit-level factors that affected unit workflow, organisation, and management (including processes, protocols, guidelines) and team dynamics

| Subtheme | Definition | Example |
|----------|------------|---------|
| **Facilitators** | | |
| Workflow | Categorised behaviours as well as practice styles and approaches (at a unit or discipline level) that lead to positive collaboration and interaction | - All efforts made to make sure RN was present and included in rounds to establish care plan and cluster RN duties |
| Leadership | Actions taken by leadership that promote and facilitate positive clinical function | - Onboarding to unit from trusted leadership was beneficial to initial engagement |
| Roles | Other roles besides RN—R—MD triad that contribute to positive unit functionality | - Other crucial roles included: EVS team, Unit clerks, Biomed, and Pharmacy “EVS for sure. The safety monitors for sure. The leadership is fantastic. … Honestly, everybody, maintenance, biomed, every single person who comes up there is so pivotal that like we couldn’t do it without them. Period. In any, way shape or form. Like the whole system would fall without any piece of that moving puzzle. I’m trying to think if there is anybody that we could do without. There really isn’t. There just isn’t anybody. Even the clerks. We just couldn’t do without them.” (RN2) |
| **Barriers** | | |
| Leadership | Actions, or lack thereof, from leadership that contributed to negative team function | - Not going into rooms and standing in hallway assessing patient care being delivered by RNs “… every person that designed this can’t assess the situation from the hallway … the managers, the administrators, even the doctors because most of them don’t go in the rooms. The doctor’s or the directors, you must don, go in the room, do anything and then leave the room. That’s the only way you can understand the pain of those masks, the pressure ulcers on the nose, the inability to pee, sweating and feeling like its one-hundred degrees and then knowing there’s a patient outside that room that could die because you’re responsible for them. That’s what we have to go through … we have all these administrators going to the unit to assess the unit, to assess the nurses. …No one can understand it.” (RN3) |
Physicians and nurses described the team nursing model as a barrier to team dynamics (see Table 1). There was a lack of understanding of the roles and function of each nurse within the team. With the team nursing model, participants described expectations of nurses were not clear, to nurses or physicians. In addition, ICU nurses found it challenging to delegate tasks to others without a clear understanding of the experience or qualifications of the other nurses. One nurse describes,

“I mean everyone was basically a sharpshooter in the first few weeks or two weeks or whatever it was. So, every single person there was qualified to take, you know, anything, basically. And so, super strong nurses, absolutely jumping on whatever needed to be done. But when we switched to team nursing then of course you have peds, general care, and any person that comes from ambulatory care, that is the floats, and then moderate care nurses are the assistants and then the ICU nurses takes the team. So then now you have this drastically changed team of, instead of one hundred percent rock star ICU nurses there are those that are afraid, and those that are timid, and those that are amazing.” (RN3)

3.1.6. Other nursing roles and outside services
Additional and complementary nursing roles, such as agency nurses, created tension among nurses due to variation in expectations and understanding of standards of care. This was particularly apparent for some nurses when working with agency nurses. For example, one nurse described,

“So one thing that has... been difficult for me to understand is some of the travel nurses that they have brought in... they are like blatantly disrespectful of our institution... I’ll hear them openly saying poor things about the providers and the decisions that they’re making... and I find that their level of care is not up to our standards... But it’s like a not pleasant work environment when they’re like always late or always on their phone. Not spending times in their rooms. And then they expect more work from me...” (RN1)

Additional roles, such as biomedical engineering, which was assisting with technology troubleshooting, were also reported as creating barriers to effective team dynamics (Table 1).

3.2. Theme #2: Structural factors were unit-level factors that affected unit workflow, organisation, and management (including processes, protocols, and guidelines) and team dynamics.

Structural factors were unit-level factors such as unit workflow, organisation, and management (including processes, protocols, and guidelines) (see Table 1). There were several subthemes that related to structural factors that affected the ICU team dynamics such as workflow, leadership, access to learning opportunities, resources, and personal protective equipment (PPE), roles, looking to the future, and scope of practice and experience.

3.2.1. Workflow
The subtheme of workflow was perceived primarily as a facilitator. Workflow was described as behaviours and/or practice styles and approaches of a unit or discipline that helped facilitate collaboration among the team members. For example, clinicians described efforts to ensure the nurse was present during rounds to establish a care plan for the patient or to ensure the nurse understood the patient care needs and activities for the day (Table 1); this was described as a workflow approach that helped the nurse to organise their day and ‘cluster’ their care for each patient which helped to facilitate effective team dynamics.

3.2.2. Leadership
Leadership was a subtheme that was described as both a facilitator and barrier. Facilitative leadership, such as onboarding clinicians to a unit by a trusted leader, was one approach that assisted in enhancing team dynamics. In contrast, leadership could serve as a barrier when clinicians perceived the leadership actions to not be in support of positive team dynamics. For example, when leaders stood in the hallway to assess patients, were without entering rooms or observed the unit but did not enter rooms; clinicians viewed this as an unsupportive behaviour by the leaders. A nurse describes this issue as,

“... every person that designed this can’t assess the situation from the hallway ... the managers, the administrators, even the doctors because most of them don’t go in the rooms. The doctor’s or the directors, you must don, go in the room, do anything and then leave the room. That’s the only way you can understand the pain of those masks, the pressure ulcers on the nose, the inability to pee,
3.2.3. Roles

There were other roles, in addition to the nurse, physician, and respiratory therapist (who in American ICUs is responsible for ventilator management), that were reported to add to positive team dynamics and function. These roles included environmental services (EVS), unit clerks, biomedical engineering, and pharmacy; the presence of these roles helped the team work together more effectively to deliver care to COVID-19 patients. A nurse described the integral role these individuals played in the ability for the ICU to care for the COVID-19 patients,

"Honestly, everybody, maintenance, biomed, every single person who comes up there is so pivotal that like we couldn’t do it without them. Period. In any, way shape or form. Like, the, the whole system would fail without any piece of that moving puzzle. I’m trying to think if there is anybody that we could do without. There really isn’t. There just isn’t anybody. Even the clerks. We just couldn’t do without them." (RN3)

3.2.4. Resources and PPE

Lack of necessary resources, including PPE, was cited as a key barrier to effective team dynamics and patient care. More specifically, there was limited availability of powered air purifying respirator machines. Lack of (or limited availability of) powered air purifying respirator machines created tension among the team as some clinicians wanted to use them when they were not available or being used by another clinician (Table 1).

3.2.5. Looking to the future

Clinicians who worked in the unit described concerns about the long-term functionality of the unit and team for future patient surges, based on the experience they had in the unit and as a team to date. Clinicians were concerned that “adrenaline would wear off” and burnout would increase dramatically, which would impact the team’s ability to function effectively in future surges. This was described as a possible barrier to effective team dynamics in the future.
3.2.6. Scope of practice and experience

Due to staffing constraints, clinicians who did not have experience in adult critical care were, at times, assigned to care for patients in this ICU. For example, some paediatric ICU clinicians might have been uncomfortable with adult ventilator settings or weaning protocols for adult patients (which differ in paediatric settings) which led to tension about appropriate patient care practices, ultimately impacting the team’s perceptions of their ability to work together effectively. This was especially evident with respiratory therapists, who, in the United States, manage the patient’s ventilator and collaborate with the nurses to provide ventilator care. A physician indicates,

“I do think respiratory was an issue because these were not adult respiratory therapists; they were pediatric respiratory therapists for the most part and so they would use ventilator modes that we are not used to using in the [adult ICU] and that we are not comfortable using and often times would push back on not wanting to do it a different way. So that became a little frustrating and there was kind of a less, less aggressive weaning of ventilator support then we would normally do” (MD2)

3.3. Suggested solutions

Interviewees provided several solutions to improve team dynamics in the specific context of a newly created ICU to manage a surge of COVID-19 patients (Table 2). Similarly, these suggestions centred around two key themes: interpersonal and interprofessional changes (pertaining to interpersonal relationships within the unit) and structural changes (pertaining to the unit procedures, processes, and other organisational aspects) (see Table 2). The main theme for interpersonal changes was to create more positive and functional interpersonal and interprofessional interactions among the team focused on familiarity. These were changes that maximised the interactions among clinicians as an explicit way of team members getting to know one another and creating team bonds. Some suggested ways to accomplish this was to attempt to schedule nurses and physicians from the same home unit at the same time to enhance familiarity among the team to help to create a more positive team dynamic.

Regarding structural changes, there were multiple subcategories of structural changes which included care process and workflow redesign, administration, resources, training, and protocol-related changes. Structural solutions, for example, included standardisation of care processes across unit teams (creating a COVID-19 ICU standard for sedation, extubation practices, etc., an example of care process and workflow redesign), enhancement of focused training for nurses without ICU experience who desired more patient responsibility (example of training), or protocol-related changes such as designated guidance to all nurses regarding moderate care nurses’ roles and responsibilities.

4. Discussion

In a newly formed ICU during the COVID pandemic in a single teaching hospital, interpersonal and structural factors impacted the team’s perceptions about their ability to work together effectively. Considering team dynamics during rapid ICU organisation is crucial and requires thoughtful attention to interpersonal aspects, such as familiarity among team members and communication, as well as structural aspects, such as leadership’s role in onboarding and ensuring adequate environment services and unit clerks to support the other team members in fulfilling their individual and team roles.

Our findings are consistent with those of prior work that suggests cultural and structural facilitators support interprofessional collaboration among ICU team members, especially in American ICUs where nurse-to-patient ratios are typically one RN to two patients and nurses work in collaboration with respiratory therapists to provide ventilator management.23,24 However, our specific subthemes are more specific to the COVID-19 pandemic context and the rapidly changing organisational approaches necessitated by the pandemic. Despite prior work identifying familiarity, defined as how often team members worked together as an effective facilitator of teamwork,23,24 our findings suggest that familiarity (or lack thereof) can serve as a facilitator or barrier to effective team function. In this way, prior experience working together can help support team dynamics but if clinicians are not familiar with one another’s practice styles, because they have not worked together or are not from the same discipline or unit, this can impact trust among the team. Indeed, if teams become more familiar, there is a possibility of ‘group think’ and less innovation which has been shown to impact team dynamics. Prior work on teams in health care has suggested that new perspectives can be critical to innovation and psychological safety (i.e., individuals feeling safe to share ideas, questions, concerns, and/or mistakes).25 Considering the prior literature as well as our findings suggest that familiarity among team members as a determinant to team dynamics is nuanced, further investigation is needed to determine if there is a threshold in which familiarity may support team dynamics positively but before possible negative impacts on teams, creativity, and innovation are evident.

Taking into consideration the rapidly evolving nature of the pandemic, creative ways of ensuring that clinicians are familiar with one another or with the practice styles of the clinicians working in the unit could be helpful; such approaches could include information sheets about various practice styles (as described in Table 2) to explicitly communicate differences and similarities. And while these are likely not feasible amidst a crisis, proactive action can be taken now to prepare for the next pandemic. As our data suggest, forming communication patterns and challenges in advance, creating information sheets about the specific ICU, practice styles, or care protocols could be helpful in proactively addressing team dynamics issues in the future. More importantly, critical evaluation of past experiences and dissemination of those findings are necessary to support other ICUs and healthcare systems to be able to respond more effectively to other pandemics.26

Notwithstanding the identified barriers and facilitators, our study introduces possible strategies that ICU clinicians and administrators could consider when creating a new ICU to handle a surge of patients during a pandemic or for any other rapidly evolving need. While many hospitals used a team nursing model,1 our findings suggest that this approach was not facilitative. Or more specifically, the clinicians (nurses and physicians) desired additional clarity and guidance regarding the roles of the moderate care nurses and intensive care nurses to be able to work together effectively. Tiered staffing models were an important approach that many hospitals used during the pandemic, and they may be
necessary. But our findings suggest additional guidance may be required when implementing team nursing or tiered staffing solutions; ways to explicitly inform the team about the roles and responsibilities of the clinicians in advance and throughout its implementation may be warranted.

We acknowledge limitations of our study. This is a single-centre qualitative study with nurse and physician participants only who were currently employed in the study hospital; our findings do not represent views from the entire interprofessional team at our study site or the views of agency staff. Our process and rapid analytic approach used verbatim audio files as the basis of our analysis, and thus, our analysis represents summaries of the audio files and is not a textual analysis; there are benefits to this approach as we were able to incorporate the interviewee’s tone in our analyses and data summaries, but there are likely some limitations. For example, we did not share interview transcripts with participants for correction or confirmation or to provide feedback. Three researchers individually conducted our analyses which adds to the rigour and robustness of our findings. While we designed our methods as rigorously and robustly as possible, we were unable to ensure prolonged engagement in the setting (to address credibility) and we did not triangulate data from other sources (to address confirmability).

In a newly formed COVID-19 ICU, we found that interpersonal and structural factors impacted the team’s ability to work together effectively; subthemes related to interpersonal and structural factors both positively and negatively impacted the teams’ effectiveness. When considering rapid reconfiguration or deployment of new teams in new care settings, consideration of interpersonal aspects, such as familiarity among team members and communication, and structural aspects, such as leadership’s role in onboarding and ensuring adequate environment services and unit clerks to support the other team members, would be helpful in providing the most ideal and supportive environment to care for ICU patients collaboratively and optimally as a team.

Conflict of interest

The authors have no conflicts of interest to disclose.

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Credit authorship contribution statement

Deena Costa: Conceptualisation, methods, writing – original draft, supervision, and project administration; Nathan Wright: Conceptualisation, methods, data collection and analysis, writing – original draft, project administration; Osama Hashem: Methods, data collection and analysis, writing – review and editing; Antonio Posa: Methods, data collection and analysis, writing – review and editing; Julie Juno: Resources, writing – review and editing, supervision; Sarah Brown: writing – review and editing; Ross Blank: Resources, writing – review and editing, supervision; Jakob McSparron: Conceptualisation, writing – review and editing, resources, supervision.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.aucc.2022.11.001.

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