

Interdisciplinary Team Interactions in Stroke Units: Can Team Dynamics Influence Patient Outcomes from a Clinician's Perspective

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Abstract

Objective: Unlike patient-level data, qualitative research allows the exploration of interdisciplinary team (IDT) dynamics that may contribute to understanding why some stroke units (SUs) achieve better outcomes. Evidence from meta-analyses of randomised controlled trials suggests not all SUs perform equally with one hospital in Trondheim, Norway outshining others in terms of better patient outcomes. This study aimed to describe and compare the functioning of the IDT in a SU in Australia to the Trondheim SU, to begin to explore factors which explain why there are differences in outcomes.

Methods: The Australian site, one of the longest established in Australia, was an 'acute' SU that provides care within the first 7-10 days after stroke (most common model in Australia). The Norwegian site, a 'comprehensive' SU, provides additional rehabilitation, with superior outcomes recognised internationally. Semi-structured interviews were conducted with clinical staff from each SU (Australia n=4; Norway n=3) using purposeful selection. All interviews were tape recorded, transcribed, with transcript content verified by respondents prior to thematic analysis. Using an inductive approach, a coding tree allowed extraction of major themes and sub-themes, with coded data then summarised. Another researcher verified the coding and summary.

Results: Three nurses, two doctors and two allied health staff were interviewed. Clear differences were apparent in approaches to stroke care, working relationships and training. Most notably, in Trondheim, nurses were more strongly involved in decision making and planning of patient care, and exhibited more confidence in various aspects of patient management, including providing rehabilitation therapies. The reasons for this related to more specific stroke training for nurses and fewer professional boundaries in the Trondheim SU.

Conclusion: The results of this study help understand the importance of IDT dynamics in the delivery of SU care, and highlight the need for more comprehensive investigation into team dynamics on outcomes.

Keywords: Stroke; Stroke management; Interdisciplinary; Nursing; Rehabilitation; Qualitative; Clinicians

Introduction

All patients, regardless of stroke severity, benefit from being managed in a stroke unit (SU) [1]. As a complex healthcare intervention it remains not well understood exactly how a SU leads to better outcomes compared to general care on medical wards. Whether a few major components, or the total package of care creates the greater effectiveness remains unclear [2,3]. One of the main factors reported as a fundamental component of effective SU care is having a coordinated interdisciplinary team (IDT), with specialist medical, nursing and allied health skills, who participate in regular professional

development, and have a focus on prevention and early management of stroke [1,4].

Although the evidence for SU care is convincing, not all SUs perform equally [5,6]. Inconsistencies in the provision of evidence-based care in SUs are evident [1,6,7]. By improving management of important clinical processes better patient outcomes can be achieved [7,8]. There is no single model of SU care. Described models include: hyper acute stroke units, which provide high dependency care and, once the patient is stable, rapid transfer to a step down hospital occurs at approximately 72 hours [9]; acute stroke units, where patients are accepted from the emergency department (ED) but are discharged early (usually within 7 days); comprehensive stroke units, where patients are admitted from ED but staff also provide rehabilitation for at least several weeks if necessary; and rehabilitation stroke units,

where patients are usually admitted after their acute care is complete. The focus in this latter model is on rehabilitation.

Stroke care provided in SUs that incorporate rehabilitation (comprehensive or stroke rehabilitation units) has the strongest evidence base for improving patient outcome [10]. In the Cochrane meta-analysis of randomised controlled trials of SU care, one comprehensive SU in Trondheim, Norway has achieved the greatest outcomes relative to other trials [1]. In this SU early mobilisation was identified as a key feature of care [11,12].

The effects of stroke are complex, resulting in multiple impairments. As such, no single discipline has all the expertise and skills required to manage the total needs of a patient's recovery after stroke. The IDT, in partnership with the patient and their family should provide a coordinated program that consists of individual assessments, treatment, regular review, discharge planning and follow-up [13]. This type of IDT care has been shown to improve health care processes and patient outcomes [14]. Despite the benefits of a coordinated IDT [15], the exact roles and interactions of the team often lack clarity, and the interdisciplinary staff to patient ratios vary between and within countries [16,17]. Rather than being dependent on the necessary complement of staff to provide evidence-based care, the staff mix and ratios within hospitals are often influenced by local organisational priorities, service arrangements, the model of care, as well as workforce availability and budgetary constraints [18,19].

Given the strong belief that a highly functioning IDT sits at the heart of the effectiveness of SU care, we were interested in exploring the dynamics and interactions between IDT members across two SUs: the first being the highly regarded unit in Trondheim, Norway, which has been considered the 'benchmark' due to the outcomes achieved; the second, one of the longest established (approx 1986) and largest metropolitan SUs in Melbourne, Australia. A SU in Melbourne was selected for practical reasons since this is where researchers TP, DC

and JB are located. In addition, differences in the models of care, including when out of bed activity is first allowed and commencement of walking training (mobilisation practices), have already been highlighted between these same two units [20]. Bernhardt et al. demonstrated that patients from the Trondheim SU were more active than those in the acute SU in Melbourne [20]. Differences in IDT roles and interactions, work philosophies and staffing levels were identified as a possible reason for lower activity in the Melbourne SU. We sought to extend this research in a study to investigate the potential impact of IDT interactions on why care in these SUs may differ.

Unlike quantitative study, qualitative research provides a valuable means to explore health professional interactions and practices from the perspective of clinicians and was the approach selected for this study. Specifically, we aimed to explore and compare clinician perceptions regarding the functioning and impact of IDT dynamics and interactions on care practices that may affect patient outcomes in different SUs. Given previous published work [20], particular areas of focus included exploring features of the nursing role within the IDT, and practices related to early walking rehabilitation (mobilisation) at these two sites.

Methods

We used in-depth, semi-structured interviews and inductive content analysis to explore differences in staff perceptions of the structures, processes and clinician behaviours within the two distinct SU models of care. Clinical audit data of 50 consecutive patient medical records from each of these SUs were also collected, to examine adherence to important clinical processes of care designed to measure compliance with clinical practice guidelines. While these data are not presented here in full, an overview of the demographics and outcome data are presented to provide important context for the reader (Table 1).

	Trondheim N=49	Melbourne N=50	p value
Age median (Q1,Q3)	77 (70,85)	76 (66,93)	0.62
Male	21 (43%)	29 (58%)	0.13
Independence prior to stroke (mRS 0-2)	32 (67%)	37 (77%)	0.26
Ischaemic stroke	40 (82%)	44 (88%)	0.65
Stroke severity on admission (SSS)			0.52
Mild	28 (60%)	24 (48%)	
Moderate	12 (25%)	17 (34%)	
Severe	7 (15%)	9 (18%)	
Length of Stay median (Q1,Q3)	6 (2,14)	5 (3,8)	0.34
Died	4 (8%)	4 (8%)	
Discharge destination			
Home ± supports	25 (56%)	17 (37%)	0.075
Rehabilitation	11 (24%)	26 (57%)	0.002*
Residential facility	7 (16%)	3 (6%)	0.17

Table 1: Overview of demographics and select outcomes from a consecutive sample of patients admitted to each stroke unit

Q1- 1st quartile; Q3- 3rd quartile; mRS- Modified Rankin Scale; SSS- Scandinavian Stroke Scale; *statistically significant difference $p < 0.05$

Selection of stroke units

The SU in Trondheim was selected as the benchmark for this project. We sought to compare this site to an equivalent hospital that represented the common method of approaching SU care in Australia [16]. Like the unit in Trondheim, the SU in Melbourne, was well established and situated in a large teaching hospital. Unlike the unit in Trondheim, the SU selected in Melbourne was an acute SU in which early mobilisation or other rehabilitation interventions were not a formalised part of acute patient care.

Data collection

We adapted an interview schedule developed by Cadilhac et al, used for stroke service evaluations [21], to include additional questions about the practicalities and decision making processes behind mobilising patients. Briefly, respondents were asked to describe the general organisation of stroke care and usual processes of care delivery including the team interactions, communication and documentation among staff. Observations about service strengths, and any aspects that the respondents considered could be improved were also explored.

Purposive sampling of the clinicians for the interviews was used. To fully conceptualise the topic and achieve data saturation, it was essential that important core members of the IDTs were selected as participants. Potential respondents needed to have worked in the unit for at least 5 or more years. At least one doctor, nurse and allied health clinician was required from each site. Although not inclusive, preferences were for a physiotherapist given the focus on early mobilisation practices and limited allied health staff in the Trondheim SU. Participation was voluntary. The study was approved by the participating sites, and all respondents provided written informed consent. Ethical approval for the study was granted from The University of Melbourne.

Interview process and analysis

The same researcher (TP) conducted all interviews face to face. Each interview was tape recorded with the respondents' permission and took between 30-60 minutes to complete. Data from the interview audio tapes were transcribed and respondents verified their accuracy prior to the thematic analysis. The data were then manually coded by one researcher (TP) and using an inductive approach, a coding tree was formulated for identifying major themes and sub-themes within the data. The coding tree was independently verified by a second researcher (DC) for reliability. Coded interview data from the respondents were triangulated and summarised under the broad themes identified.

Selected quotes from respondents are used throughout the results section to assist in conveying examples of the main views of respondents. The selected quotes reflect the point of view of the team or group rather than individual opinions. To limit repetitiveness, single quotes from each site that best highlight the message are provided.

Results

Three nurses, two doctors and two physiotherapists participated in the semi-structured interviews. The interviews took place over a single week at each site and within two months of each other. At the time of the interviews, each respondent had worked within their respective organisation for over seven years (staff from Melbourne SU average of 9 years [min 4 years, max 15 years]), and staff from Trondheim SU average of 12 years [min 8 years, max 20 years]). A broader overview of SU characteristics and staffing ratios is provided in (Table 2). In summary, the IDT in Trondheim primarily consisted of doctors, nurses and physiotherapists. Occupational therapists were not involved with patients in the acute setting, and formed part of the early supported discharge service, which offered patients early discharge from hospital with rehabilitation at home [22]. Access to speech pathologists, dieticians and psychology services were extremely limited. Patients in the Melbourne SU had access to a more extensive IDT consisting of doctors, nurses, physiotherapists, occupational therapists, speech pathologists, dieticians, and psychology services. As well as the IDT members, the staff ratios differed between SUs; the nurse-patient ratio was 1:3 in Trondheim, compared to 1:4 in Melbourne, and the physiotherapist-patient ratio was 1:6 in Trondheim and approximately 1:11 in Melbourne.

Although many principles of team work were similar we found that there were differences in the processes of care and IDT interactions between the sites. The major themes that emerged from the interviews relating to IDT dynamics in providing stroke care included differences in team work, staff training opportunities, weekend care practices and the unit philosophy/work culture. The most apparent difference that transpired between these SUs and across all themes raised was that in Trondheim, nurses were more strongly involved in decision making and planning for patient care, and expressed more confidence in various aspects of providing patient management, including rehabilitation. These findings are outlined below.

Team Work

All seven respondents reported that team work was an essential component to the successful functioning of the IDT on their SU. Team meetings, communication, and joint patient assessments were sub-themes.

Team meetings and communication

Respondents from the Melbourne and Trondheim sites both stressed the importance of IDT attendance in the regular daily and weekly team meetings. It was evident that the input from the IDT was highly valued, with all staff emphasising the importance of 'team involvement' in the care of patients with stroke.

"...we are looking to gain an overall picture as a team....[the team meeting is] an opportunity for everyone in the team to have a say on the patients' progress" Melbourne

One major difference noted with regards to team communication was that in Trondheim, all primary nurses looking after the patients would attend the daily team meetings to have input into patient decision making and planning. In Melbourne, only the nurse in charge of the shift attended the daily meeting or ward round.

Strong views about the importance of communication between team members were evident among staff at both SUs. Four of the seven respondents reported that continuous communication between

all team members was crucial, and it was felt that the geographically defined SU provided an environment that enhanced the opportunity for continuous communication. By working closely together, there appeared to be a natural flow of information and informal communication regarding patient management and care.

“....all the staff are on the ward the whole day so it is very easy to get a second opinion or discuss what you could do for specific patients” Trondheim.

While the allied health staffs in Trondheim were primarily based on the stroke ward, the allied health staff in Melbourne often had additional discipline specific roles on other wards. An electronic paging system was used in Melbourne to alert staff to return to the ward when required. Respondents felt that this provided an efficient and easy form of communication between medical, nursing and allied health staff.

	Trondheim	Melbourne
Stroke unit characteristics		
Stroke unit inception	1992	1999
No. of strokes per year	Approximately 550-600	Approximately 550-600
Location and number of beds	14 beds ± corridor beds within medical department. Corridor beds were used when demand was high	Eight beds within 18 bed neurology ward (stroke, epilepsy, neurology)
Staffing profile		
Nursing ratios	1:3, which included registered nurses and nurse assistants	1:4 in general ward; 1:2 in monitored beds. Registered or enrolled nurses
Physiotherapy	Approximately 1:6	Approximately 1:11
Occupational therapy	No involvement in acute care. Involved in early supported discharge (post acute) program ²⁴	Approx 1:13
Speech therapy	Approx 1:28	Approx 1:20
Therapy service	5 days per week	5 days per week
Discharge service coordinators	Yes	Yes

Table 2: Comparison of stroke unit characteristics and staffing between the Melbourne and Trondheim stroke units

Joint patient assessments and mobilisations among team members

In Trondheim ‘joint mobilisation’ practices were described. The nurse and physiotherapist were both involved the first time a patient got out of bed and they often worked together to shower or wash patients and help patients walk. This strong interactive approach to patient management between nurses and physiotherapists was not elicited from the Melbourne SU. However, in Melbourne, the occupational therapist and physiotherapist completed an initial assessment of a patient together, while still maintaining their discipline specific roles (e.g. occupational therapist concentrated on upper limb function and cognition, while the physiotherapist focussed on the lower limb and mobility activities).

Staff Training Opportunities

A variety of professional development opportunities and on-going education options including stroke seminars, in-services and learning packages were reported by respondents at both sites. However, the staff in Trondheim emphasised that there was extensive stroke specific interdisciplinary training, particularly for nurses, aimed at providing them with a more in-depth understanding and competence in rehabilitation care for stroke.

Interdisciplinary training opportunities

All respondents from Trondheim highlighted the importance of interdisciplinary training to a much greater extent than those from Melbourne. In Trondheim, nurses who were new to the ward would ‘shadow’ a physiotherapist for a day gaining specific training in patient handling and transfer techniques to ensure they were comfortable and confident to transfer and move patients with different levels of dependency.

“this is important to make sure that the [nursing] staff can continue with the mobilisation beyond the physiotherapists working time”....“it is learning by being there” Trondheim

In Melbourne, the nurses often relied on the written recommendations of physiotherapists to suggest a safe and effective method of transferring patients. There was no formal manual handling training for nurses in Melbourne. All four respondents from this site stated that ‘lack of training’ and ‘inadequate skills’ in handling patients was a barrier for nurses being confident in mobilising patients for the first time, and throughout the hospital admission.

“....safely moving patients is not a skill that nurses would say would be in their core portfolio” Melbourne

Ability to perform swallow assessments

Respondents in Trondheim also explained that nurses were taught to perform basic swallow assessments. They felt that this meant stroke patients in the Trondheim unit were assessed and started on the

appropriate oral diet safely and without delay. In contrast, nurses did not perform swallow assessments in Melbourne. This impacted on the initiation of an oral diet, especially on weekends, and was highlighted as a safety issue for patients in Melbourne.

Stroke specific training and formal opportunities for post-graduate education for nurses

Nursing staff at both sites had the opportunity to enrol in post-graduate study. In Melbourne, this was a general 'Neuroscience' course run by a University, which included modules on neurology, neurosurgery and stroke. In contrast, the course offered in Trondheim was coordinated through the hospital and was stroke specific. A 'buddy' or 'preceptor' system was also described by respondents at both sites, as a means of professional development or 'on the job training' for various disciplines. This process involved junior staff being paired with more experienced staff for direct learning on the ward. In Melbourne, all new graduate nurses (first year after graduating from undergraduate degree) were paired with a preceptor, or skilled senior nurse, each shift for two weeks.

"...as a preceptor, we can spend more time with the graduate nurses and teach them about strokes and what is involved with their care" Melbourne

In contrast, experienced nursing staff new to the ward in Melbourne was not given the same opportunity, and were only provided with general education and in-services. This differed from the practice in Trondheim where all nurses new to the unit, regardless of prior experience, would be 'buddied' with a senior nurse for two to three days.

Weekend Care Practices

Allied health staff worked a five-day (Monday-Friday) week in both units. All seven respondents reported that not having allied health staff

on the unit seven days a week affected weekend care practices. Respondents from Melbourne felt these staffing limitations could delay patient assessment, mobilisation and appropriate dietary intake. In contrast, Trondheim staff believed that this did not impact on the provision of evidence-based care relating to early rehabilitation or swallowing, but rather just changed who initiated the process. Nurses here felt empowered to provide rehabilitation assessments and practices when allied health staff were unavailable.

"On the weekends there are no speech pathologists, so that means that the patient can be nil orally until they are reviewed on Monday....although sometimes we [nurses] feel bad and take it upon ourselves to initiate what diet we think is suitable" Melbourne

"...when patients are admitted in the afternoon or the weekend it is the nurse who initiates it [mobilisation].....they will still mobilise the heavier, more dependent patients for the first time" Trondheim

"...the policy is that nurses do an assessment [on weekends] and then do the best they can, and it is our [physiotherapists] responsibility to make sure they are trained enough to take care of the patient physically [on the weekend]" Trondheim

"[on the weekend] if a patient is straight forward and moving all limbs with full power, the nursing staff will get them up. If there is some suspicion of weakness or balance issues then the patient is usually left in bed" Melbourne

Unit Philosophy and Care Policies

The SU in Trondheim focused on early medical management (including intravenous fluids and oxygenation), and active rehabilitation (Table 3). It was obvious that early mobilisation was considered a priority. A culture and attitude that all patients were to be mobilised early (e.g. within 24 hours of admission) and frequently during their admission was shared by all disciplines, including nurses.

	Trondheim	Melbourne
Type of stroke unit	Comprehensive	Acute
Important elements of stroke unit care		
Early medical management	Yes	Yes
Prevention of complications	Yes	Yes
Early allied health assessment	Yes	Yes
Early mobilisation and rehabilitation	Yes	No
Discharge planning	Yes	Yes

Table 3: Comparison of features of stroke unit care

In Melbourne, acute care was more directed at early medical management, assessment and discharge planning of patients with stroke. Responses from three of the four respondents provided evidence that often mobilisation and early rehabilitation was not a priority, especially for nursing staff. Respondents felt that mobilisation of patients by nurses was dependent on their competency in manual handling, work load, patient dependency level and time, and was perceived as a responsibility of the physiotherapist rather than an important role of nurses.

Discussion

This study has highlighted major differences in care practices and staff training that potentially explains why different outcomes may be achieved in SUs. The concept of teamwork is not new across many clinical areas in healthcare [23,24]. Many of the essential elements of a cohesive and well-functioning IDT reported in the published literature, including communication, collaboration and training, were also core themes to emerge from this exploratory study. However, of more importance, were the fundamental differences in the IDT dynamics, especially the role of the nurse, evident between the

Trondheim and Melbourne SUs. Compared to the Melbourne unit, nurses appeared more integral to the IDT in Trondheim, and were strongly involved in decision making and planning. Nurses clearly identified with their role as providing comprehensive 24-hour care. This may possibly explain differences in clinical performance measures and outcomes [1,20]. Areas for practice improvement identified by Melbourne SU staff included expanding stroke specific staff training and education, with a particular interdisciplinary focus, and creating a more integrated model of care.

While there were similarities in patient characteristics and features of both SU's, there were apparent differences in staffing levels, which have been identified in previous research examining acute and comprehensive SU's [25]. The staffing differences likely reflect not only the model of care and unit philosophy but also local resources, staff training and the healthcare systems. While it has been suggested that staff ratios may have an effect on 30 day mortality in some settings [26], there is no unequivocal evidence of a direct relationship between staffing ratios and patient care practices [27]. Although the SU in Trondheim did not have access to an extensive interdisciplinary stroke team, staff did not perceive that this was a barrier to providing quality stroke care. While we acknowledge that variations in IDT team members and ratios may influence clinical practice and patient outcomes, the results of this study demonstrate that there are other factors involved. The role of the nurse within the team appeared to be a major point of difference between the sites.

Nurses are the only team members available twenty-four hours a day and, as such, play a vital role in care provision. Historically the nursing role in stroke has been described as ill-defined and vague [28,29]. Nevertheless, there is strong consensus that their position has been undervalued and their skills under-utilised in the past [30,31].

There appeared to be more importance placed on the nursing role within the IDT in Trondheim. All respondents from Trondheim described the significance of having the primary nurse looking after the patient attend the daily team meetings to discuss management plans with the rest of the IDT. This is important as valuing the central role nurses play in stroke has been demonstrated to impact positively on patient outcomes in stroke care [32]. In Melbourne, only the nurse in charge of the shift attended the team meetings. It was unclear from the interviews whether this was historic practice or due to other factors (such as time constraints from larger nurse to patient ratios in Melbourne). Nevertheless, nurses in Melbourne felt that being more engaged in IDT meetings was important and would improve job satisfaction and communication, emphasising the need for an integrated model of teamwork amongst all IDT members. We did not specifically ask questions about unit leadership, staff autonomy or how the team was created and sustained. These are potential areas for future exploration.

Previous qualitative studies have reported that nursing staff felt that rehabilitation was not inherent, but additional to their role [33]. It has been suggested that this may be due in part to the historical focus of nursing, which has been considered 'task-orientated', with a focus on getting the work done rather than on incorporating rehabilitation into their practice [30]. In Trondheim, there appeared to have been a shift away from this notion, with nurses receiving extended interdisciplinary training and role sharing opportunities, which have been demonstrated as an important feature of teamwork [34]. Previous reported issues around role delineation with joint working environments [35] seemed to have been negated by the strong cultural focus within the Trondheim unit, and a holistic patient centred

approach to care. Similar to previous studies [36], we also found that team interactions influenced mobilisation practices. In addition, skill levels, workloads, and the perception of the nursing role within the Melbourne SU also meant that nurses did not generally independently initiate mobilisation of patients. These concerns are issues that have been highlighted previously in relation to nurses role in rehabilitation [33], and highlight a potential area of practice improvement in a nurses skill set.

Research has provided evidence that the development of specialist and advanced nursing roles has enhanced patient satisfaction with the continuity of stroke care from acute care to post-discharge care [37] and elevated levels of evidence-based care practice within stroke services [8,13]. At the time of the interviews nurses in the Melbourne SU were unable to complete swallow screens. This reportedly affected the timely initiation of an appropriate oral diet, and was particularly relevant on weekends when no speech pathologists worked on the Melbourne SU. A recent randomised controlled trial (QASC) [7] and Australian state government initiatives have focussed on enhancing nurse-led dysphagia screening with a broader aim of improving service provision [38]. Various nurse initiated swallow screening tools have been implemented, and have provided positive results in the number of patients receiving timely swallow screens and improved patient outcomes [7,8].

For this study, only two sites were targeted for comparison, limiting transferability. We acknowledge that results from the Melbourne site may not be reflective of other SUs within Australia with different IDT staffing structures or model of care [25]. Nevertheless, results of the Australian national organisational survey of hospitals provide evidence that the Melbourne site was comparable to many other tertiary hospitals in Australia in terms of structure, size and number of strokes per year [16]. Importantly, qualitative studies are not as concerned with making generalisations to larger populations but rather, are more inductive [39] and aim to provide important insights for testing hypotheses that may be raised from these data.

Purposive sampling of the IDT was chosen to ensure the range of expert respondents interviewed were likely to provide an inclusive conceptualisation of the processes and practices at each site. It was important that the sample at each site included similar disciplines. Therefore, not all members of the IDT (e.g. social workers, speech pathologists, dieticians, occupational therapists) at the Melbourne site were sampled. Nevertheless, the respondents interviewed did talk about interactions with all staff members. Selective perception, poor recall and the desire to present themselves well [40] are common sources of biases inherent to interviews. However, this was likely to have occurred equally across both sites. The validity and richness of the data may have been affected by the language the interviews were conducted in. All respondents from Trondheim spoke Norwegian as their native tongue, with English as a second language. Nevertheless, the interviewer had no trouble understanding the respondents, each of whom were very proficient with the English language. All respondents were also provided an opportunity to verify their transcribed interviews prior to thematic analysis in order to correct any misperceptions, thereby enhancing the validity and reliability of the data.

Unlike quantitative research where sample size is important, data saturation and redundancy are more important methodological concerns in qualitative studies [41]. Although a sample size of seven may be considered too small by some to examine a complex phenomenon like IDT dynamics and the effect on patient outcomes,

importantly, data saturation of the issues for the main themes and sub-themes was achieved in this study. Therefore, we were confident no further information would be gathered from conducting additional interviews. The emergent themes discussed offer important insights into the differences in functioning of the IDTs and factors that may potentially contribute to explaining the better patient outcomes and variations seen in previous studies [1,20]. However, further investigation, potentially including patient-level data and statistical process modelling, is warranted into the IDT training and responsibilities, and the specific role of nurses within SUs which achieve different patient outcomes.

Conclusion

We have provided new insights into IDT dynamics and how these may differ and potentially contribute to variation in clinical management and patient outcome within two SUs. A greater integration and sharing of roles and responsibilities with nurses was found to be a major factor in ensuring care provided on the highly functioning Trondheim unit was maintained uniformly across all days of the week. The results of this study could help shape future research examining the effect of these dynamics on improving care in other SUs and facilitating better patient outcomes.

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