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Co-Producing Interprofessional Round Work: Designing Spaces for Patient Partnership

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Within wide-ranging quality improvement agendas, patient involvement in health care is widely accepted as crucial. Ward rounds that include patients' active participation are growing as an approach to involve patients, ensure safety, and improve quality. An emerging approach to studying quality improvement is to focus on "clinical microsystems," where patients, professionals, and information systems interact. This provides an opportunity to study ward rounds more deeply. A new model of conducting ward rounds implemented through quality improvement work was studied, using the theory of practice architectures as an analytical tool. Practice architecture focuses on the cultural-discursive, social-political, and material-economic conditions that shape what people do in their work. Practice architecture is a sociomaterial theoretical perspective that has the potential to change how we understand relationships between practice, learning, and change. In this study, we examine how changes in practices are accomplished. The results show that practice architecture formed co-productive learning rounds, a possible model integrating quality improvement in daily work. This emerged in the interplay between patients through their "double participation" (as people and as information on screens), and groups of professionals in a ward round room. However, social interplay had to be renegotiated in order to accomplish the goals of all ward rounds.

Key words: clinical microsystem, co-production, practice architectures, sociomaterial practice theory, quality improvement, ward round, workplace learning

This article presents a close examination of the ward round¹ (henceforth, "the round") as a meeting place for care providers and patients in the daily provision of health care. During the round, the care provider considers the patient's medical history and the current health of the patient, decides on procedures for establishing diagnoses, and decides on treatment(s) and other measures during and after the provision of care.² The round is considered to be a central meeting place for the daily clinical work, where the knowledge and questions of different (medical) professionals and patients can be linked together so as to ensure a good

and safe provision of care. However, it is also a place where new questions can arise.

A social and environmental analysis of the prevailing conditions relevant to the provision of health care demonstrates a steady increase in the possibility of patients obtaining a cure for their illness and relief from pain. At the same time, it is well documented that many patients do not receive the best possible care.³ The enhancement of quality and patient safety in health care demands the cooperation of different professionals. An obstacle to this proposed cooperation is the difficulty that different professions have in recognizing each other's roles⁴ and knowledge.^{1,4} Kvarnström⁴ claims that the varying status of the different professions that are found in the context of health care provision determines how this proposed cooperation will play out. Nowadays, care providers are also challenged with the demand that they cooperate in partnership with each and every patient.⁵⁻⁷ Dunston and colleagues⁸ describe properly developed partnerships as "co-productive professional practices." These practices constitute relationally "produced" meeting places for the recipients of care and the providers of care, where services, experiences, and results are formed. Also, different mechanisms have been identified to enable patients' experiences to be used to improve health care.⁹ The new Patient Law is an example of a national-level policy within the Swedish health care system that stresses the importance of co-producing partnerships.¹⁰ The Swedish government decided on March 24, 2011, to call for a special investigator to submit proposals on how the patient's position in and influence over health care can be strengthened. The study has adopted the name of Patient Power Inquiry (Patientmaktsutredningen). In an interim report, a

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new Patient law (SOU 2013:2) was suggested that was approved by the government 2014(SFS 2014:821)¹⁰ and took effect on January 1, 2015. The Patient Law addresses how patient choice in health care can be further strengthened; how the patient's need for support, advice, and information should be met in relation to the guarantee for and free choice of care; and how the authorities should work to strengthen the position of the patient.

It has been previously argued that education methods, such as time-based, instructor-centric didactic programs are insufficient for supporting continual workplace learning, when the ultimate goal is to change behaviors in clinical practice, improve performance, and impact patient outcomes.¹¹ Further to this, Dorman and Miller¹¹ suggest that continual medical education for medical students and physicians, at all levels, "must become fully integrated into the workplace, rapidly responsive to what providers do on a daily basis and how they do it." Thus, medical students and physicians are seen as members of professions in collaboration with other professions.

The site for the present study was an inpatient ward for internal medicine in Region Jönköping County in Sweden, which has a long tradition of quality improvement work.^{12,13} The outpatient clinic at the internal medicine unit had earlier been redesigned in a quality improvement project that had the goal of being more patient- and demand orientated.¹⁴ The inpatient ward at the same unit had recently performed a quality improvement project that was directed toward the improvement of its rounds. Previously, the traditional rounds that took place on the ward consisted of conversations between physicians and nurses at the reception area or in the corridor outside the patient's room and then a visit to the patient while the patient was in bed. The goals of the quality improvement project was to (i) reinforce the patient's active participation and the patient's privacy with respect to other patients and caregivers who are not directly involved in caring for the patient in question, and, with respect to the rounds, (ii) develop cooperation and respect between the different professions, so as to achieve a better and safer provision of care. These goals informed the establishment of a new model for conducting rounds on the ward. The main components of this model were performed in a room especially reserved for rounds, as described in the Figure later.

Previous research on the round as a meeting place for the daily clinical work on a ward has focused on certain limited aspects of the round. One aspect that has been studied is the *communication* that takes place within the patient-physician-nurse interaction during a round on ward for internal medicine. In an example from England, the nurses participated in only 31% of the preparatory discussions and in 59% of the professional bedside conversations during the rounds.¹⁵ Weber et al¹⁶ have shown that the nurses' knowledge is underrepresented during rounds on internal medicine wards. Other studies have focused on *teamwork*. Bharwani et al¹⁷ have shown that the care providers worked alone and assumed that the work was being



Figure. The new model for doing rounds on the ward that was studied from the present article. From left to right, we find the nurse and the assistant nurse (new participant with important knowledge and experiences) from the patient's care team, the patient, the senior physician, and the junior physician (the term junior physician includes postgraduate interns and residents), and 2 large computer screens, displaying the patient's medical journal and other relevant information. Note the arrangement of all participants (including the screens) around the table, so that everyone could have eye contact with each other and the screen changing information monitored by the junior physician during the rounding.

coordinated by others during the rounds, instead of cooperating with each other in a spirit of mutual dependence with respect to the care of the patient. Have and Nap¹⁸ have demonstrated that senior physicians, interns, and nurses who have participated in the same round are in limited agreement with each other about how the patients' care should be provided, and these researchers have judged this to pose a danger to patient safety. Two studies have claimed that checklists were of importance for *quality and safety* in health care. The checklists were used during the rounds to support task-based, nontechnical skills as well as control over several different aspects that are considered in the evaluation of the patient's condition.^{19,20} Multidisciplinary rounds²¹ and family-centered rounds in which *patients and the patient's family members actively participate* have been shown to be a way of improving the way in which rounds are conducted and their outcomes,²² both with respect to results and the satisfaction experienced with the care that is provided. Some studies have highlighted *interprofessional* competencies in different models of rounding,²³ also made in patient-/family-centered approach communication had improved and though that climate and teamwork,²⁴ as well as promoted sense of shared purpose.²⁵ A number of studies have focused on the round as a *context for teaching* students in different professions, including medical interns and residents. An example of this is where methods that activate students during the daily rounds are used to support their learning.^{1,26}

Studies of the *practical performance of the round in its entirety* are few and far between. Counihan et al²⁷ measured poor health and different medical complications before and after the implementation of a

specific manual for patient management in the performance of multidisciplinary rounds. The study showed (i) that the coordination and outcomes of care improved and (ii) that the new patient management system contributed to improvements in the work atmosphere on the ward. A recent observation study of attending rounds recorded the number of patients who received treatment, the time assigned for each patient, and the frequency of different round-related activities.²⁸ The conclusion drawn in this study was that the most common activity in a treatment round was the discussion of the patient's treatment plan and the results of medical investigations. The records of the time spent during the rounds showed that the care providers met with the patients only for a limited amount of time. Thus, the possibility of obtaining individual patient's perspective with respect to his or her care was limited. What the aforementioned studies had in common was that they clearly demonstrated the results of concrete changes in the work performed during rounds. Furthermore, they all employed quantitative methods to describe and analyze the implementation of these changes.

The present study is justified because there is dearth of research that contributes to an increased understanding of the complexity of how the implementation of rounds takes place. If the intention in the current model of conducting rounds was to improve the level of patient participation and patient integrity as well as the care provider's cooperation and mutual respect so as to increase quality and safety in the provision of care, then perspectives and methods that focus on how rounds contribute to (or limit) the achievement of expected goals and intentions should be adopted. To achieve an understanding of this process, we need studies that demonstrate the relevance of several dimensions, including the different social and spatial conditions that inform how rounds are conducted in their entirety.

The theoretical point of departure for the present study is based on the combination of the microsystem perspective (see later) with respect to rounds and a practice-theory perspective.²⁹ Through this approach, our understanding could develop of how the changed round model was implemented in daily work and what that round work entailed.

The aim of the present study is to increase our understanding of the practical aspects of a new model for conducting rounds. More specifically, we wish to answer the following question: How does the spatial and social setting of the round influence the nature of the collaboration between those who participate in the round?

THEORETICAL PERSPECTIVE

The model of clinical microsystems and the sociomaterial practice

The clinical microsystem has been defined as:

[...] a small group of people who work together on a regular basis to provide care to discrete

subpopulations of patients. It has clinical and business aims, linked processes, and a shared information environment, and it produces performance outcomes. Microsystems evolve over time and are often embedded in large organisations. They are complex adaptive systems, and as such they must do the primary work associated with core aims, meet the needs of their members, and maintain themselves over time as clinical unit.³⁰

Rounds can be viewed as a part of inpatients' clinical microsystem since they constitute a meeting place for patients and caregivers. The microsystem model contributes to our understanding of the contextual changes that are needed so that improvement(s) in the provision of care can be realized. This model does not take into consideration how a particular context in the provision of care is materially and socially arranged, nor does it consider the importance these factors may have with respect to what one wishes to achieve in this context. Our understanding of (i) how the model for rounds is implemented, (ii) the importance that certain changes may have to this activity, and (iii) how practice, change, and learning are linked together is made more profound by employing a practice-theory perspective.²⁹

The sociomaterial practice-theory perspective

A professional practice, for example, as found on a ward, is not created only via the participants' intentional behavior and practical knowledge. When work is performed in practice, it is also created by external conditions.³¹ These conditions are made visible by observing the ward in question and the daily rounds as professional practices. A professional practice is always embodied and situated in a physical context, that is to say, that which a group of people do in a meaningful way, in a specific place, and at a specific time.³²⁻³⁵ By observing the actual performance of the rounds from a practice-theory perspective,³⁶ we are able to note how social and material conditions, together with the behavior of the participants, inform that which is achieved. Kemmis³⁷ has described these external social and material conditions as the "practice architectures" (PAs). The PA consists of the material-economic, cultural-discursive, and sociopolitical conditions that shape what people do in their daily work. Each specific practice in the daily work is prefigured (ie, make possible, limit, or create) by its unique PA.³⁷

Kemmis argues that the 3 types of conditions, (i) the material-economic, (ii) cultural-discursive, and (iii) the sociopolitical conditions, are uniquely bound together in every professional practice. For the present study, this includes noting within the rounds' (i) unique physical-, technical-, and human (with their knowledge) resources, and previously established (ii) habits, attitudes, and language, and their (iii) relationship to the expression of solidarity and the exercise of power between the participating caregivers and the patients that which prefigures what each round will achieve. It is not

possible to know in advance what the round will achieve by observing the main content of these 3 types of conditions. It is these conditions *in relation with the actions taken by the participants, what they say, and related to that which is prefigured* that makes possible, creates, and limits rounding*. Kemmis³⁷ also claims that the participants in each unique practice can create and change the conditions of the specific PA that informs a practice.

By studying the PAs of a round, we can deepen our understanding of how the rounding is performed within a clinical microsystem and thereby observe what the microsystem achieves as an existing part of a clinic's system and as part of the medical service and organization's macrosystem.

METHODS

The study employed an interactive research approach³⁸ and a field study design.³⁹ With respect to the interactive approach, the first author (K.T.) engaged in informal conversations with the ward management and other key people at the department. K.T. also participated in observations of the ward's staff meetings. This entailed that the initial results of the data analysis were conveyed to the ward's management team (the ward manager, a nurse, and the senior physician who held medical responsibility on the ward) and to the care providers on the ward. The interaction with the ward's management team contributed to how the design of the study developed during the research process. In this article, the design is described across 3 phases.

In the first phase, K.T. observed and recorded (on a tape recorder) 5 rounds. The themes emerged via the application of an inductive thematic analysis of the transcriptions of the rounds and from field notes of informal conversations and participatory observations.

In the second phase, K.T. conducted and tape-recorded 5 group interviews and an interview with 1 individual. The 5 different groups comprised (i) 4 nurses, (ii) 3 assistant nurses, (iii) 6 junior physicians (in 2 groups) who worked or had worked on the ward, and (iv) 3 of the ward's senior physicians. The fourth senior physician could not attend the group interviews and was thus interviewed separately. A preliminary analysis of the 5 rounds that were observed in the first phase was presented at the interviews, and the participants were asked to consider this analysis and add to it. They were then asked open questions about how they saw their own work on the new model of conducting ward rounds.

The third phase of the study consisted of a theory-driven analysis of all of the data that had been collected. Concrete material situations, behavior, and utterances that were relevant to the performance of the rounds were identified and interpreted via a perspective that

combined a microsystem perspective and a sociomaterial practice theory perspective and further refined in an iterative reflexive process.⁴⁰ How social and material conditions prefigured the performance of the rounding in the new model emerged from this. The trustworthiness and reliability of the analysis were ensured by continual reviews and discussions within the research group with respect to ideas and interpretations that emerged.

The result of the study consists of the identification of 3 themes that were present in the new rounds model that was conducted in the rounds room described previously. Each theme is presented within several frameworks and is empirically based on observations of the rounds, as well as informal conversations and group interviews.[†] The theoretical interpretive analysis (which is based on the microsystem model and Kemmis's different PAs) follows each framed result.

Ethical considerations

The present study was approved by the Linköping's Regional Ethics Committee (*Dnr. 11-09*).

RESULTS

The first theme reveals the patient's participation in relationship with the material and social conditions in the new rounds model in 2 senses. The care providers considered the patients partly as active participants with their own perspective and partly as individuals who were presented in the form of informants about their illness and treatment in the patients' medical journal that was shown on the computer screen. The care providers used their observations to form evaluations and make decisions. In the second theme, the round is described as a place where all of the participants' "knowing" is developed in relation to the prevailing material-economic, cultural-discursive, and social-political conditions. An example of such knowledge is when the care providers changed their behavior so that they support the patient's active participation instead of dominating the situation themselves. This type of round is called below a "learning round" and included learning, in different forms, for all of the round's participants. In the third theme, unfulfilled intentions were identified, where the process of learning was more limited in its presence than a "learning round" proper. This third theme characterized "operative rounds" and was prefigured by social-political and cultural-discursive conditions that were transferred from the previous, traditional system of ambulatory rounds, despite the material arrangements in the round room. In the following, quotations from field observations are presented and interpreted from a sociomaterial and clinical microsystem perspectives.

*We use the verb *rounding* to refer to what is also known as *rounds*, since we wish to emphasize the dynamic aspects of what conducting ward rounds entails.

†RO1-5 observations of the rounds, GI1-5 group interviews: 1 senior physician, 2 nurses, 3 assistant nurses, and 4 and 5 junior physicians, IInd1 individual interview.

The patients' double participation

When rounds were considered to be part of the clinical microsystem, the group of caregivers who participated in the rounds worked with the individual patients. They cooperated with each other and with each patient in accordance with the patient's ability to participate, and they shared patient data and information with each other as support for decisions and steps to be taken with respect to the patient's care. Complementing the analysis with interpretations generated by implementing Kemmis's sociomaterial practice-theory,³⁷ 2 typical aspects of the patient's participation emerged. These aspects consisted of the patient's participation as an active, physical person and in the form of changeable information that was projected on the computer screen. The care providers interacted with both of these aspects.

During one round, the assistant nurse went to collect the patient, a man of advanced years. Whilst waiting, the other care-providers discussed the patient's liver disease. The ongoing investigation had not yet provided an explanation for the presence of this disease. The senior physician introduced diuretic medicine as a topic of discussion. Then the nurse informed them that the patient's blood pressure was stable and that the medical journal (which the junior physician projected on the computer screen) stated that the man had lost 10.5 kg in weight.

Following that, the patient and the assistant nurse entered the room. The senior physician stood up and shook the man's hand in greeting and invited him to sit down with the assistant nurse. The senior physician then asked: "*How are you feeling today, NN?*" The man immediately began to describe his problem of excess fluid in his scrotum and asked questions as to what may have caused this and what a possible treatment for this might be. A dialogue developed between the man and the senior physician, where questions were aimed at understanding the issue and explanatory answers were developed and built on each other. During this dialogue, the senior physician used similar language as the patient and described what their investigations had revealed with respect to the man's poor liver function. The physician explained that the cause of the disease had not yet been established and how the treatment was intended to work.

In an attempt to understand the degree of liver damage, the patient asked about the size of the liver and gesticulated with his hands while he asked this question. The senior physician noted this and suggested a size by using his hands:

SP: "A normal liver is about this big, and yours is about this big."

Patient: "Is it so damaged then?" (Indicating the difference with his hands)

SP: "I don't think one can use such a scale, but if you have a normal one then I would say it is about so much." (Indicating with his hands)

Patient: "Yes."

SP: "Yes, but it is not what it should be."

Patient: "Is it not possible to cure it with some medicine?"

SP: "I can't answer that at the moment."

The conversation continued and primarily involved the nurse who spoke about medicine, and the permission and time for the man's discharge from the ward. (RO1)

The specific layout of the round room, where the patient enjoyed protection of his privacy and an equal physical position with the other participants in the room, comprised the material arrangement that stimulated the patient's active partnership with the care providers. This partnership was also prefigured by the assistant nurses, who had a daily care relationship with the patients, as they actively participated as a new care provider group in the rounds room. These relationships constituted a social arrangement, and the assistant nurses' physical presence and their participation with their knowledge and experience constituted a material-economic condition. The active participation of the patients was also facilitated by the social and discursive arrangements because the senior physician, during his conversation with them, showed them respect and answered their questions while adapting both his verbal expressions and gestures to the manner of expression used by the patients. The conversation appeared to be based on mutual understanding, in which the patient received answers to his questions, and the care providers were able to share the patient's perspective of his situation and his level of knowledge about his illness while they asked "their" questions. When the care providers' attitude showed that they welcomed the patient's questions, that they were relevant and were to be readily answered, then the patient's own needs were taken into account. When a patient was able to give account for himself or herself and had his or her questions answered, then the patient was also viewed as a person by the care providers. Thereby, the care providers gained a deeper understanding of each patient's unique situation in relation to his or her present illness, which provided a basis for their evaluations and decisions.

During the rounding, the junior physician monitored every patient's medical journal on the computer screens whilst the patient's medical problems and other problems were being worked through during the conversation. What was shown on the screen, in addition to the

patient's medical journal and the results of diagnostic investigations, were the junior physician's changes in prescribed medication and a summary of the patient's referrals. In conjunction with diagnostic reasoning, information could be obtained from different websites. Sometimes the junior physician asked for opinions about what was being written down and requested that the other care-providers comment on this. The care-providers gave suggestions for changes or asked questions about information that was displayed on the screens. The nurses stated that this was: "excellent, one is more effective and one can send referrals off faster" G12. The assistant nurses reported that in the new model for rounds: "... everyone gets the same information at the same time. When something is decided upon everyone knows it, right that's what we will do today." G13

The second instance of patient participation took the form of the computer screen's "face" that continually changed throughout the round and emerged as another active participant in the rounds. The screen visually presented the patient's illness via the use of data and information about measures taken (specifically arranged discourses), which was available to all of the other participants. The junior physician's continuous monitoring of the patient's data and information supported the work that was being performed during the round. This work constituted a social arrangement that was connected to the material arrangement, the computer screen itself. The screens became active physical participants, occupying their own position around the table and clarifying the nature of the patient's illness. This sociomaterial arrangement that set the stage for the patients' second type of participation (in the form of the information presented by the screens) interacted with the other participants.

This allowed for the immediate production of accurate written documentation that could be shared by everyone present. As G15 commented,

"However, the disadvantage you have as a junior physician is that you are busy looking at the prescribed medicine module, and setting it up and writing a referral, then you don't have the time to listen to the conversation which is taking place between the physician and the patient. You can't keep up with what and why they have decided on. You notice this when you have to write a discharge note or your daily journal notes, yes, but did we think that actually? So you become a little fragmented." G15

The sociomaterial arrangements caused the junior physicians to become divided in their thoughts as they paid attention to what was presented on the screens and this made it more difficult for them to follow the

other things that were taking place in the round and to actively participate in the conversation.

Care-providers constantly switched visual attention between those who were talking and the information presented on the screens. The actual conversation switched between the participants' questions, experiences, and knowledge, and the information displayed on the screens. In contrast to the care-providers, the patients gave the impression that they were completely focused on the conversation. One assistant nurse summarized this by reporting that "it feels like one is a team, one is so close to each other communicating." G13

The sociomaterial arrangements of the rounds entailed that the care providers alternated in their attention between the conversation with the patient and the messages about the patient's illness from the participating computer screens. In the conversation, different types of information and knowledge were processed, while the screens acted as active support and confirmation of evaluations and decisions. All of the care providers were informed by that which was established by the patient's double participation and received the same message simultaneously. This contributed to the caregivers' common understanding of the illness, how it should be dealt with, and how the state of being ill related to how the patient, as a person, presented himself or herself. The patients focused on the conversations and paid less attention to the screens. The care providers' interaction with the patients' double participation situated the "problem" outside the patients' person. This reinforced the patients' active role as a member of a group of problem solvers.

Learning rounds

The theoretical lens provided by the notion of "PAs" enabled us to note that the new model for rounds provided the conditions for learning and the construction of experiences for the care providers in the different professional categories, as well as for the patients. Their understanding, the way they acted, and the way in which they related to each other and the screens generated knowledge that influenced their planning and decisions with respect to the care work. The clinical microsystem model revealed that the care providers' cooperation, in partnership with the patient, resulted in better medical judgments and decisions with respect to the patients' care in the new model for rounds, in comparison with the traditional way in which rounds were previously conducted. Taking the intentions behind the new model as a point of departure, we note that the clinical microsystem had evolved, in the sense that it could better meet the needs of patients and provide better quality care.

An octogenarian female entered the rounds room, accompanied by the care team's assistant

nurse. Before suffering from a stroke, the lady had been able to look after herself at home. The senior physician described the situation:

“When she enters the room with her walking frame . . . , she is a bit tottery but she smiles at me, so she is with us. The first assistant nurse said that when she (the lady) had entered—no things are better Yes exactly that, I thought And you can talk with her, just so. She is awake and says that it wasn’t like this in the past Incl.”

This introduction influenced how the senior physician conversed with the lady; a conversation where she was allowed to speak for herself. His evaluation directly led to a decision about her treatment and rehabilitation measures, in contrast to the traditional model for conducting rounds. The senior physician reported that, in the traditional model, he would have first spoken to the nurse more generally about the patient’s problems. Then they would have gone to the patient who would be lying passive in bed and they would have a short conversation. Finally, the patient would be referred to a physiotherapist for evaluation of the conditions for her rehabilitation.

The sociomaterial perspective revealed how learning takes place in relation to the physical and relational arrangements in the rounding with the lady patient. To visit the rounds room, the lady had to move herself from her bed. She cooperated with the assistant nurse who reported on her observations and her knowledge of the lady’s abilities. The senior physician took note of the patient’s physical and mental performance and how the assistant nurse spoke with the patient and continued the conversation with the patient as a competent partner. The other care providers noticed what had taken place. This resulted in that their knowledge about the woman and their statements about her stroke were made more refined for the care providers and led to the making of decisions which, according to the senior physician, would not have been made during a traditional round.

“We have put the patient at the centre of the round. No one sits behind the patient, which is good.” G13

Nurse 1: “I think that the patient is reduced when one goes around and they are lying in bed.”

Nurse 2: “It is quite different” (in the rounds room).

Nurse 1: “They get to stretch their legs when they come in here, and now I [referring to the patient] am at the centre.”

Nurse 2: “And now I can speak. And you get a completely different picture of them.”

Nurse 1: “Most of them, you know, they really think it’s positive.” G12

The junior physicians, who worked across different models of performing rounds on the department’s different wards, reported that the new model for conducting rounds created better conversations with the patients than the traditional rounds. In the conversations during these new rounds, the patients were more lively, were freer with their speech, and answered their care providers’ questions on their own. The narratives about their health problems were richer in content than during other situations on the ward and during bedside rounds. After the new rounds, patients asked fewer questions.

Patients who expressed their perspectives and asked questions that were important to them actively participated in the rounding. Through this activity, patients became more or less cocreators of the care that they received and not merely the recipient of the care. In the practice of rounding, they mastered the cocreative role and learned how to act and relate to their care providers. The patient’s central position and the cocreation mentioned previously became a source of learning for the care providers as well as for themselves.

The nurses reported that in the traditional bedside rounds they often spoke on behalf of the patients in a manner which, in some way, patronized the patients. In the rounds room, “different atmospheres were created for different patients” G12, which changed the way in which the nurses behaved, encouraging those who were quiet and limiting patients who spoke too much. “It is, of course, exciting to try and calibrate oneself to every patient and to get the right level.” G12

The PA that determined the new rounds prefigured how the nurses read the different ways patients participated in the conversations and, from this, how they supported the patients’ participation. This was revealed by how the nurses’ behavior developed with respect to the relational arrangements, which contributed to the satisfaction of the patients’ interests and needs, as well as the physicians’ responsibility for making medical evaluations and decisions. The roundings, in a partnership with the patients and their care providers, resulted in enabling the patients’ learning about their illness and problems and learning about how and why different evaluations and decisions were being made with respect to their care. The nurses also developed their knowledge of how they should support each unique patient’s active participation, instead of speaking for them. Consequently, the rounds went beyond their initial intent since the participants were provided conditions in which they could learn.

The assistant nurses, nurses, and junior physicians demonstrated that they have considered that which took place during the rounds closely, especially the interaction between the patient and senior physician. They saw the conversation between the patient and the senior physician as central to the performance of the rounding and that the new rounds came to the heart of the patient's problem more quickly and accurately compared to the traditional rounds. The senior physicians claimed that the care plans were better when nurses and assistant nurses actively drove the conversation with the patient forward. At the same time, the senior physician obtained a greater understanding of the nurses and assistant nurses' knowledge.

When the care providers considered that which took place in the rounds room, they brought together (a) the patients' interpretation, conversation, and the messages on the screens with (b) the evaluations and decisions that were made, thereby producing knowledge. During the observations, their learning about the other participants' knowledge developed and so did their estimation that the rounds in the new model better approached the heart of the patient's problem. Their understanding of the entirety of the round with every unique patient and the variations that emerged between rounds with different patients create variations that generated learning. This learning was made possible in relationship to the rounds' specific material, discursive, and relational arrangements, namely, the rounds' PA.

Operative rounds

Despite the changes in the material arrangements in the rounds room (including the 3 professions of care providers, 1 participating patient at a time, the informative screens, and the furnishing placing all actors at equal level), not all parts of the round were changed, neither with respect to its entirety, in terms of what was intended concerning patient participation, the cooperation of the care providers, and the showing of mutual respect.

One junior physician said that: "Sometimes I have thought that when the patient enters the rounds room that there really isn't any difference between when we sit together compared to when we are out at the patient's bed-side" G14. It happened on the new rounds that medical evaluations and decisions were taken before the patient entered the rounds room. Before the round began, the senior physician could have studied the patient's medical journal and decided on a particular evaluation, with the reason being: "I want to give my opinion before the nurse comes in with hers!" G11. In the rounds room, the senior physician questioned the other care-providers about the absent patient. The senior physician's clinical

reasoning dominated the conversation, which resulted in certain evaluations being made, including medical decisions, as well as plans for medical investigations and treatments. Only then did the patient enter the room. The senior physician questioned the patient so as to confirm his medical evaluation. After that he informed the patient about the evaluation and further plans. Space for the patient's questions or perspective was not created or was limited.

A rounding such as the one described previously in a clinical microsystem with a small number of care providers and individual patients entails a limited amount of cooperation, and the knowledge that everyone possesses is not used to the best advantage. Traditional methods of solving medical problems were evident and the round's "complex system" was not adapted to produce the desired changes. The senior physician's knowledge, evaluations, and decisions took center stage and rationality determined that which took place. In such rounds, the patients were passive, peripheral, and were, in the eyes of the care providers, seen more as objects suffering from illness and the mere recipients of medical decisions, instead of being seen as people with valuable perspectives who could participate in solving problems. We label such rounds as "operative rounds," which entailed limited conditions for learning and development.

The medical aspects of the patients' problems were central to all of the rounds; something that all of the care-providers thought was self-evident. Aspects of nursing care and rehabilitation were dealt with to a lesser degree. The assistant nurses noted that the knowledge possessed by the occupational therapists and physical therapists could have benefited the rounds, but this was only expressed in written evaluations or was mediated by the nurses. The nurses' motive to why certain aspects of nursing care were used so seldom was "that we take that for granted that what we do is normal, you know" G12. The junior physicians who participated in other situations on the ward reported that the nurses could filter or hold back important information during the rounds.

Operative rounds are created by sociopolitical and cultural-discursive arrangements that are also present in traditional bedside rounds. Certain attitudes, power relations, and traditions are transferred to such rounds in the rounds room. This limited the possibility of employing everyone's knowledge, experiences, and questions, and it made cooperation and mutual problem-solving more difficult.

The rounds were arranged so that different groups of care-providers participated in the rounds at different times. This allowed the

care-providers to see how a number of other care-providers in other professions behaved and related to each other and the patient in different ways in similar contexts (in operative rounds and in learning rounds). With respect to some rounds, the junior physicians expressed some frustration with what they thought were some poorly conducted conversations between senior physicians and patients. But they did not act on this feeling of frustration. One nurse tried without success to introduce a patient earlier in the round so that the patient could answer the senior physician's questions more completely. The nurses, junior physicians, and assistant nurses adapted themselves to the senior physician's different ways of behaving during the rounds. The nurses said that "the rounds are quite different with different senior physicians, they have different personalities. They have different ways of dealing with it . . . this demands that we change" G12. The senior physician reported that the tasks which were to be performed after the round was completed varied, depending on which nurse participated in the round. "If you have a nurse who knows things and does them, then you can rest assured when you leave the ward." Indl

The operative rounds were not established by individual physicians or by care providers only. Sociopolitical and cultural-discursive arrangements from the traditional model of rounds prefigured the type of round that was performed. Cooperation and mutual problem solving were made more difficult by competitive attitudes adopted by groups of care providers that were informed by traditions of advantages of knowledge, views on which knowledge is relevant, and the holding back of information and knowledge. Cooperation was made more difficult by the traditional idea that care providers related to each other through adaptation. However, the continual variation of individual care providers who conducted rounds with the groups of care providers (a material-economic arrangement) created understanding of how the rounds were different in the new rounds model. Because of this, the care providers gained knowledge of how people who were not members of their particular professional group behaved and related to each other during rounding. However, they did not learn from the other's practical behavior within their own professional group. Despite the fact that the care providers were cognizant that intentions were not being achieved, during the rounds they had little power to change what took place in the operative rounds.

DISCUSSION

So as to meet changing demands and challenges in the health care system, we need to develop physical spaces and meeting places that can be used in daily health care work, which makes it possible that patients, in partnership with their care providers, engage

with and even develop the health care system.^{41,42} The results of this study into the practice of conducting rounds in a new model for rounds (which is a central meeting place for the implementation of care) reveal how the spatial and social staging of the round influences the interaction between patients and care providers from different professional groups. The main finding demonstrated that spatial and other material arrangements formed the patients' double participation in 2 respects: partly as active persons and partly in the form of dynamic patient-related information that was projected on 2 computer screens. Information technology was thus an active participant, whose message (information specific to the patient and other relevant information) interacted primarily with the care providers. The next main finding was that when care providers and patients (via their "double participation") interacted with each other, then learning became central to all of the participants. The learning took place via the relationship and the behavior of the care providers and the patient and how understanding of the delivery of each patient's care was developed.

However, the care providers could participate in both "learning rounds" and "operative rounds" in the new rounds model. Operative rounds were prefigured by sociopolitical and cultural-discursive arrangements³⁷ that entailed hierarchical patterns, perspectives, and habits taken from traditional bedside rounds. When the round was operative in its entirety or in part, the round did not live up to the intentions of the new model. The intentions behind the new model were patient participation and establishing the care providers' cooperation and mutual respect. Operative rounds also limited the possibility of taking the patient's perspective into account and the patient's understandings of the care that was being delivered. The breadth of the care providers' knowledge and experience was also not shared. Consequently, limited learning took place, which could result in the delivery of care of a lower quality and which is less safe. Furthermore, we note that the material, spatial arrangements associated with the new model are not, in themselves, sufficient to achieving the desired changes.

Co-Produced learning rounds

The results of this study show how conditions for co-produced learning rounds are realized. Learning rounds emerged when care providers and patients with different knowledge and experiences together produced the practice in the round. In such rounds, the care providers' knowledge and delivery of care are simultaneously developed with the care and knowledge of individual patients. This relate to 3 perspectives on the development of care, namely, better professional development, better system performance, and better patient (population) outcomes, which are, according to the study by Batalden and Davidoff,⁴³ dependent on each other and every participant in the system. Rounds are a frequently recurring meeting place in the daily work that is performed on the ward, and if co-produced learning rounds are conducted, then the

3 perspectives mentioned previously have the potential to be realized simultaneously, regularly, while including the patients' perspective and learning. Co-Produced learning rounds could be developed into a model in which learning and development take place at the same time as the daily health care work on a specific ward practice is performed.

Co-Produced rounding was prefigured in the interaction between the patients' double participation and the care providers representing several professions via sociomaterial conditions (theme 1). Professional practices can be co-productive to varying degrees, depending on how the care provider considers the patient to be capable, knowledgeable, and possesses the ability to participate in a mutual partnership and adapt how they relate to them.⁴⁴ The patient's active participation was facilitated in the rounds that were studied by the care providers' attitudes and behavior and by the material arrangements that were present. During the rounds, the care providers' understanding was deepened and their behavior was more refined as they linking together each patient's unique perspective and needs, the messages projected on the computer screens, and the care providers' medical and health care knowledge (theme 2, learning rounds). Learning rounding emerged as knowing "done" socially and materially⁴⁵ and created collective practical achievements, "knowing in practice."⁴⁶ The care providers contributed with their knowledge and observations and were able to note and respect each other's (and the patient's) knowledge and different roles in the interaction that took place during the rounds. This entailed that the care providers improved their understanding, actions, and ability to relate to others,⁴⁷ and they could contribute to the next stage of the patients' care, during and after the rounds, knowledgeably and safely.

Dorman and Miller¹¹ have called for models that enable continual development of knowledge to be integrated into the daily work of health care provision. We claim that co-produced learning round can be developed to such a model. During co-produced learning rounds, care providers and patients can develop new patterns with respect to how and why the provision of care for individual patients should be delivered from a holistic perspective. This includes what should be done in the usual way, what should be done differently, what the potential risks are with each action, and what needs to be followed up on. In addition, we should consider examining how the patient's experience and social conditions relate to the medical-, caring-, and rehabilitation measures provided to the patient, areas where additional knowledge is needed (and who needs this knowledge), and areas that are clearly understood. In such rounds, knowledge is developed with patients and groups of care providers, which may lead to successive changes in how care is delivered, possibly even improving the quality of care that is delivered.

Batalden et al⁴⁸ describe the health care system as "a service" and argue that co-productive partnerships with patients develop the provision of care positively since there is an increase in the understanding of the

aims of the health care system and what potentials exist with respect to everyone's roles and spheres of responsibility. We decided to view the health care system as a professional practice and, with support from Kemmis's notion of a "PAs," we have clarified how the conditions that lie outside the participating individuals (the conditions in the round's PA) made co-produced learning rounds possible. The round was shaped not only by the individuals who participated in the round but also by the layout of the room, the positioning of the participants within the room, and the messages that were projected on the screens (the patient's second participation). The social and material conditions were entangled with each other.³⁵ The participating computer screens could be used to contribute further to the patient's understanding and learning by, for example, projecting radiographs and descriptions of medical procedures.

To achieve an effective and safe delivery of health care, there are certain expectations of models for team-based and patient-centered care. However, there are but a limited number of academic studies of these models.⁴⁹ We claim that co-produced learning rounds can be developed into a sociomaterial model for the implementation of rounds that can be a significant contribution to the delivery of effective and safe health care.

Challenges in the development of co-produced learning rounds

In the new rounds model, we observed co-produced learning rounds, operative rounds with their attendant hierarchical and competitive behavior and relationships between the care providers, and more passive patients. The rounds room, the participants and how they were positioned in the room were also part of the PA of the operative rounds. However, these material-economic conditions were not sufficient to change them to co-produced learning rounds.

Individual care providers participated in both operative rounding and co-produced learning rounding. Individual care providers experienced a continual variation in the representation of the other professional groups that participated in the different rounds. The care providers developed their knowledge about the different ways in which the rounds were conducted by participating, observing, and reflecting over the rounds. The junior physicians who participated in the traditional rounds on the other wards compared models for conducting rounds. Despite the fact that knowledge had been developed about how a care provider should behave and relate the patient and other care providers so that the round could be conducted according to the new model, individual care providers did not possess the power to implement these intended changes in operative rounds.

Baathe et al⁵⁰ have studied a similar model for rounds and have shown that a number of physicians felt that their autonomy was limited and that they were uncomfortable with running the risk that potential gaps in their knowledge would be revealed in front of the other

participants in the round. In another study, it was observed that nurses could be unsure whether a physician appreciated it when nurses took the initiative, based on their knowledge, to develop patient-centered rounds.⁵¹ Grant⁵² has noted that when changes are to be implemented, physicians, who enjoy a dominant subculture, can make the implementation of changes that they do not support more difficult. From this, he emphasizes the importance of an increased understanding of the prevailing cultures in health care settings. The main finding in this study revealed that sociopolitical and cultural-discursive arrangements that lie outside each individual were transferred from the bedside rounds to operative rounds in the rounds room. The failure to implement changes in the round cannot be placed on individual participants, but rather, on how the interaction was informed by transferred ways of behavior, habits, and attitudes. The transferred conditions can be interpreted as an expression of power structures and traditional patterns of interaction, but this remains to be more closely studied via perspectives that allow for this type of analysis more thoroughly.

According to Kemmis,²⁹ the long-lasting establishment of overarching changes depends on the prevailing material-economic, sociopolitical, and cultural-discursive arrangements that inform specific practice being made visible and renegotiated by the individuals involved in that practice. This entails, for example, that the group of care providers referred to in this study clarify and renegotiate together by appealing to a sense of solidarity, how they should relate to all of the round's participants, including the type of language and the attitudes that should permeate the rounds, and how they should use the physical layout and information technology in rounds room. During the change to co-produced learning rounds, one's own and other's expectations concerning the knowledge and needs of other groups of care providers became clearer. This highlights the importance of discussing how learning takes place and how one should manage and share the information on the screens during the rounding. Any changes should be tested. When the performance of a round does not live up to agreed intentions, the care providers should know how to behave so that the intentions can be realized.

To change how rounds are to be conducted, all of the care providers together need to describe which material-economic, sociopolitical, and cultural-discursive conditions facilitate co-produced learning rounds, and which conditions make conducting such rounds more difficult. The clinical microsystem model can be used to support such a dialogue, since it can be used to clarify the specific context where the care providers, patients, and information technology are all part of the same system.⁵³ When the care providers on a ward have decided on changes and have implemented these changes so that co-produced learning rounds are continually being conducted, we claim that this is a practice that generates learning and development integrated in the daily work.

Practice architectures; a new perspective on how development takes place in the clinical microsystem

According to Likosky,⁵⁴ the clinical microsystem contributes to changing the traditional view of the health care system's complexity. He also claims that traditional views need to undergo fundamental changes if development of the health care system is to take place. Likosky⁵⁴ emphasizes the importance of how care providers relate to each other and how they value their patients' care; the results of the present study support this observation. The microsystem model and the theory of PA have clarified the importance of establishing relationships and involving the patient in the rounds so as to create more knowledgeable and safer care providers and patients and thereby develop the delivery of care in general.

In comparison to the clinical microsystem model, the theory of PAs deepens our understanding of how sociopolitical, cultural-discursive, and material-economic arrangements prefigure what the participants in a care practice can achieve. The microsystem model does not include the material conditions in any way. The PAs' perspective gives the participants within particular practice knowledge of how they should redesign the practice materially and how they interact so as to achieve the desired changes. Practice architecture is a new theoretical perspective in health care improvement that can add deeper understanding to the clinical microsystems model and thus enhance our ability to integrate practice, learning, and change in situated practical health care work.

Co-produced learning rounds can be considered as quality improvement work that is integrated into the daily work in the health care's microsystem, where every care provider and recipient of care participate. In contrast to traditional improvement work that takes place to the side of the daily health care work and may involve only a small part of the unit's care providers, co-produced learning rounds entail that practice, learning, and change permeate the daily care work. When this happens, the potential for improved quality and safety is reinforced, both for current patients and for future patients who suffer from the same illness(es).

Limiting the material used in this study to a specific ward has allowed for a close description of the complexity of the performance of the rounds. The combination of observing the rounds, interviews, and informal conversations provided internal and external perspectives on the rounds, which contributed to the trustworthiness of the study. One limitation is that, unlike the other participants in the rounds, the patients were only observed and were not interviewed. The study is based on models and theoretically informed analyses, which entail that the results of the study are of general validity.

This study needs to be followed up on with further studies of rounds in similar rounds models in other contexts. Using the results of this study as a point of departure, care units can test whether co-produced learning rounds can be properly established as the prevailing rounds model over the long term. It would then be of

importance to study the influence co-produced learning rounds have on the quality and safety of health care delivery. Practice architectures theory could also be applied in studies of other health care situations in which the interaction between care providers and patients is central, for example, during operations, rehabilitation activities, or in interactions in outpatient care.

CONCLUSION

Practice architectures theory, as applied in this study, provides a sociomaterial perspective of the performance of rounds and clarifies how desired overarching and permanent changes in the clinical microsystem can be achieved and how potential limitations to change can be revealed. This theory makes clear the importance material-economic, cultural-discursive, and sociopolitical arrangements have with respect to what the performance of rounds can achieve. Co-produced learning rounds entail that a specifically configured rounds room interacts in partnership with patients via their “double participation” and with care providers representing several professions. In this way, the rounds are linked to continual learning for all of the participants and to continual change in the provision and delivery of care from an overall perspective. Co-produced learning rounds have the potential of being developed into a model for quality and safety improvement work that is integrated with daily health care work.

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