

TITLE:

Nurses' experiences of managing patient deterioration following a post-registration education programme: A critical incident analysis study

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ABSTRACT

The aim of this study was to explore nurses' experiences assessing and managing deteriorating patients in practice following completion of a relevant post-registration education programme.

Recognising the increasing acuity of ward patients, nurses are faced with patients who are at an increased risk of deterioration. Patients who are acutely ill or deteriorating often exhibit periods of physiological deterioration; however there is evidence illustrating that these clinical changes are frequently missed, misinterpreted or mismanaged in practice. In order to prepare nurses to competently assess and manage the deteriorating patient, education as a care initiative is offered to develop the knowledge and skills required.

A qualitative study using critical incident analysis was conducted to acquire narrative data from nurses, describing their clinical practice experiences of patient deterioration. Thematic analysis was used to analyse the data.

Findings revealed improvements in nurses' abilities to recognise patient deterioration, greater application of the evidence base and an increase in confidence and assertiveness. There was some evidence of applying the knowledge and skills learned, however equally some nurses indicated that they remained ill-prepared to apply the skills in practice.

HIGHLIGHTS

- Post-registration education has potential to improve care of deteriorating patients

- Nurses reported improved knowledge and skill acquisition following formal education
- Better recognition of deterioration cues, attributed to the education programme
- Nurses' reported increased confidence asserting deterioration in practice

KEY WORDS

Patient deterioration; post-registration; nurse education; qualitative.

INTRODUCTION

There is a recognised requirement for education and training in the assessment and management of the deteriorating patient to address rising patient acuity and risk of deterioration (National Institute for Health and Clinical Excellence (NICE) 2007, Department of Health (DH) (2009), Australian Commission on Safety and Quality in Health Care (ACSQHC) (2010), Scottish Intercollegiate Guidelines Network (SIGN) 2014). There are a number of certified courses and local teaching initiatives that have emerged for post-registration professionals, in response to this identified need, for example the Acute Life Threatening-Events: Recognition and Treatment (ALERT™, 2016), Care of the Critically Ill Surgical Patient (CCrISP®, 2016), and Ill Medical Patients' Acute Care and Treatment (IMPACT©, 2016). Higher Education Institutes have also addressed this prevalent demand by developing programmes to educate nurses with the knowledge, skills and application relevant to the assessment and management of the deteriorating patient. Although there is much evidence exploring nurses' experiences of recognising deterioration (Cox et al 2006, Gazarian et al 2009, Chua et al 2013, Hart et al 2014) there is a distinct paucity examining the transition from theory to practice. Some literature has explored this shift following a

teaching session or one day course (Buykx et al 2011, McDonnell et al 2013, Liaw et al 2016), however few studies addressed the impact of a higher education programme specifically on subsequent practice (Liaw et al 2011, Purling and King 2012).

BACKGROUND

The aging population, increasing complexity of medical intervention and escalating demand for intensive care beds has resulted in patients with complex care needs and rising acuity being cared for in ward environments (McKeown 2004, NICE 2007, Massey et al 2008). Patients who are acutely ill or deteriorating can often exhibit prolonged periods of physiological deterioration on the ward, however there is evidence illustrating that these clinical changes are frequently missed, misinterpreted or mismanaged in practice (National Confidential Enquiry into Patient Outcome and Death (NCEPOD) 2005, Jacques et al 2006, National Patient Safety Agency (NPSA) 2007, Hogan et al 2012, NCEPOD 2012, Massey et al 2014, Odell 2014). In practice it is often the ward nurse who undertakes the physical assessment of these patients and records the physiological observations as part of the daily ward routine (Goldhill and McNarry 2004, Purling and King 2012). These nurses then face challenging situations, interpreting complex findings, deciding what actions to take and when to call for further help. Therefore there is a necessity for ward nurses to be competent to assess and manage patients with rising acuity, and consequently at greater risk of deterioration.

Internationally, a number of care initiatives have been identified to help enable a timely recognition and response to deterioration and severity of patient illness, Critical Care Outreach Teams (DH 2000) and National Early Warning Scoring in the

United Kingdom (UK) (Royal College of Physicians (RCP) 2012), Rapid Response Teams in the United States of America (Berwick et al 2006) and Medical Emergency Teams in Australia and New Zealand (Lee et al 1995). In addition, many authors have emphasised that nurses also require the underpinning knowledge and physical assessment skills in assessing and managing the deteriorating patient, interpretation and reporting findings and decision making (Andrews and Waterman 2005, Cox et al 2006, Odell et al 2009, Donohue and Endacott, 2010, Hartigan et al 2010, Liaw et al 2011, Pantazopoulos et al 2012, Chua et al 2013, McDonnell et al 2013, Hart et al 2014).

An Honours level post-registration programme has been developed at Oxford Brookes University with an aim to improve qualified nurses' clinical practice assessing and responding to the deteriorating patient. Students undertake institution based learning to better understand the theoretical knowledge and in partnership with National Health Service trusts have the opportunity to practise the skills in the clinical environment.

Some studies have shown improved competence in recognising, responding and reporting deterioration following relevant education provision (McGaughey 2009, Liaw et al 2011, Pantazopoulos et al 2012). However, recent evidence has still identified cases of poor management of patients who are deteriorating (NCEPOD 2012, Massey et al 2014) and inaccuracy in patient assessment and referral in this patient group, identifying suboptimal practice (Shearer et al 2012, Hands et al 2013, Odell 2014).

In order to determine if this education programme has the intended impact and outcomes it is critical to understand how nurses assume this assessment and

management of the deteriorating patient; and how they make the decisions and judgements that they do. Although such concepts are difficult to measure, one can gain an insight into nurses' abilities to perceive coherence between the theoretical and practical components of deteriorating patient education by further exploring their experiences sometime after their formal education.

The aim of the study

The aim of the study was to explore nurses' experiences assessing and managing a deteriorating patient in clinical practice following completion of a relevant post-registration education programme.

METHODS

Design

A qualitative design methodology applying a broadly interpretive perspective was employed to explore nurses' experiences of assessing and managing a deteriorating patient. Specifically, critical incident technique analysis was utilised to gain a personal insight of events where a patient/s deteriorated and the actual experiences and interpretations from the nurses involved. The critical incident technique was first described by Flanagan (1954) to collect data of an event or action, it focusses on identifying behaviours in human performance and problem solving. Since his seminal work this technique has become a successful and widely used qualitative research method in health care (Kemppainen 2000, Butterfield et al 2005, Schluter et al 2008, Aveyard and Neale 2009). The critical incident technique was appropriate to achieve the study's aims as it attained subjective descriptions of nurses' individual

experiences and perceptions of an event where a patient deteriorated from the perspective of the participant.

Sample and study setting

Participants were former students, practicing as nurses in acute hospital trusts across the South Central region of the UK who had completed the post-registration programme entitled 'Assessment and Management of the Acutely ill or Deteriorating Patient' at Oxford Brookes University in 2013. The education programme comprised two honours level modules with 44 hours lectures, sixteen hours facilitated skills practice, 135 hours clinical practice and 105 hours guided/independent study, over two semesters. The assessment comprised of objective structured clinical examinations, multiple choice questions, classroom test and clinical competencies. The 2013 cohort, a sample population of 80 potential participants were sent a letter and information sheet, inviting them to participate in the study. A purposive sampling technique was used, this ensured that participants were relevant to the research question (Bryman 2016) and can inform an interpretation of the research problem owing to their profession and understanding of the topic. Five participants volunteered for interview and five interviews were completed.

Data collection

Critical incident technique using face-to-face, one-to-one semi-structured interviews was used to collect data from the participants. Interviews took place in a meeting room at Oxford Brookes University; this ensured that it was an environment suitable for digital recording, and that the venue was quite, private and without interruptions. The aim of the interview was to explore the nurses' factual experiences of critical incidents of patient deterioration, drawing upon any knowledge from their relevant

post-registration education that they applied. The interview therefore began with a broad question “Can you describe a situation that you experienced where a patient deteriorated?” Subsequent questions were then asked as required (see table 1). The participants were given the opportunity to portray their experiences of the chain of events, during the assessment and management of the deteriorating patient. They were asked to draw on their post-registration education and how this may have influenced actions taken during the incident. All participants were asked the same opening question, thereon the order and number of questions varied determined by the flow of the participant’s account, and the sensitivity of the subject matter. After one incident was explored, the participant was then asked if there was another situation that they were prepared to discuss.

Data was collected from mid-July to end of September 2013. The author assumed the role of the interviewer in all interviews to ensure parity in data collection. As an experienced nurse in acute care they had the contextual knowledge so were in a position to clarify the focus, reword or prompt as necessary to provide greater explanation. A reflexive diary was maintained throughout the study. It is recognised that reflexivity strategies can moderate any personal bias and enhance the rigour of the study (Polit and Beck 2016). Seven incidents in total were shared. The narrative from the interviews was digitally recorded for analysis.

Data analysis

Data were analysed using thematic analysis. Braun and Clarke’s (2006) approach was applied to the interview data. All interviews were transcribed verbatim by the researcher and transcripts were sent to each participant for accuracy, all transcripts were agreed as accurate with no errors or discrepancies disclosed. Codes were

then manually generated and then the entire transcripts from each interview were coded systematically. As patterns emerged, these codes were then collated into themes and sub-themes. This manual method of analysis brought the researcher closer to the data from the transcription stage of the process. It allowed the researcher to become familiar with and immersed in the data and was an achievable method for this small scale study. Themes surfaced during this on-going process of reflection and analysis (Creswell 2013), and a thematic map was developed with accompanying quotations. The final themes for discussion were considered in relation to the underpinning content matter of each theme in order to conceptualise them within the research topic.

Ethical considerations

To safeguard the human participants and ensure the research conformed to Oxford Brookes University code of practice and ethical standards for research, ethical approval was gained through Oxford Brookes University Faculty of Health and Life Sciences Research Ethics Committee. Participants were recruited as former students and all interviews took place at Oxford Brookes University thus only university ethics committee approval was required. Participants were given clear written unambiguous information about the purpose of the research and procedures of the study and written consent was obtained. To maintain confidentiality all data was de-identified and participants are thereon referred to by a participant number to ensure their anonymity in the report of the findings. Acknowledging the small sample, participants were also given the option to refuse the use of verbatim quotes to further protect their identity. No participants refused. For security, data was stored on a password secured and coded computer.

Although the participants were known to the interviewer as a former lecturer, to address any potential bias, interviews did not take place until completion of their studies. It was also made clear to participants that taking part in the research would have no effect on any future studies.

FINDINGS

Five broad themes were identified: translating knowledge to practice; applying clinical skills; deterioration cues; building confidence; and understanding the evidence.

Translating knowledge to practice

Some participants self-reported evidence of application of the theory, but this was not consistent. Some described amongst other things, specifically how they used the specialist knowledge taught on the programme and applied the frameworks:

“every week (lecturer) drummed it into us all, early warning scores, tools for assessment ... there was no way (lecturer) was going to let us not remember (laughs) ... and yeah I guess I knew these approaches existed but never saw the value ... yes now I do use them” (P2)

One participant described their experience of applying the case study approach taught in class to their patient to help them consider possible treatment options in practice:

“I remembered how we went through it step by step in case studies, so I did the same for this patient, using the knowledge I had I could consider what might possibly be wrong” (P2)

Aside from the education programme under discussion three of the participants described experiences of other training that they had received that they had drawn upon to handle the situation that they described. One participant had undertaken some hospital based education on assessing the deteriorating patient, but felt that the post-registration programme added new knowledge:

“I did the ABCDE assessment study day bit when I first started to prepare me to assess unwell patients, but it doesn’t go into what might actually be going wrong with the patient, just when to call for help. If you know what might be wrong you can act on it which is what I did with the ward sister” (P3)

When questioned, all participants recognised that they possessed the knowledge, but some still felt ill-prepared to use it. In one incident that was portrayed, a participant expressed that regardless of completing the education programme and an in-house life support study day they still felt that they had a deficit in knowledge:

“She was generally quite drowsy then became worse, if there were any clues to her deteriorating I must have missed them ... I feel like I learned a lot from the course but I still have so much to do and practice it just didn’t happen how (lecturer) taught us there were no signs ... I think I need more knowledge and more experience and I am not so confident” (P1)

Applying clinical skills

There were mixed responses when describing the application of clinical skills acquired from the education programme. Some participants revealed an increase in skill acquisition with three participants specifically commending the skills that they had learned, and how they had been used since in practice. The application of

physical assessment skills in particular was identified by participants when assessing acutely ill patients.

“I was looking after him all day, first he was just struggling on humidified oxygen, then when we put him on CPAP I could listen to his chest it was amazing to hear the difference ... he deteriorated then that afternoon and I listened again. It was easier ‘cause I had a comparison but I really knew what I was listening out for ‘cause we did it in class” (P5-A)

Many participants spoke about how since the education programme they were better able to independently start the process of treating and managing the patient after deterioration was recognised and the patient assessed. Many declared that they would not have previously known where to begin, or would not have been involved as this was seen as the responsibility of the doctor.

“I had laid the patient flat, prepared fluids and bloods even before the doctor had arrived. I knew what to do, we were one step ahead so nothing was delayed when he did show up” (P4-B)

“We had done a BM and were thinking along the lines of DKA when she was unresponsive so I started preparing the treatment as in the protocol, it made things easier when the medics got there” (P3)

There were three respondents however, who although recognised that they had practiced the skills during simulation, struggled in practice and felt they were not able to manage the patient independently:

“He wasn’t great, so I wanted to do a quick ‘A to E’ assessment so that when I asked for help I knew what I wanted ... It just wasn’t like what we did in class, I couldn’t use the skills we were taught as it is just too different in practice” (P2)

“I did the first assessment then called the sister, what I did wasn’t wrong but she said that there was more I could have done ... it was nothing like the skills we practiced at uni ... I felt like I needed more practice at uni with scenarios, I haven’t had enough practice so I couldn’t assess him without help” (P5-B)

Deterioration cues

Many points were raised illustrating how participants had been able to better recognise their patient was deteriorating since the education programme in question and described how they used the systematic approaches to assessment and physical examination skills taught to assist them. The timely recognition of deterioration was discussed in five of the incidents.

“Using the knowledge and skills and more experience that I now have I could see he was unwell, he was tachy and ‘shut down’ so even before I did his score I could escalate his care ... more quickly than I think I would have done before” (P4-A)

“I had always used the early warning scoring, well we have to don’t we? But the course put it into context ... I am more slick now at seeing what is really important and requires that immediate help from the doctor” (P2)

There were a number of participants that referred to the increased use of assessment and management tools when caring for the deteriorating patient. Although most affirmed that they were already familiar with basic early warning scoring systems, they identified an increased use of systematic approaches to

identify deterioration and communication mnemonic tools since undertaking the programme.

“I knew RSVP existed, but to be honest before the course I had never used it, and it actually helped me focus and stop fretting when I was trying to summon help for her”

(P5-A)

Some were still not convinced of the effectiveness of the communication tools in particular. Although they spoke about their potential to improve patient care, one interview suggested that it was not always well received in practice:

“It’s all very well saying how great these things are in the classroom, and they are don’t get me wrong but unless the team are on board it is not gonna work ... the same with ‘readback’ the reality is that no-one is interested” (P1)

Another element of this theme was that of intuition. In two of the incidents described, patient deterioration was recognised prior to any abnormal physiological parameters being evident. This intuitive nature, suspecting that something was wrong, was something that both participants felt had manifested since undertaking the education programme. Although other participants alluded to their use of intuition, no other specific examples were given. Further exploration, beyond the bounds of this study would be required in order to determine if nurses’ practise more intuitively following formal education.

Building confidence

Experiences principally focused on the improved confidence the participants felt they had gained to articulate their concerns in order to achieve an appropriate action when a patient deteriorated. Many examples were given demonstrating new

assertive skills. This was attributed to their greater knowledge and skill base, knowing that they were correct and had the knowledge to back this up.

“I knew what help I needed as he was really sick so I just went and asked straight away ... I had the knowledge to support the reason for my actions” (P2)

Two participants spoke about being more experienced. One felt that having completed the education programme they were seen as more experienced by their colleagues which also gave them increased confidence:

“I was the most senior nurse there so I had to be confident to take the lead ... I couldn’t just back up and let the others get on with it I was seen as a role model” (P4-A)

Further changes in attitude were described as having a more questioning manner. Some participants expressed their experiences of challenging practice and challenging the decisions made by other health care professionals:

“I have since challenged what a doctor has asked me to do, it doesn’t matter that I wasn’t correct, but I feel that it’s okay to have an opinion and that is sometimes respected” (P5-A)

Understanding the evidence

When considering how the education programme in question had prepared their application of the learning to practice, participants mostly, although not exclusively spoke about the academic knowledge gained. Many participants drew upon the evidence based learning that was facilitated on the course, describing how the education programme had advanced their evidenced based practice.

“in class (lecturer) really made us look at the evidence and what evidence is, now I am starting to do this on the ward. When I do something more so I guess if it is new to me I am looking at the whys and hows and try and make time to look at the research” (P2)

The other aspect of this theme related more specifically to sourcing research, two participants acknowledged that they had not searched for literature since their nurse training so these were skills that were not up-to-date, but had developed and improved throughout the education programme. They have since used these skills to search for literature relevant to their practice:

“... no-one really knew the best evidence so I looked it up... I find this easy now. In the end I didn't need it for that patient, but I am sure I will for others in the future” (P4-B)

“some of the other girls in the group knew how (to search for literature) but I didn't it had been a long time (laughs) ... by the end I got the hang of it. Now on the ward if I want to look at the research about some aspect of patient care I can do this more easily and hopefully this will make a difference to my patients” (P5-B)

DISCUSSION

Five areas of discussion related to the themes from the analysis of the study have been identified; these will be discussed and interpreted in relation to the wider context in which they are located and existing evidence of the topic.

Translating knowledge to practice

The findings showed some improved knowledge application to practice when assessing and managing a deteriorating patient, in particular to the taught structured

approaches and tools relevant to patient deterioration which has not previously been explored. When reviewing the current evidence, although there is indication of some improved knowledge application following other professional development courses (Wright 2005, Edmonds and Adams 2009, Finn et al 2010), specific to the deteriorating patient, the application of knowledge has been scarcely explored. Liaw et al (2016) found an increased knowledge base following a web-based education programme, likewise with McDonnell et al (2013) after relevant training, however neither addressed knowledge application directly. Many authors suggest that education could go some way to improve the recognition and management of this patient group (Gazarian et al 2009, Rattray et al 2011, Odell 2014).

Applying clinical skills

When describing clinical skills, responses were mixed, with no obvious relationship between skill acquisition and skill application. This is consistent with other published studies that explored skill application, where findings were also varied. There is some published literature that suggests that training can increase the skills to manage deteriorating patients (McDonnell et al 2013) and an improved performance in assessing this patient group (Liaw et al 2016). However, evidence shows that assessment of vital signs when patients' were deteriorating was inconsistent (Hands et al 2013) and nurses' application of physical assessment skills was weak (Endacott et al 2007). An older study, but pertinent to higher education, equally highlighted that nurses did not apply the skills learned to care for the critically ill patient and that the education programme had lacked 'practical applicability' (Cutler 2002). When comparing this to other specialities, the application of taught skills and the impact on care delivery is more evident (Wright 2005, Edmonds and Adams 2009).

Deterioration cues

An improvement in both the recognition of deterioration and improved use of assessment and management approaches, including scoring systems and use of mnemonics was apparent from the findings. There is no existing evidence exploring education relevant to this theme. Nurses have previously described the use of scoring systems and communication techniques to allow for prompt recognition and management of deterioration (Gazarian et al 2009, Rattray et al 2011), and shared experiences of detecting deterioration (Cutler 2002, McDonnell et al 2013), but not explicitly in relation to previous formal education. Earlier research has however implied that education is considered necessary to improve the recognition and referral of deteriorating patient in addition to using the scoring systems alone (Endacott et al 2007, Jones et al 2009, Odell 2014).

Pattern recognition and nurses' intuition, alerting them to patient deterioration was described by number of participants in this study. Clinical reasoning education, including the recognition of cues was taught on the programme, so it is possible to attribute this finding to the education programme. This is also consistent with previous literature where intuition has been identified as a key factor (Minick and Harvey 2003, Cox et al 2006, Douw et al 2015) describing subtle and unmeasurable changes as cues to patient deterioration when sharing subjective experiences of early recognition of deterioration.

Building confidence

Although difficult to directly attribute to the education programme, an increase in confidence and assertiveness was found following the programme of study. Previous research has recognised confidence and assertiveness as important factors when

summoning help (Cox et al 2006, Mc Donnell et al 2013) and its importance in communication between disciplines when referring deteriorating patients (Endacott et al 2007, Mok et al 2015). In addition there is evidence from other disciplines highlighted assertiveness as fundamental when describing their improved care delivery (Edmonds and Adams 2009). However, the influence of higher education specific to patient deterioration on attitude has not been explored previously.

Understanding the evidence

This study revealed that participants had drawn upon their academic knowledge and skill and applied this evidence to their clinical practice since undertaking the education programme. In a profession of lifelong learning it is impossible to attribute this to the education programme alone, and with no tangible examples of the evidence used or how it influenced practice for a particular patient, this is largely subjective. However the broader understanding of research and evidence based practice was apparent from the narrative and some existing literature also identified an increase in scholarly interest following similar education programmes (Lee 2011). The findings from this theme although consistent with existing evidence; demonstrated a more noticeable attribution to academic work than evident in other existing research.

The strength of the findings from this critical incident analysis, unlike other studies, is that it allowed participants to describe what they actually did rather than what they think should be the desired effect. Using these rich descriptions and verbatim quotes of original data contribute to the confirmability of the study compared to undefined quantitative data.

Limitations

The findings presented represent the experiences of five nurses from the south central region of the UK describing a total of seven incidents. Sample sizes in qualitative research are invariably small; although a larger sample may have added both depth and breadth, particularly in the analysis stage; it is the quality of the findings not the quantity that was important. Incidents of patient deterioration can often be of a sensitive nature, so this could be a reason why recruitment was challenging. Given the small sample, region and specific programme, caution must be applied when considering the representativeness and transferability of the data to different settings, cultures or specialities.

The researcher conducting the interviews is both a nurse and lecturer in higher education with an interest in the management of the deteriorating patient. The inevitable potential for interviewer bias is acknowledged, both with the questions posed and the analysis and interpretation of the findings.

There were elements with this research that were impossible to control, for example the participants recall and memory. The critical incident technique relies on the participant accurately remembering the critical events, and sole reliance on memory could contribute to inaccuracies in this reporting. The critical events that the participants described needed to be as close as possible in time to the data collection to ensure congruence between the participants' reports and actual events. This method is largely dependent on the event timing and description, both impossible to foresee.

Demographic information was not obtained from the participants. Although participants were comparable in terms of the study setting and cohort, no information of the ward area they worked in, number of years' experience they possessed or the

length of time they had been working in their given speciality was obtained. This information could have proved valuable as these factors may have influenced their abilities to assess and manage a deteriorating patient in addition to the education. Comparing the demographic data of the sample may have increased the transferability of the data.

CONCLUSION

The findings from this small study have helped to provide some understanding of nurses' experiences in assessing and managing the deteriorating patient after completion of a relevant post-registration education programme. Developments in deteriorating patient management and education in this field have been acknowledged globally (Lee et al 1995, DH 2000, Berwick et al 2006, NICE 2007, DH 2009, ACSQHC 2010, RCP 2012, SIGN 2014), however with little exploration of practice following formal education.

This study provides evidence to suggest that after completing the post-registration programme 'Assessment and Management of the Acutely ill or Deteriorating patient' at Oxford Brookes University, nurses' recounted experiences of improvements in their abilities to recognise and manage patient deterioration. The findings corroborate that of previous work in this field. There are some similarities between this study and others with respect of improved knowledge and skills application (McDowell et al 2013, Liaw et al 2016); but also evidence to the contrary, suggesting that a relevant post-registration education programme doesn't consistently prepare nurses for the application of the knowledge and skills acquired. Furthermore improvements with confidence and attitude reported by the nurses is in agreement with Cox et al (2006), Endacott et al (2007) and Mok et al (2015) in similar research.

Deterioration cues have previously been described when exploring patient deterioration (Gazarian et al 2009, Rattray et al 2011, McDonnell et al 2013), however this study provides new insight into nurses' ability to recognise such cues that can be attributed to the education programme. This research from a diversity of settings demonstrating the positive impact of post-registration education is similar enough to be used in support of the conclusions.

Although alone this study was of small scale, when viewed with the existing literature this could go some way to support the identified themes. Acknowledging the limitations, these findings postulate that a relevant post-registration education programme has the potential to improve many aspects of care for deteriorating patients. Education is just one method to inform this area of practice, and further work is necessary to consider the impact of a multifaceted intervention on assessment and management of the deteriorating patient.

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