Tidsskriftet Tidsskrift for Den norske legeforening

First year junior doctors and medical uncertainty – a qualitative study

ORIGINAL ARTICLE

EIRIK HUGAAS OFSTAD

eirikofstad@gmail.com
Department of Medicine
Nordland Hospital Trust
and
Department of Community Medicine
UiT The Arctic University of Norway
Author contributions: concept, analysis of data material and drafting the article.
Eirik Hugaas Ofstad, PhD, associate professor, specialist in emergency medicine and general internal medicine, head consultant in emergency department and observation ward.
The author has completed the ICMJE form and declares no conflicts of interest.

KAROLINE ASDAL

UiT The Arctic University of Norway
Author contributions: analysis of data material and drafting the article.
Karoline Asdal, Year 6 medical student
The author has completed the ICMJE form and declares no conflicts of interest.

BRUNO NIGHTINGALE

Akershus University Hospital
Author contributions: analysis of data material and drafting the article.
Bruno Nightingale, specialist and senior consultant in psychiatry
The author has completed the ICMJE form and declares no conflicts of interest.

PAUL K. HAN

National Cancer Institute
Bethesda, Maryland, United States
Author contributions: concept, analysis of data material and drafting the article.
Paul K. Han, specialist in internal medicine and palliative care, researcher

The author has completed the ICMJE form and declares no conflicts of interest.

TRINE AMMENTORP GREGERSEN

Centre for Research in Patient Communication
Syddansk University
Odense, Denmark
Author contributions: analysis of data material and drafting the article.
Trine Ammentorp Gregersen, PhD and postdoctoral fellow
The author has completed the ICMJE form and declares no conflicts of interest.

PÅL GULBRANDSEN

Institute of Clinical Medicine University of Oslo, Campus Ahus
and
Akershus University Hospital, HØKH
Author contributions: concept, qualitative interviews, analysis of data material and drafting the article.
Pål Gulbrandsen, PhD, doctor, professor and senior researcher
The author has completed the ICMJE form and declares no conflicts of interest.

BACKGROUND

Few studies have investigated how doctors in Norway deal with medical uncertainty. The purpose of the study was to explore how first year junior doctors perceive and manage uncertainty in clinical practice.

MATERIAL AND METHODS

Ten first year junior doctors at two hospitals in Norway were recruited for interviews following response pattern analysis from a mapping questionnaire. The interviews were analysed using systematic text condensation.

RESULTS

The analysis revealed three main themes in the interviews: dealing with medical uncertainty, personal response to medical uncertainty, and working environment, feedback and preparation. Within all three thematic areas, the informants used the words 'certain/uncertain' and 'secure/insecure' interchangeably.

INTEPRETATION

The first year junior doctors struggled with the inherent uncertainty of medicine and felt a marked sense of insecurity, particularly at the start of their training period. How the doctors were welcomed in the workplace and the feedback they were given were important factors. Their undergraduate medical education had not sufficiently prepared the first year junior doctors for how to deal with medical uncertainty in clinical practice.

Main findings

First year junior doctors experienced a large degree of medical uncertainty and used the words 'certain/uncertain' and 'secure/insecure' interchangeably.

'Insecurity' was used in the context of feelings such as shame, inadequacy and concern about standing out for the wrong reasons.

The potential for improvement in terms of the working environment, feedback and preparation was described as considerable.

Uncertainty is an unavoidable aspect of medicine that can arise in many different situations (1). It can arise due to a lack of knowledge and awareness. This awareness leads to emotional, cognitive and behavioural responses in healthcare personnel and patients (2). Common reactions to uncertainty are fear, anxiety, indecisiveness and a feeling of vulnerability (3).

In patient interaction, knowledge is generated from conversations about the patient's medical history, clinical examinations and tests. In a qualitative study of 22 doctors with varying experience, Han et al. called the process of ignorance-focused response to uncertainty a search for information to reduce or 'cure' uncertainty (4). At any given time, there is also uncertainty that cannot be reduced. This relates to *known unknown* variables – what we know that we do not know. Meanwhile, it is always possible that there are *unknown unknowns* – what we *do not* know that we do not know (5).

Few studies exist on Norwegian doctors' perceptions and management of medical uncertainty. One group that can be assumed to have a lot to say about the topic are the most recently qualified doctors: those in stage 1 of their specialty training, herein referred to as first year junior doctors.

First year junior doctors have traditionally staffed emergency departments in Norway, with varying degrees of supervision and decision-making support. In 2008, the Norwegian Board of Health Supervision strongly criticised the lack of management and control in emergency departments and raised concerns about the standard of patient care (6). The consideration to patient safety played a part in the introduction of the new specialty of emergency medicine in Norway in March 2019 (7). But what about the safety of our first year junior doctors? A Norwegian study showed that the presence of an emergency specialist led to less experienced doctors reporting a stronger sense of security in their working situation in the emergency department (8). Better working conditions for first year junior doctors in Norwegian emergency departments are still being called for (9), and first year junior doctors' perspectives on medical uncertainty should be of great interest.

The purpose of this study was to explore, through qualitative interviews, how first year junior doctors perceive and manage uncertainty in clinical practice.

Material and method

In February 2018, 71 first year junior doctors at Akershus University Hospital and Nordland Hospital were invited to take part in a pilot study on uncertainty in clinical practice. The study was in two parts and consisted of a questionnaire with 30 questions about tolerance for uncertainty, and a qualitative interview. Of the 65 who responded to the questionnaire, 48 agreed to be contacted about a qualitative interview.

Based on the responses from the questionnaire survey at Akershus University Hospital (n = 42), a hierarchical cluster analysis of response patterns was performed. Six groups of doctors with similar response patterns were identified. One doctor in each group was invited to a qualitative interview. Informed by this method and with the aim of ensuring a similar stratification of interviewees at Nordland Hospital, four doctors who had consented to an interview were invited. These four were sent an email or text message, consented to participation and were included in the study.

Six informants were women, and eight informants were educated in Norway (all four Norwegian universities were represented). Before starting their specialty training, the first year junior doctors had an average of nine months' experience of working with a medical licence (0–23 months). We therefore felt confident that we had a representative sample in terms of gender, hospital size, place of education and work experience, and the personal diversity was sufficient for us to expect a rich data material.

Qualitative interviews were conducted according to a semi-structured interview guide consisting of ten questions (see the appendix). The study deliberately did not use a predetermined definition of medical uncertainty, and the interview guide started with the following two questions: 1) When I say 'uncertainty in clinical practice', what first springs to mind? 2) When you think about uncertainty, what do you think it entails?

At Akershus University Hospital, the interviews were conducted 8–9 months into the year by PG, whom the doctors had not met since the induction week. At Nordland Hospital, the interviews were conducted 9–10 months into the year by a research assistant, who was a qualified doctor and was trained in conducting qualitative interviews. The reason for this was that the local study member (EHO) was the head consultant in the emergency department, and we wanted the interviewees to be able to speak freely to an interviewer with whom they had no working relationship. The interviews lasted 15–60 minutes, and most were 30–45 minutes long. The interviews were transcribed verbatim and translated to English so that PKH could participate in the analysis.

An initial core team of BN, PG and EHO used a detailed American codebook from a similar study for all statements in the interviews (4), which sharpened our focus on nuances in interpretations and classifications related to English and Norwegian. Due to changes in the working situation, we subsequently had to assemble a new core team consisting of EHO, KA and PG. We decided to take a fresh look at the material and chose the systematic text condensation method (10). The core team's analyses were presented to and discussed with BN, TG and PKH in several rounds.

The study was assessed and approved by the Norwegian Centre for Research Data (project number 59292) in 2018 as well as the data protection officers at Akershus University Hospital and Nordland Hospital.

Results

To the first two open-ended questions about what the informants understood by the terms 'uncertainty' and 'uncertainty in clinical practice', seven of the ten first year junior doctors responded immediately by talking about their own uncertainty and their own experiences, while three talked about uncertainty at a more general level. The doctors in the first group talked about their fear of making mistakes, fear of not being well versed enough in medicine, thoughts about what they have done right, doubts about their own knowledge and their own decisions, and their concerns about how patients may have fared. The other three informants talked about the amount of uncertainty in medicine, how you have to accept uncertainty, and about diagnostics and clinical assessments.

During the work, we became aware of the informants' extensive use of the words *uncertain/certain* and *insecure/secure*, and that the words were used interchangeably. We found that this was consistent in all three main themes in the interviews, and this observation gave us a deeper understanding in the analysis of the first year junior doctors' perceptions.

Our analysis culminated in three main themes related to the first year junior doctors' working situation. The first theme was about how first year junior doctors dealt with the medical uncertainty to which they were exposed in that moment. The second theme was how the doctors reacted to and were affected by medical uncertainty, both in the situation and retrospectively. The last theme was about the importance of how the doctors were received and included in the various departments and how well their medical studies had prepared them for their specialty training.

Dealing with uncertainty

When the first year junior doctors talked about how they dealt with uncertainty in clinical practice, they mostly talked about their interaction with the individual patient, usually a patient admitted to the emergency department. According to several of the doctors, the immediate response in the face of uncertainty was to search for information in available literature (online, in medical handbooks etc.) or to ask a colleague, either a secondary on-call doctor, other first year junior doctors or nurses:

'If there's something that's quite serious, I call for help. But if it's something trivial, I go and check the facts and what I can actually do here and now.' (Doctor 1)

Although the first year junior doctors tried to minimise uncertainty and insecurity by gathering information, several of them wanted to remove the last shred of doubt by getting support from colleagues:

'I really try to be prepared, read up or talk to people... In practice, I probably end up asking a lot of questions, better one too many than too few. I'm probably… I really like to know that I'm secure and am confident that what I'm doing is okay.' (Doctor 2)

Trying to minimise uncertainty and insecurity by asking colleagues was described as crucial by some of the first year junior doctors. They were determined to endure the shame of possibly asking too many questions in order to be sure that a patient was safe:

'Yes, maybe too often... I've sometimes thought... that it had... yes, that I've become a little more effective by trusting myself a bit more when I think that it's probably right. And then I get an urge to just double-check... I think of the big responsibility I have for the patients, that maybe I'm the only one they actually see, at least in the beginning. And that the sense of responsibility is so great that I would rather seem a bit stupid and be a bit embarrassed than be uncertain of whether I've done something right or wrong.' (Doctor 10)

Talking with a more senior doctor, usually referred to as a secondary on-call doctor, was something the first year junior doctors generally described as giving them a strong sense of security. But the dialogue with the secondary on-call doctor could also be a difficult balancing act between being challenged and getting decision-making support:

'It's a double-edged sword that there, because some secondary on-call doctors are very good at letting you think for yourself and feel your way, while some secondary on-call doctors give you specific information before you have time to think. Then you don't become uncertain, you become a machine that only does the job that the secondary on-call doctor has told you to do. But if you get the opportunity to think for yourself, then you have room to be uncertain. I think that being uncertain can be healthy too, it's not all bad.' (Doctor 1)

When discussing the issues in the emergency department, several of the first year junior doctors expressed that they approached the patients' presentation of symptoms as a problem with an answer:

'If you can rule out the most serious conditions, then you have a bit more time to think about it. And, for example, if the secondary on-call doctor is operating and you don't know, then do what you can in the meantime to rule out anything life-threatening. And if you don't have the answer by then, it can sort of wait until they've finished operating and you find out what the answer is.' (Doctor 3)

After a conversation with and examination of the patient, while awaiting the results of tests, the patient process in the emergency department nears a decision on a tentative diagnosis and a further plan for the patient. The first year junior doctors expressed that this was often the most challenging part of the process:

'At the start, I think I was actually quite passive. And I've kind of been working hard on that, on the fact that nothing good comes of it. So I've actually worked on being more systematic and thinking that if you work more systematically, you at least don't do... I was about to say the worst thing you can do is not doing anything. And I've found that that helps.' (Doctor 4)

Personal response

When asked how they reacted to uncertainty, the doctors' answers varied, but most of them talked a lot about feeling uncertain and that it affected them emotionally:

'I get physically sick. I can feel that I typically get an increased heartbeat, butterflies in my stomach, the whole package. Sometimes I wonder if I've done something stupid, if I should be a doctor. Because feeling that uncertainty is so challenging.' (Doctor 2)

Not only did it make them start to question their career choice, but they also wondered whether they could handle the work.

'No, you get scared, you feel small and stupid and incompetent and unimportant and sort of lose your sense of feeling like you belong in the emergency department or wherever you are. That someone who knows what they're doing now has to come and sort things out...' (Doctor 1)

Some of them also became emotional during the interview itself:

'Yeah, it's always like that there...certain assessments and a lot you have to take into account and...oh, I'm starting to feel really stressed just thinking about it.' (Doctor 4)

The first year junior doctors talked a lot about fear that something could go wrong because of them.

'Fear of making a mistake, a big mistake. I think it's kind of immediate, no matter how straightforward the patient is, you immediately think what is the mistake I can make here.' (Doctor 8)

Many also worried about what others at work might think of them.

'The fear of the confrontation, the fear of being scolded or ... that it will actually be something much worse if it gets to the point where I get feedback that maybe this wasn't good enough or try to do it this way the next time.' (Doctor 2)

The first year junior doctors often compared themselves to the other doctors:

'You tend to compare yourself a lot with everyone around you. Other colleagues, and thinking that I should be doing just as good a job.' (Doctor 7)

A concern that was central to many was their pace of work:

'At least in one department, first year junior doctors have much of the responsibility to sort of deal with the incoming patients. So if you're someone who is a bit slow, it all seems very fast-paced. And I probably thought about that a bit too much at the start, I was a bit worried that people would see that I was taking a long time and…' (Doctor 9)

Several of the first year junior doctors talked about a positive development during the first months of their specialty training in the hospital and about how they were more willing to express their uncertainty:

'And I've become more open to asking when I'm uncertain. And perhaps also to conveying that to the patients. I think that maybe at the start I was a bit more afraid to tell the patient that... or you might have that barrier that you shouldn't show uncertainty.' (Doctor 6)

Some first year junior doctors spoke less about their own uncertainty and the emotions that uncertainty can evoke. They seemed to have come to terms with their role and expressed confidence in the system they were part of:

'And I often feel that the diagnostics and ... it feels a bit above my pay grade as a first year junior doctor, so I don't really think about that much, because that responsibility doesn't in a way ... isn't on me yet, I feel. So it doesn't worry me that much. I think more about how they (the patients) are doing and did we do the right thing and …' (Doctor 9)

Several indicated that the experience of uncertainty was the trigger for asking for help and that it gave them a sense of security to be part of a system where you always have someone you can ask:

'Or that other times you feel more like, I think it makes you feel secure to be uncertain because you're meant to be uncertain and you have a good reason to ask someone else.' (Doctor 7)

Most of the first year junior doctors spoke of personal development during their specialty training and that their confidence in their own abilities and limitations was growing:

'I think that I've become more confident, both in my own decisions and in the fact that it's okay to spend a bit of time on some patients.' (Doctor 9)

The first year junior doctors talked a lot about the emotions they took home from work. They spent a lot of time ruminating and thinking about the patients they had met and the decisions that had been made:

'I didn't think it would be like that really, but I take it home with me a lot. Even when I don't think I've made a mistake, I think that I might have.' (Doctor 8)

Here, too, there was a positive development in several doctors after a few months of specialty training in the hospital:

'And so you become a bit more self-confident with each patient you've had, where you think okay, well, that went well, I did the right thing. So it's probably like that... So there's certainly nothing wrong with either what I've learned or other things hopefully.' (Doctor 4)

Working environment, feedback and preparation

The first year junior doctors talked a lot about how they had been welcomed in various departments and in the emergency department. Those who had experienced a safe environment and close supervision at the start greatly appreciated it:

'My first week on duty, she was the secondary doctor (registrar) that I was with...she double-checked everything I did. I was very grateful for that, because I got a lot of good feedback, like remember this, do such and such like that, and that sort of thing.' (Doctor 8)

But there were also examples of the opposite:

'I've been thrown out of three rooms at the outpatient clinic because there's no room for me to admit elective patients. And then when I wondered about something, I had no one to call. I don't have any lists, I don't know who to call. And as I said, I don't have a phone. And the phone in the office didn't work where I was sitting either. So yesterday I felt pretty insecure. I had a really crappy day at work.' (Doctor 8)

A low threshold for being able to ask questions was highlighted as very positive:

'And it helps a lot that many of those you might not have met before start by saying that "I get worried if you don't ask", so placing the threshold quite low for you to ask.' (Doctor 10)

The first year junior doctors expressed a hunger for feedback from their colleagues:

'I think and I hear people saying that I do a pretty good job. And when I get feedback about things I can improve, I think yes, yes, it was really nice to get feedback on that, because I can then try to do it like that the next time. There isn't much of it, I feel, that the little I get... it doesn't just apply to me, but... the little you get is so important.' (Doctor 2)

The first year junior doctors spoke of a culture where the little feedback that they receive is often negative, while good work is rarely recognised.

'There are lots of times... we get very, very, very little feedback. You only hear things if they are wrong. Then you get a digital note saying that you should have done it differently here or that you can clarify at the meeting that, yeah, why haven't you done

those things. You never get to hear if you've done something right. Some have probably become a bit better at saying "good job" at the end of your shift, you know, like, automatically. And that's nice in itself. But... yes, there's very, very little positive feedback in the medical community.' (Doctor 1)

Several first year junior doctors went so far as to say that their medical studies had not prepared them well enough for the everyday working life that they faced:

'No, I don't really think so. It's quite a big transition to go from studying to going out to work, that maybe it could... that they could try to get it across a bit better during your medical studies. They may have tried different ways, but I felt... and I've discussed it with others as well, that it's a bit of a shock when you first come to work... And I'd really like to think that you're sort of more prepared to work in a hospital where you've been throughout your studies.' (Doctor 10)

One first year junior doctor concluded the interview as follows:

'... I think it's great that this uncertainty is actually being addressed, and that young doctors are getting some tools to cope with uncertainty. We have to figure out a lot of this on our own.' (Doctor 5)

The parameters of uncertainty, security and insecurity

We found significant differences between how the informants dealt with and reacted to uncertainty, depending on whether they felt secure or insecure. Several of the doctors described a clear change during the short time they had been working in the hospital, and some described themselves as secure in some situations and insecure in others.

Figure 1 visualises key components in our analysis that depend on whether the first year junior doctors felt secure or insecure when they were uncertain, both in general (rectangles) and in the process where they were responsible for a patient (triangles). The dotted line that runs diagonally from the bottom to the top of the figure expresses permeability and shows how first year junior doctors could move above or below the dotted line from situation to situation.

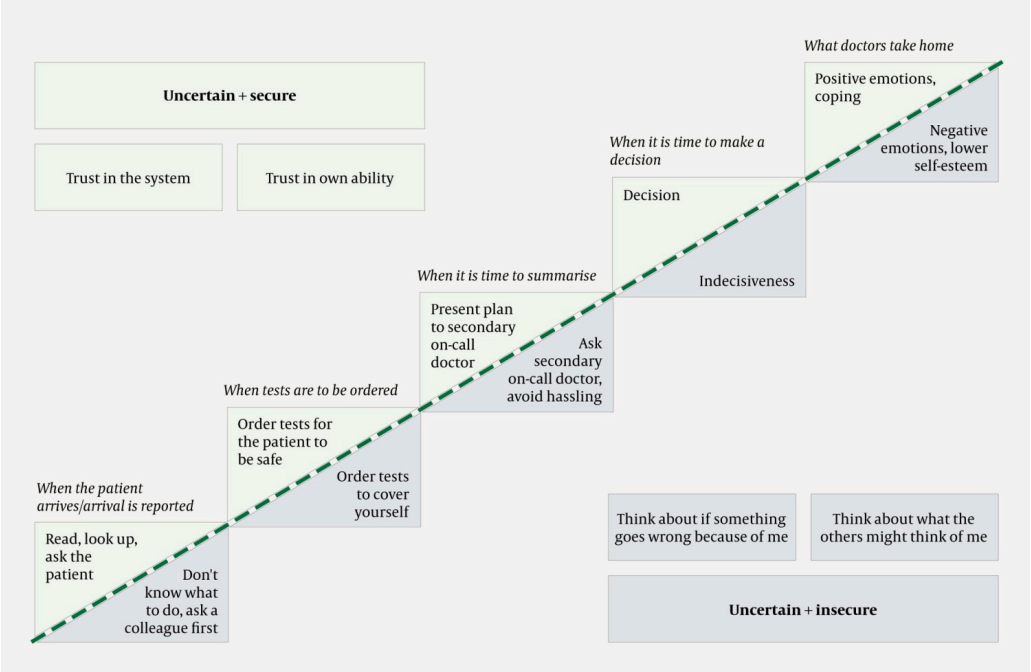

Figure 1 The parameters of uncertainty, security and insecurity, in general (rectangles) and when the doctor has responsibility for a patient (triangles). First year junior doctors move from situation to situation above (they feel secure) or below (they feel insecure) the dotted line.

Discussion

Previous attempts to describe uncertainty in clinical practice have dealt with sources of uncertainty, how uncertainty affects patients and doctors, as well as the emotional and behavioural responses to uncertainty (1–4). In our interviews, the words 'uncertainty/certainty' and 'insecurity/security' were often used interchangeably. This may indicate that the first year junior doctors interviewed did not make a clear distinction between medical uncertainty and what the uncertainty does to them.

In further work with uncertainty in clinical practice, we believe it may be useful to make a clear distinction between *uncertainty* as a cognitive phenomenon and *insecurity* as the emotional response that uncertainty can evoke. There are at least two good reasons for this. The doctors' well-being is one. The relationship with the patients is the other. When doctors express uncertainty in relation to diagnosis and treatment options, it is crucial that they create security around the uncertainty. This is difficult if the doctor himself does not feel secure. In an experimental study from the Netherlands, it was found that non-verbal expressions of uncertainty reduced patients' trust in the doctor, while verbal expressions of uncertainty did not (11).

Han et al.'s taxonomy of uncertainty management strategies in medicine is transferable to the newly qualified doctors in our dataset, and has primarily a 'curative' approach to uncertainty and a desire to reduce ignorance (4). Our first year junior doctors reflect and use to a lesser extent 'palliative' strategies to make the uncertainty something they can live with. The informants in our study described feelings such as shame, inadequacy and a constant worry about standing out for the wrong reasons. The primary objective of specialty training should be to give doctors the experience of being in a secure learning environment. In order to achieve this, increased awareness and systematic changes are needed in both in undergraduate medical education and in the doctors' working environments.

The informants talked a lot about the importance of the working environment they experienced, how they were welcomed and the degree of supervision and feedback. Medical uncertainty in itself can be overwhelming for a newly qualified doctor. Our study suggests that a secure framework can be helpful in a work situation where uncertainty is always a factor. Stage 1 of specialty training has not been subject to a national evaluation since it replaced the prior model in 2017. Evaluations are carried out regionally in hospital trusts, but have not been made public. In the Norwegian Medical Association's most recent national evaluation of the stage 1 specialty training, the rotations in surgery, internal medicine and psychiatry all ranked highly across hospitals in Norway, while supervision and guidance scored significantly lower (12). As part of the new specialty training, the learning objectives in a common competence module require hospital trusts to significantly boost areas such as guidance, supervision and communication (13), but this is not coordinated at a national level.

The first year junior doctors in our study expressed that their undergraduate medical education had not prepared them well for what they would face in their first year of specialty training. Our study suggests that medical students need more and earlier patient contact, followed by more patient responsibility and thus more exposure to uncertainty – under close supervision. Increased utilisation of centralised learning

arenas as well as simulation puts students in reality-like situations where they have to make decisions under uncertainty (14), and will help prepare newly qualified doctors for their first years as a junior doctor.

The findings of a qualitative study based on interviews with ten doctors from two hospitals cannot be generalised to other first year junior doctors in Norway. However, the strengths of the study are that a response pattern analysis of established questionnaires on tolerance for uncertainty enabled a wide range of informants to be included, and that the interview guide had previously been used in a study of doctors in the United States (4). In future research, we suggest that questionnaires be used in combination with participant observation and reflective interviews, which has not been done before.

Conclusion

First year junior doctors in the study not only struggled with the inherent uncertainty of medicine, but also felt a significant sense of insecurity, particularly at the start of their specialty training. How the doctors were welcomed in the workplace and the feedback they were given were important factors, and the informants told of an undergraduate medical education that had insufficiently prepared them for dealing with medical uncertainty in clinical practice.

Thanks go to Jūratė Šaltytė Benth, a statistician at the University of Oslo, for the response pattern analysis.

This article has been peer-reviewed.

REFERENCES

1. Han PKJ, Babrow A, Hillen MA et al. Uncertainty in health care: Towards a more systematic program of research. Patient Educ Couns 2019; 102: 1756–66. [PubMed] [CrossRef]

2. Han PK, Klein WM, Arora NK. Varieties of uncertainty in health care: a conceptual taxonomy. Med Decis Making 2011; 31: 828–38. [PubMed][CrossRef]

3. Hillen MA, Gutheil CM, Strout TD et al. Tolerance of uncertainty: Conceptual analysis, integrative model, and implications for healthcare. Soc Sci Med 2017; 180: 62–75. [PubMed][CrossRef]

4. Han PKJ, Strout TD, Gutheil C et al. How Physicians Manage Medical Uncertainty: A Qualitative Study and Conceptual Taxonomy. Med Decis Making 2021; 41: 275–91. [PubMed][CrossRef]

5. Djulbegovic B, Hozo I, Greenland S. Uncertainty in clinical medicine. I: Woods J, Gabbay DM, red. Handbook of The Philosophy of Science: Philosophy of Medicine. San Diego: North Holland, 2011: 299–356.

6. "Mens vi venter…" – forsvarlig pasientbehandling i akuttmottakene? Oslo: Statens helsetilsyn, 2008.

7. Kongsvik L. Ny spesialistkompetanse i akutt og mottaksmedisin. https://tidsskriftet.no/2019/10/aktuelt-i-foreningen/ny-spesialistkompetanse-i-akutt-og-mottaksmedisin Accessed 26.4.2023.

8. Ofstad EH, Stoknes BD, Dale J et al. Effekter av økt legefaglig kompetanse i akuttmottak. Dansk Tidskr for Akutmedicin 2021; 4: 3–9. [CrossRef]

9. Schei V. En turnusleges bønn om bedre arbeidsvilkår. Tidsskr Nor Legeforen 2022; 142. doi: 10.4045/tidsskr.22.0269. [CrossRef]

10. Malterud K. Systematic text condensation: a strategy for qualitative analysis. Scand J Public Health 2012; 40: 795–805. [PubMed][CrossRef]

11. Blanch-Hartigan D, van Eeden M, Verdam MGE et al. Effects of communication about uncertainty and oncologist gender on the physician-patient relationship. Patient Educ Couns 2019; 102: 1613–20. [PubMed][CrossRef]

12. Birkeli CN. Nasjonal evaluering av turnustjeneste for leger 2015. https://www.legeforeningen.no/contentassets/ea5f46eb1dc7453d91502248df658427/turnusevaluering-endelig.pdf Accessed 26.4.2023.

13. Gulbrandsen P, Hyldmo I, Fossum IS et al. En effektiv og trygg vei til bedre spesialistutdanning i sykehus? Tidsskr Nor Legeforen 2020; 140. doi: 10.4045/tidsskr.19.0639. [PubMed][CrossRef]

14. Olsen IP, Lillebo B, Ofstad EH et al. Tid for å utdanne flere leger desentralt. Tidsskr Nor Legeforen 2021; 141. doi: 10.4045/tidsskr.21.0367. [PubMed][CrossRef]

Publisert: 31 May 2023. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.22.0428
Received 14.6.2022, first revision submitted 19.1.2023, accepted 12.4.2023.