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An Evaluation of Considerations and Decision-Making during Nurse Prescribing in a Dutch Clinical Setting:

a Qualitative Study

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English Abstract

Title: An Evaluation of Considerations and Decision-Making during Nurse Prescribing in a Dutch Clinical Setting: a Qualitative Study

Background: Since January 2012, Dutch nurse specialists have been authorized to prescribe medicines to patients for an experimental period of five years. There is a lack of evidence in national research, so the quality and safety of nurse prescribing in the Netherlands is unclear and has to be assessed.

Aim and research question: The aim was to get a first impression of nurse prescribing in a Dutch general hospital in order to discover and research possible issues to ensure further implementation of the new task. The research question was: what factors influence the considerations and decision-making of nurse specialists in a Dutch general hospital when prescribing medicines?

Method: A qualitative, exploratory case study was conducted from January 2013 till June 2013. A convenience sample was used to select the participants: three nurse specialists and three physicians working in a Dutch general hospital. Data collection involved observations during eight nurse-prescribing consultations and semi-structured interviews with the six participants. Thematic analysis of data proceeded in stages and the general principles were analytic induction and theoretical sensitivity.

Results: Four overarching themes emerged describing factors in the considerations and decision-making of nurse prescribing: guidelines and protocols, role physician, personal experience and role patient.

Conclusion: Formal guidelines and consultation with physicians were the determining factors in prescribing medicines by nurse specialists in a Dutch general hospital. Personal experience and consultation with patients were of less influence in the considerations and decision-making of nurse prescribing.

Recommendations: Further qualitative research could be conducted with a larger purposeful sample to explore the decision-making process of nurse prescribing, the pharmacological knowledge base, continuing professional development and the use of protocols by Dutch nurse prescribers in the future. These recommendations should be made, viewed from government policy's perspective, to decide about definitive permission of nurse prescribing in the law BIG.

Keywords: Decision-making, Drug prescriptions, Nurse prescribing, Nurse Specialist

Background

As part of the modernisation of healthcare workforce in the Netherlands, there is an on-going discussion about task shifting in health care settings[1-3]. The World Health Organisation declares that task shifting involves rational redistribution of tasks among health workforce teams. Specific tasks are moved from highly qualified health workers to health workers with shorter training and fewer qualifications in order to make more efficient use of available human resources for health[4]. An example of this has been the development of 'nurse prescribing'[4-6]. Legally permitted and qualified independent prescribers are responsible for the clinical assessment of a patient, the establishment of a diagnosis and decisions about the appropriateness of medicines, treatment or appliance, including the issuing of a prescription[1,7,8]. Prescribing medicines by nurses has been implemented in a growing number of countries, including Australia, Canada, New-Zealand, South Africa, Sweden, United Kingdom (UK) and United States of America (USA)[7-9].

Since January 2012, Dutch nurse specialists have been authorized to prescribe medicines to patients for an experimental period of five years. Dutch nurse specialists who have successfully completed the Master of Advanced Nursing Practice (MANP) are registered in the Dutch Nursing Specialists Register (VSR). Nurse specialists are active in one of the five nursing specializations in the Netherlands: preventative care, acute care, intensive care, chronic care or mental care[10]. The authorization to prescribe medicines to patients is related to nurse specialists' expertise and legalized in article 36a of the Dutch law Professions in Individual Healthcare (BIG)[6]. After the experimental period the Dutch government[11] will evaluate article 36a and decide about definitive permission of nurse prescribing in the law BIG.

In daily practice, prescribing medicines by Dutch nurse specialists particularly occurs in clinical settings. Information is required about how nurse specialists apply their new authority in daily practice and what aspects influence the prescribing practices. International research has shown that important factors in the decision-making process of nurse prescribing are access to and support from physicians, non-medical prescribing lead (formal guidelines) and continuing professional development[12]. In addition, guidelines from the National Institute for Health and Clinical Excellence (UK) indicate that professionals should "offer all patients the opportunity to be involved in making decisions about prescribed medicines"[13,14]. McCaughan et al.[15] stated in their study: "Faced with clinical uncertainty, the majority of nurses relied on personal experience, or obtained advice and information from a general practitioner or other colleagues". An evaluation-study of nurse prescribing also found that most practices of both nurses and physicians are based on experiential knowledge rather than research-based knowledge[16].

Problem statement

There is a lack of empirical evidence in national research, so the quality and safety of nurse prescribing in the Netherlands is unclear and has to be assessed. Therefore, multiple factors such as the use of research-based guidelines, personal experience or interpersonal contact with the physician and / or patient should be evaluated. This is important information for the implementation process and effectiveness of the prescribing authority of nurse specialists and eventually on the evaluation of article 36a (BIG).

Aim

The aim of this study was to get a first impression of how Dutch nurse specialists prescribe medicines in daily clinical practice. On that basis, possible issues could be discovered and researched to ensure further implementation of nurse prescribing.

Research Questions

The research questions were:

What factors influence the considerations and decision-making of nurse specialists in a Dutch general hospital when prescribing medicines?

a. What influence do formal guidelines and personal experience have in prescribing medicines by nurse specialists?
b. What influence do (consultation with) physicians and patients have in the considerations of nurse specialists when prescribing medicines?

Method

Design

A qualitative, exploratory case study was performed between January 2013 and June 2013 to observe and describe the prescribing practices of nurse specialists, which provided empirical knowledge about what happened in the new task[17,18]. This study was part of a study by the Netherlands Institute for Health Services Research (NIVEL) in which topics as clinically appropriateness and organizational conditions were also investigated. In the NIVEL-study, five different hospitals (three university and two general hospitals) in five larger Dutch cities participated.

Participant selection

The study population consisted of nurse specialists and physicians working in a general hospital in the Netherlands. In order to be eligible to participate in the study, nurse specialists successfully completed the MANP, were registered in the VSR and prescribed initial medicines

to adult patients. Physicians, with the same specialism, who cooperated closely with the nurse specialist were eligible to participate in the study.

A convenience sample was used to select participants whose experiences helped to explore nurse prescribing in daily clinical practice[19]. A total sample of three nurse specialists and three physicians who met the inclusion criteria was formed and a preliminary estimate for a first impression[17].

Through one nurse specialist, who functioned as the gatekeeper[18], the researcher gained access to other nurse specialists and physicians. The researcher approached participants by email and information letters informed them. After their agreement by email, the Board of Directors of the hospital was asked for approval by the researcher.

Ethical issues

The study was conducted according to the principles of the Declaration of Helsinki[20] and in accordance with the Dutch Medical Research Involving Human Subjects Act (WMO)[21]. For implementation of the NIVEL-study, non-WMO judgment and approval were received from the Medical Ethical Exam Committee (METC) of the VU University Amsterdam hospital (reference number 2012/366) and of the participating hospital in this study (reference number NT2013.02.05.1).

Core concepts

When examining the prescribing practices of nurse specialists and important underlying patterns of relationships between nurse specialists and physicians during prescribing medicines, more insight was expected in the topics that were searched for. These topics were considerations, decision-making process, influencing factors, formal guidelines, experiential knowledge, the role of the physician and patient.

Data collection

Data collection consisted of observations during nurse-prescribing consultations and semi-structured interviews with all the participants. The combination of both methods of data collection allowed triangulation of sources, which in turn helped maintain rigour of the study findings[22]. The used observation guide and interview topic lists (one for nurse specialists, one for physicians) were developed on the basis of literature on nurse prescribing[5,12,14-16,23,24] and assessed on reliability, validity and usability by the researcher and experts from the NIVEL.

All the observations and interviews were conducted by the researcher (SG) who was trained in qualitative interviewing techniques; this improved the quality of data and results[25]. The observations and interviews took place at the hospital where the participants worked. The

researcher only observed, i.e. did not, in any form, participate in the consultation[19,26]. No non-participants were present during the interviews.

Socio-demographic data (name, year of birth and specialism) of the nurse specialists and physicians were collected at the start of both data collection strategies. The researcher ensured adequate information about the intent of the study and oral consent of participants was tape-recorded.

Participant Observation

Nurses were observed during face-to-face and telephonic consultations to capture data on decision-making and to provide leads for the interviews that were held with the nurse specialist and physician after the consultations[19]. Observations were performed according to the formulated observation guide and reporting form. The strategy was to observe until the number of three nurse-prescribing consultations for each nurse specialist was reached, because during consultations it was not clear upfront if the nurse specialist would prescribe medicines to the patient. Patients were given oral information before the consultation and when the nurse specialist prescribed medicines, the patients received the information letter and signed an informed consent form including socio-demographic data (name and date of birth).

Interviews

Face-to-face semi structured individual interviews (about 30 minutes) were held with all the participants concerning their experiences with nurse prescribing and the core concepts. The interviews were of a general nature and were conducted in conjunction with the collection of observational data. Interviews were organised around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewee/s[17]. The interviews were tape-recorded and transcripts were returned to participants to check the interpretation of their words and accuracy[19,22]. The approved interview transcripts formed the basis for analysis.

Data analysis

Analysis of qualitative data was commenced after conducting the first interview in an (inter)active process[19]. After the first observations and interviews a peer debriefing was arranged with all the researchers of the NIVEL-study[19]. These researchers re-analyzed the raw data, listened to and discussed the researcher's concerns. No adjustments were created for further data collection. All data were coded using QSR NVivo qualitative data analysis software[18,27]. The underlying general principles of the thematic analysis were analytic induction and theoretical sensitivity[19] and were used to assemble the data in a meaningful and comprehensible fashion[17]. Analytic induction was used to determine the factors that influence the nurse specialists' considerations during prescribing. Theoretical sensitivity (deduction) enabled the development of creative ideas from the research data, by viewing the data through

a theoretical lens. The researchers (SG and MK) participated in internal discussions of the analysis, and themes were discussed until consensus was reached. Quotes from different participants were chosen to add transparency and trustworthiness to the findings and interpretations of the data from which the results emerged[19,28,29]; used quotes from the nurse specialists *(NS)* and the physicians *(P)* were translated in English.

Results

All the participants worked at the outpatient department oncology of a general hospital. It was not possible to select participants at different departments because only at this department nurse specialists prescribed medicines. Three female nurse specialists (29, 52 and 53 years old) with the specialism intensive care-oncology and three female oncologists were approached and all agreed to participate in the study. Twenty-four consultations were observed; in eight consultations nurse specialists prescribed initial medicines to (female) patients (between 38 and 66 years old). Two nurse-prescribing consultations were telephonic consultations and the other six were face-to-face consultations. In total eight observations of nurse-prescribing consultations, three interviews (length 30, 38 and 45 minutes) with the nurse specialists and three interviews (length 14, 16 and 31 minutes) with the physicians were analysed. Data from the interviews provided the most information to answer the research questions; data from the observations were used to confirm the answers given in the interviews. No new themes emerged from the observations rather than from the interviews and no inconsistencies occurred between both data collection strategies.

Four overarching themes, with subthemes, emerged describing the factors that influenced the considerations and decision-making process of nurse prescribing.

Guidelines and protocols

All the medicines that nurse specialists within their specialism (oncology) may prescribe was defined in a formulary. Nurse specialists, the physicians and the pharmacists developed the formulary on the basis of guidelines from the professional association Nurses & Carers Netherlands (V&VN) and scientific literature. Permission was granted on behalf of the partnerships oncology, oncological surgery, the Board of Directors, the legal adviser and the manager of the hospital's College to prescribe medicines as defined in the formulary.

Other guidelines and protocols used during prescribing medicines were pain protocols[30-32], national evidence and consensus based guidelines oncology care[33] and the pharmacotherapeutic precept[34].

Nurse specialists identified that they prescribe medicines only for patients with the clinical diagnosis that corresponds with their specialism: people who have breast abnormalities as

benign or malignant breast lesions, gastric carcinoma, colon carcinoma, wound infections or effects of oncological surgery and chemotherapy.

> *"If someone has epilepsy, I'm not going to prescribe medicines focused on epilepsy, but when something is wrong on oncology then I'll write medicines for that part."(NS3)*

The formulary contained an alphabetical list of the most commonly prescribed medicines: anti-diarrhoea, concomitant medicines chemotherapy, benzodiazepines, endocrine therapy, laxatives, mucosa protective, protonpom inhibitors, pain management, medicines in case of infectious diseases, corticosteroids and bisphosphonates. Recorded information was available for each medicine during indexing, for prescribing and evaluating. It concerns: conventional dosage forms, strengths, standard doses, important information for the patient, instructions, warnings and measurements to monitor side effects.

Guidelines and protocols – limits of the prescribing authority

Because of the clear boundaries in prescribing, nurse specialists stated that the formulary is a very useful and clear instrument to work with. Nurse specialists made sure that their knowledge is up-to-date and saw to it that they stayed competent according to the limits of their prescribing authority.

> *"You have to be clear about your differentiation as a nurse specialist. The danger is that you're doing too much, so you should always clearly monitor your boundaries and stick to your protocol."(NS1)*

Guidelines and protocols – deviation from guidelines and protocols

Nurse specialists wrote prescriptions according to their formulary but sometimes they had to deviate from this guideline. Important considerations were allergies, hypersensitivity, side effects of medicines, not responding and strong reaction to medicines. Practical experience and contact with the physician were needed when deviation from the formulary was necessary.

Role physician

Physicians supervised nurse specialists and gave full assistance in performing the new task. Nurse specialists stated that the supervision is good and the physician is a backup that can be consulted. During development of the formulary, physicians talked with nurse specialists about qualification and competence in relation to choices of medicines that should be prescribed.

"I experience a great cooperation of doctors and pharmacists and whoever you need at this."(NS2)

In contrast, one physician stated that the system is working properly, although it is possible to improve its quality by standard feedback moments after the outpatients' clinics and by starting to work in smaller teams.

"I think you should work in teams more often, preferably with one or two nurse specialists. When you work together well you can make use of each other's competences."(P2)

Role physician – formal consultation

A standard multidisciplinary consultation was arranged every morning before the outpatients' clinics to discuss the total treatment plan of each patient on initiative of the nurse specialist. When medicinal prescriptions were part of the treatment plan this was coordinated between the nurse specialist and physician. Later, the nurse specialist discussed the advice with the patient. Afterwards evaluating the outpatients' clinic with the physician was exceptional, but possible on request.

"You discuss all the patients in the morning, before they come to the outpatients' clinics. When you see the patient you have already specified the treatment plan."(NS1)

Role physician – informal consultation

Informal consultation with the physician consisted of a direct phone call or indoors walking together. Mostly a direct dialogue took place about the patient at the outpatients' clinic. All the nurse specialists felt free and equal to consult with the physician and disturbed the physician in between the outpatients' clinics when needed.

"The threshold for informal consultation is relatively low, nurse specialists can always walk in, call or consult me after the outpatients' clinic."(P3)

Reasons mentioned for direct consultations with the physician: deviation from the protocol, other medicines than discussed in multidisciplinary consultation, further investigation before prescribing medicines, doubts or uncertainty about the correct prescription of medicines.

"You anticipate on what may come. If I have a patient in my consulting room with a problem in which I need to deviate from the protocol and when I'm not sure, I can directly consult with my supervisor."(NS2)

Personal experience

Nurse specialists wrote prescriptions on the basis of knowledge and practical experience. Knowledge referred to the education module pharmacotherapy and personal formulary. Practical experience was necessary to decide if individual patients fit in the protocol. The choice for a specific medicine, doses and administration forms happened on the bases of personal and practical experience.

"Sometimes it is quite difficult for nurse specialists to decide about the prescriptions. For example, someone has a fungal infection in the mouth and then you can give something for the mouth only, but you can also prescribe a systemic medicine."(P3)

Role patient

Nurse specialists explained the medicine that they wanted to prescribe, the pros and cons and the side effects to the patient and the people most concerned. Nurse specialists asked the patient for experiences with the specific medicine and eventually agreement on the recommended treatment. When the patient preferred another medicine, this was occasionally possible in consultation with the nurse specialist.

"Sometimes I prescribe a stomach protector and the patient indicates: "I used that medicine in the past and it didn't agree with me." You can see if there is a suitable medicine."(NS2)

It happened that a patient wanted to postpone medicine use but the nurse specialist convinced the patient that the medicine is essential. In contrast, the patient sometimes wanted a prescription and the nurse specialist still found prescription unnecessary.

"I listen to the patient. For example inflammation repeatedly gives problems and I may decide to prescribe antibiotics. I make my own assessment but the patient knows his own body best; sometimes people become inflamed easily. But when the skin is just slightly red, I indicate that I want to wait and see."(NS1)

Discussion

This study identified the factors that influenced the considerations and decision-making during nurse prescribing in a Dutch general hospital: guidelines and protocols, role physician, personal experience and role patient.

Prescribing practices of nurse specialists were based more on research-based guidelines than on personal experience. International research showed similar results on the importance of formal guidelines in the decision-making process of nurse prescribing[12]. Although, other studies[15,16] found dissimilar results about the use of experiential knowledge rather than research-based knowledge during prescribing practices. Dutch nurse specialists prescribe medicines for a short period and according to a very clear formulary, which can ensure more adherence to guidelines than nurses who have more personal experience.

Consultation with physicians was an important factor in the considerations and decision-making process of nurse prescribing. This finding is consistent with other international research where the access and support from physicians and the reliance of nurses on the obtained advice and information from a physician is also seen as important in making decisions about prescribed medicines[15]. Consultation with the patient had a small influence on the decision-making process of nurse prescribing. According to the UK-guidelines should professionals "offer all patients the opportunity to be involved in making decisions about prescribed medicines"[13,14]. The lack of experience in prescribing medicines can ensure that nurse specialists are less focused on the opinion of their patients.

The added value of this study lies in the fact that the study results give new information and contributes to knowledge about how nurse specialists, with the specialism intensive care, prescribe initial medicines to adult patients in a Dutch general hospital.

This was a single centre study with a small sample size. All nurse specialists' participants had one of the five nursing specializations intensive care-oncology and worked at the same outpatient department of a general hospital. Our findings may not be transferable to settings in which the nurse specialists have other nursing specializations and work in university hospitals. We acknowledge that the participants involved in prescribing medicines in the practice settings of other health authorities may have had different experiences and show different perspectives on nurse prescribing[18,19]. Another limitation is volunteer bias, because only those participants who volunteered were interviewed, others who chose not to volunteer might have had different perceptions. Participants included were only those who worked at the outpatient department. As a result of focusing on the outpatient department, no data were collected from pharmacists. Data from pharmacists could have provided insight into what extent nurse specialists make use of their new task and the relationship between nurse specialists and the pharmacists.

The strength of the study lies in the fact that the combination of both data collection strategies with all the participants have enhanced the understanding of nurse specialists' role enactment and interactions between nurse specialists and patients and/or physicians[25]. Despite the fact that the sample size was small and a preliminary estimate for a first impression, saturation was reached because the sample consisted of a homogeneous group; all the participants worked at the same outpatient department[17,19].

The implication of this small explorative study is that the findings help to explain how the factors influence the quality and safety of nurse prescribing and emphasize information for the implementation process and effectiveness of the prescribing authority.

Conclusion

Formal guidelines and consultation with physicians were the determining factors in prescribing medicines by nurse specialists in a Dutch general hospital. Nurse specialists consulted with the physician before the outpatients' clinic and used their formulary containing all allowed medication during every nurse-prescribing consultation. Personal experience and consultation with patients were of less influence in the considerations and decision-making of nurse prescribing. The great adherence to formal guidelines instead of using personal experience and focus on the opinion of patients can be explained by the fact that nurse specialists just started with their new task.

Recommendations

More qualitative research with a larger purposeful sample and more scenarios is required to explore other factors in the decision-making process of nurse prescribing. Other factors to investigate are the pharmacological knowledge base of nurses, continuing professional development and the use of formal guidelines in the future. These recommendations should particularly be made, viewed from government policy's perspective, to decide about definitive permission of nurse prescribing in the law BIG.

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