

Risky procedures by nurses in hospitals: problems and (contemplated) refusals of orders by physicians, and views of physicians and nurses

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Abstract

Occurrence of problems with, refusals of orders and contemplated refusals of orders for risky procedures by nurses in Dutch hospitals and views on the safety of performance was studied using postal questionnaires (600 physicians and 3200 nurses, response 60–71%). Of the respondents, 11–30% experienced problems with and (contemplated) refusals of orders for risky procedures in the previous 12 months. Gynaecologists and internists most frequently mentioned problems concerning the practical performance of the procedure (44% and 30%, respectively). The reason for a problem or a contemplated refusal most frequently given by nurses was that they disagreed with the medication policy (34% and 35%, respectively). The reason for a refusal most frequently given by the gynaecologists, internists and nurses was that the nurses themselves were of the opinion that they did not have the necessary authorisation (95%, 67%, and 62%, respectively). With regard to certain procedures, the views of professionals are more strict than the current legal regulations.

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1. Introduction

In recent years there has been a change in the traditional roles of physicians and nurses, motivated by medical–technical developments, capacity problems, and economical considerations. Other important factors in this change are the professionalisation of the nursing

profession, the job satisfaction of nurses, their career perspectives, and the lack of flexibility that is experienced in the involvement of different health care professionals. It has for instance been hypothesized that task shifts or changes in skill-mix in health care can improve the continuity of care and the communication with patients. These task shifts can take different forms. Tasks can be delegated ‘horizontally’ to professionals with an equal level of expertise (e.g. by hospital specialists to general practitioners) or ‘vertically’ to professionals with a lower level of expertise (e.g. by

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Box 1**The reserved procedures regulations in the Netherlands****Reserved procedures**

Surgical procedures

Obstetric procedures

Catheterisations and endoscopies*

Punctures and injections*

General anaesthetic

Procedures involving the use of radioactive substances and ionising radiation

Cardioversion

Defibrillation

Electroconvulsive therapy

Lithotripsy

Artificial insemination

Conditions

Reserved procedures may only be carried out by those with direct authorisation (e.g. physicians) within their field of expertise, or by others (e.g. nurses) on the orders of those with direct authorisation under the following conditions:

1. There must be reasonable grounds for assuming the nurse is proficient enough to perform the procedure properly, as determined by both physician and nurse.
2. If necessary the physician has to give instructions to the nurse, and the nurse must follow these instructions.
3. If necessary, arrangements for supervision or the possibility of intervention must be provided by the physician.

In emergency situations the reserved procedures regulations are not applicable. For procedures marked with a* nurses have a functionally independent status, and condition 3 does not apply.

physicians to nurses). Another development is the creation of new functions, such as the nurse practitioner and the physician assistant, that already exist in the USA and the UK (The Council for Public Health and Health Care, 2002; Dowling et al., 1996; Salvage and Smith, 2000; American College of Physicians, 1994, Snelgroves and Hughes, 2000).

In deciding which elements of care, or which procedures are appropriate for task shifts from physicians to nurses, key considerations are the quality of the care provided to patients and the extent to which these procedures pose a risk to patients when performed by professionals who are not trained as physicians. However, there seems to be no clear consensus on the safety of shifting tasks from physicians to nurses and other professionals. Although some studies have been done on possibilities for task shifts and skill-mix changes most of these focussed on local experiments and primarily used patient satisfaction and satisfaction of the involved professionals as outcome measures. One meta analysis that was done in this respect found large differences for the percentage of possible tasks that could be shifted from physicians to other professionals, ranging from 4–90%, although most studies ranged from 25–70% (Richardson et al., 1998). Most of the studies that were analysed focused on task shift and task substitution from physicians to specialised nurses and nurse practitioners in primary care.

When considering the possibilities and desirability of shifting tasks from physicians to nurses, governments and professional organisations are faced with the

question of what professionals in health care should be allowed to perform which tasks without compromising patient safety. Various approaches can be chosen with regard to the regulation of performance of medical procedures and internationally different choices are made, with different degrees of emphasis on legislation versus self-regulation.

In the Netherlands, the Individual Health Care Professions Act (IHCP Act; in Dutch: Wet BIG), which came into force in 1997, enables task shifts to take place. The basic principle underlying this Act is that the practice of medicine is open to all, replacing the former monopoly of physicians. Only certain procedures that would cause unacceptable health risks to patients when performed by professionals with insufficient professional competence, are specifically excluded to ensure adequate protection of patients. These so-called reserved procedures (e.g. injections) may only be performed by two groups of health care professionals: those with direct authorisation (e.g. physicians) and those who may, under certain conditions, perform the procedure on the orders of those with direct authorisation (e.g. nurses). One of these conditions is the determination of the nurse's proficiency by both professionals, seen as an assessment of the current status of proficiency to perform the reserved procedure, which can vary over time due to (recent) work experience. The reserved procedures regulations are explained in more detail in Box 1. The list of categories of reserved procedures mainly consists of medical–technical procedures that can be clearly defined and demarcated. More medical

procedures or actions may be considered as risky procedures, but these are not reserved; however, because it is more difficult to clearly define and demarcate them (e.g. assessment of the need for sedatives).

As required by the IHCP Act, an evaluation of its functioning had to be carried out within 5 years after its implementation. This study aims to evaluate the functioning of the reserved procedures regulations in hospitals by examining possible dilemma's that occur in daily practice with the performance of reserved and non-reserved risky procedures by nurses. For this purpose the occurrence, nature and reason for problems with and (contemplated) refusals of orders from physicians to nurses for reserved and non-reserved risky procedures were studied. In addition, the views of physicians and nurses on the safety of the performance of these procedures by nurses were obtained.

2. Method

2.1. Samples

Postal questionnaires were sent to random samples of 600 physicians (250 gynaecologists and 350 internists) and 3200 nurses (drawn from the register of Individual Health Care Professionals) in the period from July to October 2001. Included in the samples were gynaecologists and internists who were born after 1-1-1937, were registered before January 2001 with no restrictions or clauses concerning their registration, and were living in the Netherlands.

The same inclusion criteria were applied for nurses, with the exception of date of birth; only nurses born after 1-1-1942 were included, due to the expected younger retirement age of nurses. Educational requirements for registration as a nurse in the public IHCP register are described in the IHCP Act (4 years formal education or in service training). Registration in this register entitles the professional to use the title of nurse and is linked to a disciplinary code as well as a description of the field of expertise of nurses. Further qualifications after initial formal education, such as a nurse practitioner masters degree or a specialisation, are currently not registered. In the Netherlands, nursing and midwifery are distinct and separate professions with different authorisations; when referring to nurses midwives are not included. Information on current employment of professionals is not available in the IHCP register and could therefore not be used as a selection criterion beforehand. For the purpose of this paper, only nurses that reported working in an academic or general hospital in the questionnaire, were included.

2.2. Measurement instruments

The questionnaires were constructed specifically for this study and were designed to be as similar as possible for reasons of comparability. A list of procedures was compiled by the researchers on the basis of discussions and interviews with medical nursing and legal experts (see Box 2). The list contains a combination of reserved and non-reserved risky and less risky procedures that occur in practice on a regular basis. Some procedures were not included in the questionnaires for all respondent groups, due to specialisation and efforts to minimise the length of the questionnaire.

Physicians were asked whether and how many times they had experienced problems when giving orders to nurses for one of the listed procedures in the previous 12 months. Those who had experienced a problem were asked to give a description of the most recent problem that had occurred and the reason why this problem occurred. Nurses were asked the same questions for problems with orders which they had received from physicians. In addition all respondents were asked similar questions about refusals of orders. Nurses were also asked about orders that they had first contemplated refusing, but had eventually carried out (contemplated refusals). In addition a description was asked of the course of action taken after the refusal or the contemplated refusal. Although some refusals or contemplated refusals are seen as problems, this is not automatically the case, which is why they were addressed separately in the questionnaires.

Respondents were further asked to indicate the extent to which they considered it safe for a nurse to perform the listed procedures, on a 4-point scale (not at all; on the orders of a physician according to the conditions in the reserved procedures regulations; likewise but without the need for the possibility of supervision or intervention; and without an order).

The study is descriptive, and only percentages and simple counts are presented.

3. Results

3.1. Response rates

Of all the questionnaires that were sent to the gynaecologists and internists, 9 (3 and 6, respectively) were undeliverable, due to change of address or retirement. Of the remaining 247 gynaecologists, 160 responded (65%), and after selection on employment status, 152 were included. Of the remaining 344 internists, 207 responded (60%), and after selection on employment status, 190 were included. Of the 3200 questionnaires sent to nurses, 58 were undeliverable, due

Box 2

Reserved and non-reserved risky procedures listed in the questionnaires for gynaecologists, internists and nurses

Reserved procedures

Intravenous injection (directly)
 Intramuscular injection
 Venipuncture
 Insertion of peripheral infusion
 Administration of medication via infusion
 Changing dosage on infusion pump
 Increasing dosage on oxytocin infusion pump^a
 Removal of epidural catheter
 Insertion of nasogastric tube
 Bladder catheterisation (female)
 Bladder catheterisation (male)
 Suture^b
 Perineotomy^a
 Amniotomy^a
 Vaginal examination during delivery^a
 Birth of the placenta^a
 Supervision of expulsion^a

Non-reserved procedures

Assessment of cardiocotogram^a
 Assessment of electrocardiogram
 Assessment of the need for sedatives
 Assessment of a blood glucose level

^aThese procedures were only listed in the gynaecologists' questionnaire

^bThese procedure were only listed in the nurses' questionnaire

to change of address or retirement. Of the remaining 3142 nurses, 2233 responded (71%) and, after selection on employment in a hospital, 687 were included (under the assumption response patterns for different sectors are equal, 71%).

3.2. Incidence of problems, refusals and contemplated refusals

A total of 12% of the gynaecologists, 17% of the internists and 11% of the nurses had experienced one or more problems in the previous 12 months when giving (physicians) or receiving (nurses) orders for one of the listed reserved or non-reserved risky procedures (median 2, respectively 3 times). Over three quarters had not experienced any problems (76–83%), while 5–9% had not given or received orders for any of the listed

procedures. Of the gynaecologists and internists, 14% and 19%, respectively, indicated that their orders for such procedures to nurses had been refused at least once in the previous 12 months (median 2, respectively 3 times). Almost a third of the nurses (30%) indicated that they had refused orders for these procedures in the previous 12 months (median 2 ×), while 11% indicated that they had contemplated refusing an order for these procedures at least once in that period (median 1 ×) (Table 1).

3.3. Most recent occurrence of a problem, refusal or contemplated refusal in the previous 12 months

3.3.1. Procedure for which orders were given or received

Table 2 presents the procedures for which orders were given or received in the most recent occurrence of a problem, refusal or contemplated refusal in the previous 12 months. A few examples of descriptions that were given by gynaecologists, internists and nurses are displayed in Box 3. For the gynaecologists the last problem most frequently concerned orders for bladder catheterisation and the insertion of a peripheral infusion (both 29%), and for the internists it was intravenous injections and the insertion of a peripheral infusion (25%, respectively 22%). As for the internists, the most recent problem for nurses most frequently concerned orders for an intravenous injection (29%).

For all respondents who had experienced a refusal in the previous 12 months, the most recent refusal most frequently concerned orders for an intravenous injection (30–41%), followed by orders for the insertion of a peripheral infusion (14–20%). Of the gynaecologists, 20% also mentioned orders for the removal of an epidural catheter.

Of the nurses who had at least once contemplated refusing orders in the previous 12 months, 19% indicated that in the most recent case it concerned orders to give an intravenous injection, and for 10% of the nurses it concerned the insertion of a nasogastric tube. Although administration of medication was not listed in general terms in the questionnaire, 19% of the nurses also mentioned this.

3.3.2. Reason for the problem, refusal or contemplated refusal

Table 3 lists the reasons for the most recent occurrence in the previous 12 months of a problem, a refusal of orders, or a contemplated refusal of orders. The reasons for the problems that were most frequently mentioned by gynaecologists and internists were problems with the performance (44% and 30%, respectively), such as inability to insert a peripheral infusion or the incorrect insertion of a catheter. The reason that was most frequently mentioned by the gynaecologists and

Table 1

Incidence of problems, refusals and contemplated refusals of orders for reserved and non-reserved procedures in the previous 12 months among gynaecologists, internists and nurses

| | Gynaecologists % <i>n</i> = 145 | Internists % <i>n</i> = 190 | Nurses % <i>n</i> = 678 |
|--|---------------------------------|-----------------------------|-------------------------|
| <i>Problems</i> | | | |
| Yes (median no. of times) | 12 (2) | 17 (3) | 11 (2) |
| No, never any problems | 83 | 76 | 79 |
| No, never given/received orders ^a | 5 | 6 | 9 |
| <i>Refusals^b</i> | | | |
| Yes (median no. of times) | 14 (2) | 19 (3) | 30 (2) |
| <i>Contemplated refusals^c</i> | | | |
| Yes (median no. of times) | | | 11 (1) |

^aGynaecologists and internists were asked about orders given; nurses about orders received. If orders had never been given/received, the questions about refusals and contemplated refusals could be left unanswered.

^bGynaecologists *n* = 140, internists *n* = 177, nurses *n* = 606.

^cNurses *n* = 597.

internists for a refusal of orders was that the nurses themselves were of the opinion that they lacked the necessary authorisation for different reasons such as a lack of proficiency or institutional arrangements or protocols (95% and 69%, respectively).

Just over one-third of the nurses (34%) gave as reason for the most recent occurrence of a problem that they disagreed with the physician's medication policy (among other things, because of an incorrect dosage or because they did not think that the medication was necessary). This was also most frequently given as a reason by nurses for a contemplated refusal of an order in the most recent case (35%), and in 23% of the cases it was given as a reason for the most recent refusal. The reason that was most frequently given by the nurses for the most recent refusal of an order was that they were of the opinion that they did not have the required authorisation (63%), 41% of whom did not consider themselves proficient enough to perform the procedure adequately. In describing the most recent experienced problem, one nurse reported that a comatose patient had died because a nasogastric tube had entered the throat.

3.3.3. Course of action after refusal or contemplated refusal

The majority of the gynaecologists and internists (89% and 74%, respectively) and just over a third of the nurses (35%) indicated that after the most recent refusal of orders in the previous 12 months the physician had eventually performed the procedure, or was asked to do so. Furthermore, 16% of the internists and 18% of the nurses indicated that the procedure was performed by another nurse or physician.

Over two-thirds of the nurses (71%) said that after the most recent contemplated refusal they had either performed the procedure themselves after consultation,

or together with the person who gave the orders or a colleague (Table 4).

3.4. Views on the safety of performance of reserved and non-reserved risky procedures by nurses

Table 5 presents the views of gynaecologists, internists and nurses with regard to the extent to which they considered it safe for the listed reserved and non-reserved procedures to be performed by nurses.

3.4.1. Reserved procedures for which nurses currently have no functional independence

With regard to the performance of reserved procedures for which nurses currently have no functional independence, over 80% of the gynaecologists were of the opinion that it is not safe for nurses to perform a perineotomy or an amniotomy, even if it is carried out on the orders of a physician according to the reserved procedures regulations (84% and 81%, respectively). This also applied, according to 69% of the gynaecologists, to a vaginal examination during delivery, and approximately half of them were of the opinion that this also applied to delivery of the placenta and supervision of the expulsion (52% and 49%, respectively).

Of the gynaecologists 73% and of the nurses 61% were of the opinion that the removal of an epidural catheter could safely be carried out by a nurse according to the reserved procedures regulations. Almost a quarter (24% and 22%, respectively) of them thought that nurses should have functional independence with regard to this procedure. On the other hand, 12% of the gynaecologists and over one-third of the nurses (35%) were of the opinion that this procedure could only be safely performed by a physician. According to 68% of the nurses, this also applied to sutures.

Table 2

Procedures mentioned by gynaecologists, internists and nurses, in which the most recent problem, refusal or contemplated refusal occurred in the last 12 months

| Procedures | Problems | | | Refusals | | | Contemplated refusals |
|--|---------------------------------|-----------------------------|----------------------|---------------------------------|-----------------------------|-----------------------|-----------------------|
| | Gynaecologists <i>n</i> = 17 | Internists <i>n</i> = 32 | Nurses <i>n</i> = 72 | Gynaecologists <i>n</i> = 20 | Internists <i>n</i> = 32 | Nurses <i>n</i> = 171 | Nurses <i>n</i> = 59 |
| | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) |
| <i>Reserved procedures</i> | | | | | | | |
| Bladder catheterisation (female) | 5 (29) | | 1 (1) | 1 (5) | 1 (3) | 4 (2) | 1 (2) |
| Insertion peripheral infusion | 5 (29) | 7 (22) | 4 (6) | 4 (20) | 5 (16) | 24 (14) | 3 (5) |
| Intravenous injections (directly) | | 8 (25) | 21 (29) | 6 (30) | 13 (41) | 59 (34) | 11 (19) |
| Administration of medication via infusion | 3 (18) | 4 (13) | 5 (7) | | 5 (16) | 5 (3) | 4 (7) |
| Intramuscular injections | 2 (12) | | 2 (3) | 1 (5) | | 12 (7) | 2 (3) |
| Bladder catheterisation (male) | | 4 (13) | 3 (4) | | 1 (3) | 8 (5) | 3 (5) |
| Increasing dosage on oxytocin infusion pump | | | | 1 (5) | | | |
| Changing dosage on infusion pump | | 3 (9) | 8 (11) | | | 9 (5) | 2 (3) |
| Insertion of nasogastric tube | | 2 (6) | 8 (11) | | 2 (6) | 6 (3) | 6 (10) |
| Removal of epidural catheter | 2 (12) | | 2 (3) | 4 (20) | | 10 (6) | 3 (5) |
| Venipuncture | | 1 (3) | 1 (1) | 2 (10) | 2 (6) | 3 (2) | 1 (2) |
| Other reserved procedures reported by respondents ^a | | | 3 (4) | 1 (5) | | 11 (7) | 7 (12) |
| <i>Non-reserved procedures</i> | | | | | | | |
| Assessment of the need for sedatives | | | 3 (4) | | | 1 (1) | 1 (2) |
| Assessment of an electrocardiogram (ECG) | | | 2 (3) | | | 1 (1) | 1 (2) |
| Administration of medication | | 3 (9) | 8 (11) | | 1 (3) | 12 (7) | 11 (19) |
| Other non-reserved procedures reported by respondents ^b | | | 1 (1) | | 2 (6) | 6 (3) | 3 (5) |

^aDrawing blood via infusion (3), dialysis (3), detubation (2), intubation (2), administration of medication via subclavia catheter (2), repositioning subclavia catheter (2), connecting epidural pump (1), removal of navel catheter (1), insertion of jugularis line (1), intra-uterine insemination (1), removal of jugularis catheter (1), removal of subclavia catheter (1), removal of ventricle drain (1), feeding via subclavia catheter (1), regulation of mechanical ventilation (1), removal of a balloon pump (1).

^bNo medication (2), stopping medication (2), requesting blood tests (2), stopping bleeding (1), admission of a premature infant without supervision (1), irrigation of the bladder (1), irrigation of a tracheo stoma (1), repositioning of the wrist (1), preparation of ERCP (1).

Box 3

Examples of problems, refusals and contemplated refusals mentioned by gynaecologists, internists and nurses

| | Gynaecologists | Internists | Nurses |
|------------------------------|---|---|---|
| <i>Problems</i> | <p><i>Problem with performance</i> When a nurse received orders from a gynaecologist to perform a catheterisation of the bladder, there was a problem with the performance because the wrong route was taken.</p> | <p><i>Unauthorised, not further specified</i> A nurse who received orders from an internist to administer medication via an intravenous injection (metocplamide) indicated she was not authorised to do so.</p> | <p><i>Disagreement with the medication policy</i> A nurse received orders to administer a large dose of prednison intravenously while the result of tests should have been awaited.</p> |
| <i>Refusals</i> | <p><i>Unauthorised because of institutional arrangements/protocols</i> Orders from a gynaecologist to administer medication intravenously (bolus heparine) were refused by a nurse because she was not authorised to do this, due to arrangements in the institution. The gynaecologist offered his apologies and subsequently administered the medication himself.</p> | <p><i>Disagreement with the medication policy</i> Orders from an internist to administer cardiac medication via an intravenous injection were refused by a nurse, because she was afraid of the effects. The internist explained these effects were known and intended, and performed the intravenous injection himself</p> | <p><i>Unauthorised because of lack of proficiency</i> A nurse did not feel competent enough to give an intramuscular injection, as ordered by a physician because it was a long time since she had last done this. In the end, she observed one of her colleagues giving the injection, in order to be able to do it herself the next time.</p> |
| <i>Contemplated refusals</i> | <i>Not asked</i> | <i>Not asked</i> | <p><i>Disagreement with the medication policy</i> A nurse received orders to increase dosage on a morphine infusion pump, but contemplated refusing because in her opinion the prescribed dosage would hasten the patient's death unnecessarily. Eventually the nurse did increase the dosage.</p> |

3.4.2. Reserved procedures for which nurses currently have functional independence

With regard to reserved procedures for which nurses currently have a functional independence, the majority considered that it was safe for nurses to perform the

following procedures functionally independent: bladder catheterisation in females (48–52%), intramuscular injections (51–61%), the insertion of a nasogastric tube (43–51%) and changing dosage on an infusion pump (43–47%). With regard to the latter procedure, 43% of

Table 3

Reasons mentioned by gynaecologists, internists and nurses for the most recent problems, refusals or contemplated refusals in the previous 12 months

| Reason | Problems | | | Refusals | | | Contemplated refusals |
|--|---------------------------------|-----------------------------|----------------------|---------------------------------|-----------------------------|-----------------------|-----------------------|
| | Gynaecologists <i>n</i> = 16 | Internists <i>n</i> = 30 | Nurses <i>n</i> = 71 | Gynaecologists <i>n</i> = 20 | Internists <i>n</i> = 32 | Nurses <i>n</i> = 171 | Nurses <i>n</i> = 62 |
| | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) |
| Nurse considered him/herself unauthorised because of: | | | | | | | |
| Lack of proficiency | 2 (13) | 3 (10) | 9 (13) | 7 (35) | 7 (22) | 71 (41) | 14 (23) |
| Institutional arrangements/protocols | 4 (25) | 3 (10) | 14 (20) | 4 (20) | 9 (28) | 24 (14) | 5 (8) |
| Inappropriate orders | | | 6 (9) | | 6 (19) | 11 (6) | 4 (6) |
| Not further specified | | 3 (10) | | 8 (40) | | 3 (2) | |
| Nurse disagreed with the | | | | | | | |
| Medication policy | 3 (19) | 4 (13) | 24 (34) | | 6 (19) | 39 (23) | 22 (35) |
| Reserved procedure | 1 (6) | | 2 (3) | | 1 (3) | 8 (5) | 4 (6) |
| There was, or the nurses expected, a problem with the performance | 7 (44) | 9 (30) | 9 (13) | 1 (5) | 1 (3) | 4 (2) | 6 (10) |
| There was, or the nurse expected, an undesired or unforeseen consequence | | 5 (17) | 2 (3) | | 1 (3) | 6 (3) | 4 (6) |
| Other | | 3 (10) | 5 (7) | | | 5 (3) | 3 (5) |

Table 4

Course of action, according to gynaecologists, internists, and nurses, after the most recent refusal or contemplated refusal in the previous 12 months

| Course of action | Refusals | | | Contemplated refusals |
|---|---------------------------------|--------------------------|-----------------------|-----------------------|
| | Gynaecologists <i>n</i> = 19 | Internists <i>n</i> = 31 | Nurses <i>n</i> = 155 | Nurses <i>n</i> = 58 |
| | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) | <i>n</i> (%) |
| Person who gave the order performed the procedure him/herself, or was asked to do so | 17 (89) | 23 (74) | 55 (35) | 2 (3) |
| Another nurse or physician was asked to perform the procedure | | 5 (16) | 28 (18) | |
| Procedure was performed, but after consultation and/or together with the person who gave the order or a colleague | 2 (11) | 3 (10) | 6 (4) | 42 (71) |
| Procedure was not performed, person who gave the order was informed | | | 20 (13) | 6 (10) |
| Discussion with person who gave the orders or colleague/supervisor | | | 39 (25) | 5 (8) |
| Other ^a | | | 7 (5) | 3 (5) |

^aAmong other things: order changed, protocols/manual implemented, training received for procedure.

the internists were (also) of the opinion that this could only be safely performed by a physician, compared to 1% of the nurses. With regard to the other listed procedures, with the exception of internists in the case of venal puncture, the respondents most frequently considered that these procedures could be safely carried out by a nurse according to the reserved procedures regulations, but *not* with functional independence (40–62%). For all of the procedures in question, one or more respondents were of the opinion that they could be carried out without orders from a physician (3–33%).

3.4.3. Currently non-reserved procedures

With regard to the currently non-reserved procedures, a small minority of the gynaecologists (4%) were of the opinion that the assessment of a cardiotocogram could be safely carried out by nurses on their own initiative, without orders from a physician. Approximately one-third (32%) thought that the assessment could only be safely performed by a physician, and half of the gynaecologists (50%) considered that it was safe if a nurse did this, but only on the orders of a physician according to the reserved procedures regulations (without functional independence).

In the opinion of 2–12% of the nurses, it was safe for nurses to assess an electrocardiogram, the need for sedatives and a blood glucose level on their own initiative, without orders from a physician. Almost three quarters of the nurses (73%) were of the opinion that an electrocardiogram could only be safely assessed by a physician. Almost half of the nurses (47%) had the same

opinion about assessment of the need for a sedative. Most of the nurses (43%) considered that it was safe for nurses to assess a blood glucose level, as long as this occurred on the orders of a physician in accordance with the reserved procedures regulations (without functional independence).

4. Discussion

In the opinion of the authors, the data presented here give reliable insight into the occurrence of problems, refusals and contemplated refusals of orders for reserved and non-reserved risky procedures given to nurses by physicians, and of their views concerning the extent to which it is safe for nurses to perform these procedures. We feel this Dutch data can provide relevant information for international readers too. The response was reasonable to good, and because anonymity was guaranteed we do not feel that problems, refusals and contemplated refusals were underreported. One limitation, however, is that the study only included questions on part of the risky procedures being performed in hospitals. Moreover, some respondents found the classification of problems, refusals and contemplated refusals difficult.

The results of this study show that, in practice, only a minority of physicians and nurses experience problems with regard to giving or receiving orders for reserved and non-reserved risky procedures. It also appears that orders are not often refused or contemplated to refuse.

Table 5
Views of gynaecologists, internists and nurses on the extent to which it is safe for a nurse to perform certain procedures (horizontal percentages)

| Current legislation | Gynaecologists <i>n</i> = 150 | | | | Internists <i>n</i> = 190 | | | | Nurses <i>n</i> = 672 | | | |
|--|-------------------------------|--------------------|---|--------------------|---------------------------|--------------------|---|--------------------|-----------------------|--------------------|---|--------------------|
| | 1 ^a | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| | Physician only | Reserved procedure | Reserved procedure with functional independence | No orders required | Physician only | Reserved procedure | Reserved procedure with functional independence | No orders required | Physician only | Reserved procedure | Reserved procedure with functional independence | No orders required |
| <i>Reserved procedures (without functional independence) (= 2)</i> | | | | | | | | | | | | |
| Perineotomy | 84 | 7 | 4 | 5 | | | | | | | | |
| Amniotomy | 81 | 10 | 5 | 4 | | | | | | | | |
| Vaginal examination during delivery | 69 | 22 | 5 | 5 | | | | | | | | |
| Birth of the placenta | 52 | 38 | 6 | 4 | | | | | | | | |
| Supervision of expulsion | 49 | 41 | 7 | 3 | | | | | | | | |
| Removal of epidural catheter | 12 | 49 | 24 | 16 | | | | | 35 | 39 | 22 | 5 |
| Suture | | | | | | | | | 68 | 26 | 5 | 2 |
| <i>Reserved procedures with functional independence (= 3)</i> | | | | | | | | | | | | |
| Bladder catheterisation (female) | 1 | 18 | 48 | 33 | 2 | 31 | 52 | 15 | 1 | 32 | 48 | 19 |
| Intramuscular injection | 1 | 32 | 51 | 15 | | | | | 1 | 21 | 61 | 18 |
| Insertion of nasogastric tube | | | | | 2 | 43 | 43 | 13 | 0.5 | 27 | 51 | 22 |

| | | | | | | | | | | | | |
|--|----|----|----|----|----|----|----|----|-----|----|----|----|
| Changing dosage on infusion pump | | | | 43 | — | 47 | 11 | 1 | 33 | 43 | 24 | |
| Insertion of peripheral infusion | 3 | 62 | 22 | 13 | 3 | 49 | 36 | 12 | 13 | 51 | 25 | 10 |
| Administration of medication via infusion | — | 60 | 36 | 5 | 1 | 53 | 42 | 5 | 0.6 | 48 | 46 | 6 |
| Intravenous injection (directly) | 19 | 59 | 16 | 6 | 18 | 59 | 21 | 3 | 24 | 53 | 20 | 3 |
| Increasing dosage on an oxytocin infusion pump | 3 | 58 | 29 | 10 | | | | | | | | |
| Venipuncture | 3 | 46 | 30 | 20 | 3 | 30 | 40 | 28 | 24 | 40 | 24 | 12 |
| Bladder catheterisation (male) | | | | | 4 | 49 | 39 | 9 | 7 | 43 | 37 | 14 |
| <i>Non-reserved procedures (= 4)</i> | | | | | | | | | | | | |
| Assessment of cardiocotogram | 32 | 50 | 14 | 4 | | | | | | | | |
| Assessment of electrocardiogram | | | | | | | | | 73 | 21 | 3 | 2 |
| Assessment of need for sedatives | | | | | | | | | 47 | 39 | 11 | 4 |
| Assessment of blood glucose level | | | | | | | | | 27 | 43 | 17 | 12 |

^a1 = Not safe, only to be performed by physician, 2 = Safe, but orders from physician required, according to the reserved procedures regulations, 3 = Safe, as 2, but arrangement of supervision or intervention not required (functional independence), 4 = Safe, no orders from physician required.

The problems mostly concerned orders for bladder catheterisation, the insertion of a peripheral infusion, and intravenous injections. Orders that were refused mainly concerned the insertion of a peripheral infusion and intravenous injections, and orders that were contemplated to refuse mainly concerned orders for intravenous injections and the insertion of a nasogastric tube. These are all reserved procedures that can currently be performed by nurses with functional independence, i.e. without the requirement of arrangement for supervision or the possibility of intervention.

Interpretation of the occurrence of problems, refusals and contemplated refusals in practice is somewhat ambiguous. On the one hand, problems, refusals and contemplated refusals can indicate errors and practical dilemmas, which occur because the task shift from physicians to nurses goes too far. On the other hand, they can be seen as a reflection of a well-functioning quality control and safety system, in which the nurses can raise the alarm. Moreover, according to the reserved procedures regulations orders for reserved procedures should be refused when the nurse does not assess her proficiency as being sufficient to perform the procedure. A careful contemplation by individual nurses whether to accept or refuse an order is also in line with these regulations.

From this study it appears that the most recent experienced problems mainly concerned performance, in which an action was not successful or the wrong approach was taken. Although in one case a nurse reported that the patient had died, it is impossible to be sure that these problems would not have occurred even if the procedure had been performed by the physician. On the other hand, the occurrence of performance problems indicates that in a number of cases proficiency might not have been adequately assessed.

Orders were, in particular, refused when the nurses who had received the orders were of the opinion that they were not authorised, mainly because of a lack of the necessary proficiency, or when they disagreed with the medication policy. Disagreement with the medication policy was also the most frequently mentioned reason for nurses to contemplate refusing orders.

The fact that nurses refused orders because they disagreed with the prescribed medication policy can imply that nurses are involved in work that in the Netherlands is currently restricted to the domain of the physician. The prescription of medication, whether or not by specialist nurses, as occurs in the UK and the USA, is not allowed in the Netherlands. Debate on this authorisation for specialist nurses has recently been initiated in the Netherlands (Ministry of Health, 2003). Our data show that nurses assume their own individual responsibility with regard to medication policies. In a number of cases the nurse was of the opinion that the wrong medication or an incorrect dosage was prescribed

for a patient. In the case when refusal of orders were considered the procedure was, indeed, performed, but when it was performed by the nurse in question, this was only after discussion, or together with the professional who had given the orders.

This study further shows that the views of the respondents do not entirely correspond with the legal requirements, with regard to the extent to which they considered it safe for reserved and non-reserved procedures to be performed by a nurse. With regard to certain procedures, the opinion of the professionals is more strict than the current legal regulations. According to the majority of the professionals, various procedures for which nurses currently have functional independence could not be safely performed in this way by a nurse. With regard to those procedures that are currently not reserved, i.e. assessment of an electrocardiogram, the need for sedatives, and a blood glucose level, only a small minority of the nurses were of the opinion that these procedures can be safely performed by nurses without orders from a physician.

Considering the number and nature of the problems, refusals and contemplated refusals, it would seem that there is no question of any serious dilemmas in daily practice with regard to the reserved procedures regulations. Professionals may in some cases be stricter in practice than these regulations require, following their views. At the same time, the tendency to shift the performance of tasks to a 'lower' level increases the risk that the actual proficiency to perform a procedure correctly is lacking in certain cases. Although legal regulations should cause no restrictions when the shifting of tasks is beneficial and safe, vigilance is also required to prevent excessive delegation. Institutions should also provide adequate safeguards for quality and safety, such as written guidelines or protocols describing the way in which proficiency is to be determined within the institution.

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