

Interdisciplinary preoperative patient education in cardiac surgery

Fred Tromp MA

Researcher, Netherlands Institute for Health Services Research, Utrecht, The Netherlands

Sandra van Dulmen PhD

Research Coordinator, Netherlands Institute for Health Services Research, Utrecht, The Netherlands

Julia van Weert MA

Researcher, Netherlands Institute for Health Services Research, Utrecht, The Netherlands

Submitted for publication 3 March 2003

Accepted for publication 15 December 2003

Correspondence:

Fred Tromp,

Netherlands Institute for Health Services
Research,

PO Box 1568,

3500 BN Utrecht,

The Netherlands.

E-mail: f.tromp@nivel.nl

TROMP F., VAN DULMEN S. & VAN WEERT J. (2004) *Journal of Advanced Nursing* 47(2), 212–222

Interdisciplinary preoperative patient education in cardiac surgery

Background. In 1998, we carried out a study of interdisciplinary preoperative education in cardiac surgery given by nurses, physicians and health educators. Overlaps were found in gathering and providing information by physicians, nurses and health educators, and gaps were found in providing psychosocial information and emotional support. Based on these findings, an information protocol was developed.

Aim. This paper reports a study examining the effects of the implementation of the information protocol on the content and process of preoperative education.

Methods. Dialogues between health educators and patients were videotaped at the preoperative clinic ($n = 54$) and on the day of admission ($n = 53$), and analysed using a checklist of 123 specific topics.

Results. The information given by health educators at the outpatient clinic and on the day of admission accorded with the information protocol to a large extent. There was also an increase in the number of psychosocial issues raised. Nurses raised significantly more psychosocial issues in comparison with before implementation of the protocol. After implementation, patients spent approximately 3 minutes less talking with the health educator and about 7 minutes less talking with a nurse. This suggests that on the day of admission a more time-efficient coordination in patient education was achieved.

Conclusions. Implementation of the information protocol led to a better interdisciplinary division of labour. The education is tailored more to the needs of the patient, and psychosocial items are mentioned more frequently. This straightforward intervention gave very positive results. Inconsistencies, gaps and overlaps in information provision can be avoided by the unambiguous delineation of responsibilities and tasks in information provision by different health care providers.

Keywords: cardiac, communication, implementation, interdisciplinary care, patient-centred care, nursing

Background

Several studies have been conducted to examine the preoperative educational needs of cardiac surgery patients (Grossi *et al.* 1998, Read 1998). Fulfilling these patients' informational needs has long been recognized as important in assisting recovery and reducing anxiety (Read 1998). Furthermore, health care professionals are increasingly aware of the importance of providing effective information and advice to patients (Van den Borne 1998). Provided that education is patient-centred, i.e. that it is tailored to the individual patient and incorporates information as well as psychosocial factors, it appears to contribute to both cardiac and psychosocial recovery (Cupples 1991, Read 1998). Patient-centred health care and its associated communication skills are defined as the key to developing sensitive and respectful care, which appears to be linked to patient well-being (Roter 2000). In addition, a patient-centred attitude has been shown to save time as, when it is adopted, interactions automatically focus on the individual patient and the most relevant issues (Roter *et al.* 1995). The quality of health care education for cardiac surgery patients depends not only on its informational content (instrumental communication), but also on the extent to which attention is paid to patients' feelings about surgery (patient-centredness and affective communication) (Bensing 1991, Roter *et al.* 1995).

In 1999, 14 150 cardiac operations were performed in the Netherlands. The most common were coronary artery bypass graft (CABG) (64%) and valve replacement (13%) (Adviescommissie cijfers van de Nederlandse Hartstichting 2000). Care for cardiac surgery patients involves numerous health care providers including nurses, thoracic surgeons, anaesthetists, cardiologists, health educators and physiotherapists. This interdisciplinarity complicates the information process and engenders the risk of overlaps or inconsistencies in information provision. Although sometimes overlaps and repetition are likely to enhance retention (Robinson & Whitfield 1988), there is a limit to the amount of information that patients can retain (Read 1998). Accordingly, repeated information should be carefully selected and relevant. The information process would, therefore, benefit from a protocol that dictates who should give what kind of information at what time.

In 1997, an internal survey to investigate cardiac surgery patients' satisfaction with the quality of care was carried out in one of the 13 heart centres in the Netherlands. Forty-six patients admitted for cardiac surgery completed a questionnaire about their satisfaction with the quality of care. This revealed that 38% were not satisfied with the

amount and content of the information that they received. Apparently, the information provided did not fit their individual needs. Furthermore, the patients experienced the admission day as confusing and fatiguing, because the information provided on that day was too much and too detailed. They felt that they spent an excessive amount of time talking to too many health care providers. The interdisciplinarity of the care of cardiac surgery patients seemed to complicate the preoperative information process. It appeared to be unclear who was responsible for what kind of information at what time, and this caused overlaps, inconsistencies and gaps in the information supplied. As a result of these findings, in 1998, the Netherlands Institute for Health Services Research (NIVEL) was asked to undertake a content analysis of preoperative education provided by health educators, nurses and physicians in cardiac surgery at a group of clinics. Health educators, usually trained nurses, provide patients and their families with practical information about the timing and duration of surgery, and the patient's stay in the intensive care unit (e.g. rules and visiting times). Results showed that the information provided by the different health care providers covered a wide range of topics and that there were significant overlaps (Van Weert *et al.* 2003). In particular, there appeared to be a huge overlap in medical history-taking by physicians and nurses. More than two-thirds of the patients had to answer questions about medication, health care problems, previous surgeries, allergy and smoking twice, in immediate succession, on admission day. Also, during patient education there seemed to be major overlaps. For instance, almost three quarters of patients were informed more than once about length of stay on the intensive care unit and about not being allowed to be alone at home after discharge. Gaps (topics not mentioned by any of the providers) were primarily found in relation to psychoeducational care and emotional support. In addition, in more than half of the patients, no attention was given to psychosocial issues (Van Weert *et al.* 2003).

Development and implementation of the information protocol

Based on the findings presented above and a report (Nederlandse Hartstichting 1998) from the Netherlands Heart Foundation, guidelines were developed. A nurse was appointed to formulate and implement these guidelines in close co-operation with a project group, consisting of the nurse manager cardiac surgery/cardiology at the study hospital, a cardiothoracic surgeon, a head nurse, a health educator and the co-ordinator of patient education. This

Box 1 Information protocol

Information given by health educator (outpatient clinic)
 Purpose of the encounter
 Are there urgent questions prior to the encounter?
 Explaining the task of health educators
 Intermediary between intensive care unit and relatives
 Guidance of health educators stops at transfer to medium care unit
 Programme of procedures in the outpatient clinic
 Check receipt of first chapter of the PID
 Information about encounter and physical examination by resident in cardiopulmonary surgery
 Information about medical examinations (blood tests, ECG, etc.)
 Explanation of admission procedure
 In the week before surgery make telephone call on Thursday
 Date of admission
 Hour of admission
 Length of stay in the hospital
 Bring medicines when admitted
 Accommodation for family to stay the night
 Explanation regarding family education during surgery
 Psychosocial questions about:
 Emotions/response/perceptions of patient about surgery/admission
 Emotions/response/perceptions of partner/relatives about surgery/admission
 Contact
 Hand over the PID and explain purpose and use
 Are there any questions?
Information given by health educator (admission day)
 Purpose of the encounter
 Specific information about guidance for family
 Do patient and/or family want information for the family during surgery?
 Time of telephone calls from health educator during surgery
 Phone number of patient education/ICU (handout card)
 Contact
 Explanation of how health educator acquires information about surgery
 Physician will contact family after surgery
 Preparation and guidance of family about the first visit to the intensive care unit
 Conditions and rules about visiting ICU
 Before visiting ICU check in at patient education
 Possibility of phoning the ICU at all hours
 Psychosocial questions about:
 Emotions/response/perceptions of patient about surgery/admission
 Emotions/response/perceptions of partner/relatives about surgery/admission
 Expectations of the patient
 Accommodation for family to stay the night
 Are there any questions?
Information given by nurse (admission day)
 Purpose of the encounter
 Are there urgent questions prior to the encounter?

Box 1 (Continued)

Check receipt of PID and booklet of the Netherlands Heart Foundation
 Check patient's knowledge about the surgery
 Inform patient about:
 Scheduled time of surgery
 Name of cardiopulmonary surgeon
 Possibility that surgery will be delayed
 Programme on admission day
 Medical examinations on admission day: ECG and artery puncture at 1 PM
 Meeting with physiotherapist at 2 p.m.
 Encounter with patient educator
 Encounter with/physical examination by resident in cardiopulmonary surgery
 Encounter with cardiopulmonary surgeon in the course of the day
 Encounter with anaesthetist in the course of the day
 Does the patient give permission to inform their family about their condition?
 Medication
 Problems with taking medicines
 Has patient stopped taking blood-thinning medicines?
 Instructions about medicine use before surgery
 Information about care during the first fortnight after discharge
 Lifestyle rule after discharge: during the first fortnight the patient should not be left alone
 Information about preparation for surgery
 Nurse will check blood pressure, height and weight.
 Shaving
 Shower with special soap
 Take off necklaces, rings etc.
 Premedication: information about premedication (sleeping pill)
 Premedication: instructions (do not get out of bed unaided)
 Empty stomach before surgery
 Give patient instructions about what to do in case of chest pain (before surgery)
 Information about intensive care unit
 Length of stay
 Stay in ICU: waking up, artificial respiration, not being able to talk
 After surgery and rehabilitation
 Back on ward: drowsy, telemetry, drip
 Information re chest wound
 Possibility of leg wound
 Pain and analgesia after surgery
 Give patient instructions about what to do in case of pain (after surgery)
 Nausea and diminished appetite
 Rehabilitation: short stay in hospital, at home one must take time for further recovery
 Recovery and rehabilitation on ward is focused on self-management
 Information about emotional consequences of surgery for patient during admission
 Information about emotional consequences of surgery for partner/relatives during admission

Box 1 (*Continued*)

Information about emotional consequences of surgery for patient after discharge
Information about emotional consequences of surgery for partner/relatives after discharge
The importance of timely expression of symptoms
Psychosocial questions about:
Emotions/response/perceptions of patient about surgery/admission
Emotions/response/perceptions of partner/relatives about surgery/admission
General information about ward
Mixed ward
Timetable
After surgery back to the same room
Further information can be obtained from information desk on ward
No smoking
Do not leave the ward
Do not lock toilet door
Visiting hours
Possibility of visiting patient outside visiting hours
Management of personal belongings during surgery and stay on intensive care unit
Are there any questions?

took 9 months. The guidelines were developed for all health care providers involved in cardiac surgery care, and were named the interdisciplinary information protocol (IP). The IP offered all the different care providers a list of issues to discuss at different times during preoperative education (see Box 1). A copy of the IP was located at each patient's bedside, and providers could mark on it the information that they have given. This enabled nurses, for instance, to make sure that the cardiothoracic surgeon had given specific information.

These guidelines were also integrated into a Patient Information Dossier (PID). This was an information booklet on patient education for cardiac surgery patients. The PID also stated which information would be given by which health care provider. The PID was derived directly from the IP.

Changes were also made in the organization of the education process: a preoperative outpatient clinic was started. Patients visited the health educators and the physicians at this clinic a few weeks before surgery. At this visit, patients received information, including their PID, which helped them to prepare for surgery. In this way, information was distributed more evenly before and during the hospital stay and was more likely to match patients' actual needs for information. Before these changes, patients received a great deal of information all at once, when

admitted the day before surgery, making it difficult for them to process it adequately.

The study

Aim

The aim of this study was to examine the effects of the implementation of the information protocol on the content and process of preoperative education.

The following research questions were addressed:

- did the health care providers inform the cardiac surgery patients according to the information protocol?
- what were the gaps and overlaps in the information provided by the various health care providers?
- did the implementation of the information protocol lead to fewer gaps and overlaps in the information provided by the various health care providers than before implementation, as detailed in Van Weert *et al.* (2003)?
- did the re-organization of the education process, meant to balance information-giving, lead to shorter encounters in the presurgery clinic in comparison with the previous encounters on admission day, as detailed in Van Weert *et al.* (2003)?

Design

A pretest/post-test design was used. Measurements were conducted in the study clinic on two occasions: data were collected from cardiac surgery patients admitted before implementation (premeasurement, which took place in February, March and April 1998) and from a second group of cardiac surgery patients admitted after the implementation of the information protocol (postmeasurement, which took place in May, June and July 2000). This paper focuses on the results of the postmeasurement. Results from the premeasurement have been published elsewhere (Van Weert *et al.* 2003) and are discussed above.

Participants

This article focuses on planned cardiac surgery patients (CABG and/or valve replacement), waiting for admission at the study clinic. Patients transferred for surgery from other hospitals and those having emergency surgery were excluded because the organizational structure for educating these patients differed substantially from the educational pathways for elective surgery patients. Sixty-one patients and eight health educators participated in videotaped encounters.

Data collection

As already mentioned, between pre- and postmeasurement, changes were made in the organization of the education process: a preoperative outpatient clinic was started. About a week before their preoperative outpatient clinic appointment patients received written information about the study, a consent form and a questionnaire about demographic aspects and their surgical history. Those who consented to participate were videotaped during two encounters with the health educator: first, at the outpatient clinic and, secondly, on admission day. On admission day, their encounter with a nurse was also videotaped. The main task of nurses during the admission interview was to supply information about the organization, services and rules of the cardiac surgery ward, where patients stayed before surgery, and the intensive care unit (ICU) where they went after surgery. Nurses also informed patients about the preparatory care they would receive before surgery as well as the care and rehabilitation after surgery. These three encounters were selected because they were considered to be the ones in which the most important changes were expected following re-organization of preoperative patient education.

A checklist with 123 specific topics was used to examine the providers' dialogue. The content of the checklist was derived directly from the information protocol. The checklist contained medical items (e.g. questions about symptoms or medical history), nurses' items (e.g. general information about the ward) and health educators' items (e.g. explanation of the admission procedure). Furthermore, the list included categories that covered aspects of communication that were necessary for establishing effective education, such as psychosocial issues and checking for comprehension, i.e. assessments of patients' knowledge, expectations and understanding. The psychosocial issues and checks were derived from the literature (Devine 1992, Mullen *et al.* 1992, Davis *et al.* 1994, Read 1998, Van den Borne 1998). Finally, categories were included to cover other issues about which information was given or questions asked, such as lifestyle advice and information about admission day. Two independent raters watched each video and rated it independently, recording the education topics mentioned during that encounter. Because one topic may lead to another, the raters marked topics regardless of whether they were brought up by the patient or the provider.

Ethical considerations

Before each video recording, patients were informed about the nature of the study and were asked to give written

consent to allow recording for research purposes. They were told that they could withdraw their permission to co-operate at any time. To safeguard their privacy, all recordings and questionnaires were only identifiable by a participant code. Nurses were not asked to give personal consent because the hospital director had commissioned us to carry out the study.

Data analysis

The *t*-tests and chi-square analyses were used to test the differences between pre- and postmeasurement data.

Results

Reliability of the observations

Inter-observer reliability of the 123 checklist items was measured by using Cohen's Kappa. Two observers rated the same 15 videotaped encounters with health care providers (approximately 10% of the total number of videotaped encounters). The overall Cohen's Kappa between the two observers for the checklist items was 0.78. For 19 checklist items Cohen's Kappa could not be calculated because the observers had no variation in their score.

Sample characteristics

Seventy-three patients were asked to participate: 12 refused and, therefore, 61 (84%) patients were videotaped at the preoperative outpatient clinic and on admission day. Some of the recordings were unfit for analysis; either the encounter was not recorded because of logistical problems or the tape was of insufficient quality. Fifty-four (74% of a potential total of 73) encounters with a health educator during the preoperative outpatient clinic, 54 (74%) on admission day and 53 (73%) encounters with a nurse could be analysed. The eight health educators were videotaped with an average of 6.8 patients (range 1–25) each and the 26 nurses with an average of 2.0 patients (range 1–4) each. There were no significant differences between participating patients, refusers and those lost to the study in terms of age and gender.

The sociodemographic characteristics of the participating patients are presented in Table 1. No significant differences were found between the patients taking part in the premeasurement and the postmeasurement with regard to these characteristics.

Information according to the IP

Tables 2–4 provide information about the extent to which the health care providers informed the cardiac surgery patients according to the information protocol. Because of the large number of items, mean, standard deviation and range are given for each category. The IP (see Box 1) provides the list of all these items.

Table 1 Sociodemographic characteristics of participating patients

	Premeasurement (<i>n</i> = 51)	Postmeasurement (<i>n</i> = 54)
Age (years)		
Mean age	62.5	63.1
Gender (%)		
Male	80.8	75.5
Female	19.2	24.5
Surgical history (%)		
First surgery	40.4	41.5
Surgical history, but not in cardiac surgery	59.6	52.8
Cardiac surgery history/ repeat operation	0.0	5.7
Educational level (%)		
Elementary school	30.0	35.7
Lower secondary education	36.0	32.1
Intermediate secondary education	16.0	18.9
Higher education	18.0	13.3
Living situation (%)		
Alone	15.4	11.3
With spouse	76.9	84.9
Other	7.7	3.8

Table 2 Proportion of outpatient clinic patients receiving information from the health educator that accorded to the protocol (*n* = 54)

	Mean/percentage*	SD	Range
Purpose of the encounter (one item)	74.1%	–	–
Are there urgent questions prior to the encounter (one item)	24.1%	–	–
Explanation of task of health educators (two items)	68.5	10.47	61.1–75.9
Programme of procedures in the outpatient clinic (three items)	73.2	25.1	44.4–90.1
Explanation of admission procedure (five items)	80.4	23.6	40.7–100
Accommodation for family to stay the night (one item)	74.1%	–	–
Explanation of family education during surgery (one item)	83.3%	–	–
Psychosocial questions (two items)	50.9	27.5	31.5–70.4
Contact: phone number (one item)	96.3%	–	–
Hand over PID and explain purpose and use (one item)	100%	–	–
Are there any questions? (one item)	92.6%	–	–

PID, patient information dossier.

*When there is one item in a category, the percentage is given.

Tables 2 and 3 show the percentages of patients who received specific information during the two encounters with the health educator (on the outpatient clinic and on the admission day). During the outpatient clinic (Table 2), three of every four patients were informed about the purpose of the meeting. Almost 80% (77.8%) of the patients were told to bring their medicines on admission day (category: explanation of admission procedure). With regard to psychosocial items, in more than two-thirds of the encounters health educators inquired about the feelings of the patient regarding the impending surgery (70.4%). One of every four patients was asked at the start of the encounter if there were urgent questions.

On admission day (Table 3), half of the patients were informed about the purpose of the encounter with the health educator and in two-thirds of the encounters (66.7%), health educators inquired about the feelings of the patient regarding surgery (category: psychosocial questions).

Table 4 presents the percentages of patients who received specific information during their encounter with a nurse. In more than half the cases patients were asked if they had any urgent questions at the start of the encounter. Three of every four patients (75.5%) were informed about the time schedule for their surgery (category: practical information about surgery). In most cases (79.2%), nurses inquired about the feelings of the patient (category: psychosocial questions).

Gaps and overlaps

Data on gaps in preoperative education can be found in Tables 2–4. Because of the large number of items, mean, standard deviation and range are given for each category, a

	Mean/percentage*	SD	Range
Purpose of the encounter (one item)	50.0%	–	–
Specific information about guidance for family (six items)	72.2	32.5	18.5–100
Preparation and guidance for family at the first visit to intensive care unit (three items)	92.6	6.7	87.0–100
Psychosocial questions (three items)	37.7	25.6	18.5–66.7
Accommodation for family to stay the night (one item)	25.9%	–	–
Are there any questions? (one item)	81.5%	–	–

*When there is one item in a category, the percentage is given.

Table 3 Proportion of patients receiving information that accorded to the protocol from the health educator on admission ($n = 54$)

	Mean/percentage*	SD	Range
Purpose of the encounter (one item)	69.8%	–	–
Are there urgent questions prior to the encounter (one item)	56.6%	–	–
Check receipt of PID and booklet of the Netherlands Heart Foundation (one item)	83.0%	–	–
Check patient's knowledge about the surgery (one item)	60.4%	–	–
Practical information about surgery (three items)	56.6	19.9	35.8–75.5
Programme on admission day (six items)	82.4	11.0	64.2–96.2
Does the patient give permission to inform their family about their condition (one item)	13.2%	–	–
Medication (three items)	47.8	35.1	7.5–71.7
Lifestyle rule after discharge: during the first fortnight the patient should not be left alone (one item)	81.1%	–	–
Information about preparation for surgery (eight items)	58.3	24.8	30.2–88.7
Information about intensive care unit (two items)	50.0	9.3	43.4–56.6
After surgery and rehabilitation (11 items)	37.6	19.3	1.9–62.3
Psychosocial questions (two items)	54.7	34.6	30.2–79.2
General information about ward (10 items)	41.1	20.3	13.2–73.6
Are there any questions? (one item)	94.3%	–	–

PID, patient information dossier.

*When there is one item in a category, the percentage is given.

Table 4 Proportion of patients receiving specific information that accorded to the protocol from a nurse on admission ($n = 53$)

list of all the appropriate items is given in Box 1. From the category 'after surgery and rehabilitation' (Table 4) nurses gave information about the postdischarge emotional consequences of surgery in only 9.4% of encounters, and about the emotional consequences of surgery for the partner and family in one case only. Health educators (category: psychosocial questions, Table 3) inquired about patient expectations about their surgery in only 27.8% of their encounters, and about the feelings of partner and family with respect to the surgery in only 18.5% of cases.

With regard to overlaps in patient education, it was found that health educators seldom mentioned topics that were the responsibility of other health care providers. The most frequent incorrectly mentioned item concerned the visiting hours of the ward (14.8%); according to the information protocol, nurses should cover this topic.

It was found that nurses asked questions about medical history, e.g. about symptoms (73.6%), other health problems (62.3%) and allergies (62.3%). According to the protocol, physicians should pose these questions. Furthermore, nurses mentioned some health educators' items. The relevant findings are shown in Table 5.

Changes in gaps and overlaps.

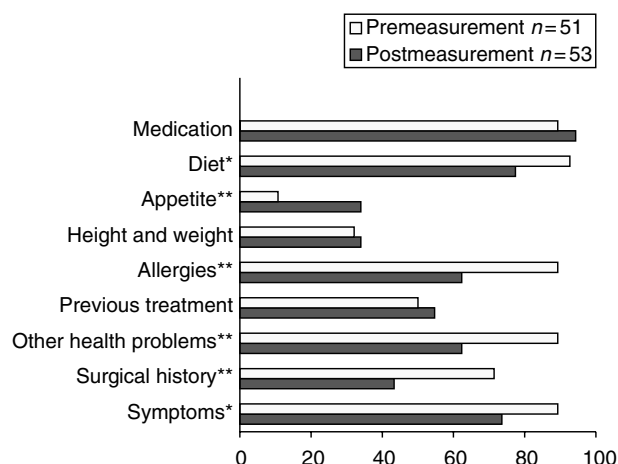
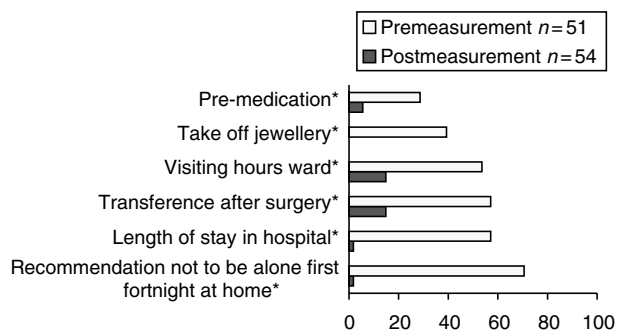
In the premeasurement data, most of the overlap in information provided by various health providers was found in talk about medical topics by physicians and nurses. In particular, questions relating to medical history-taking were asked twice. To answer the third research question, percentages of patients who were educated about medical topics by nurses during premeasurement and postmeasurement

Table 5 Proportion of patients who received medical and educational information from nurses ($n = 53$)

Medical items	
Diet	77.4
Symptoms	73.6
Teeth	73.6
Eyes/glasses	71.7
Allergies	62.3
Other health problems	62.3
Ears/hearing aid	56.6
Treatment in other hospital/from other specialist	54.7
Surgical history	43.4
Height and weight	34.0
Appetite	34.0
Health educator's items	
Contact	86.8
Conditions and rules about visiting intensive care unit (ICU)	39.6
Before visiting ICU check in at patient education	11.3

encounters were compared. The results are shown in Figure 1. Although fewer, questions relating to medical history-taking and questions about medication were still asked in most postmeasurement encounters.

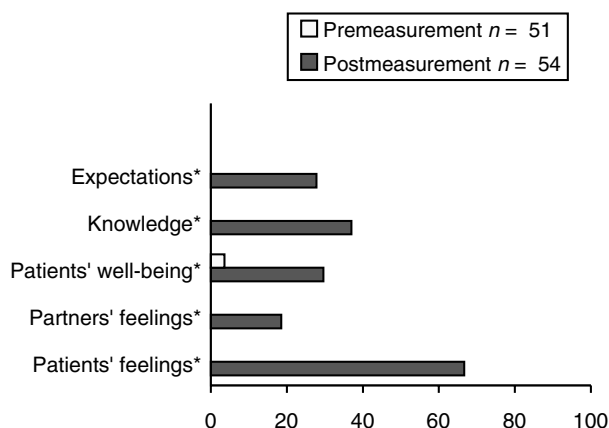
The topics addressed by health educators that overlapped those covered by nurses and physicians in premeasurement encounters were compared with those in postmeasurement encounters. The results are shown in Figure 2. Health educators talked about these items significantly less following implementation of the intervention. Topics mentioned most were the visiting hours of the ward (14.8%, a nurses' item) and the possibility of being transferred to another hospital (14.8%, a physicians' item).

**Figure 1** Proportion of patients who were asked medical questions on admission by nurses. * $P < 0.01$, ** $P < 0.05$.**Figure 2** Proportion of patients who received specific information on admission from the health educators. * $P < 0.01$.

The results of the premeasurement showed that there were gaps in emotional support and psychoeducational information-giving (Van Weert *et al.* 2003). There also seemed to be gaps in tuning information to individual needs. Nurses were the only providers who sometimes checked the extent to which patients had already had been informed. Figure 3 provides more detailed information about the percentages of patients receiving psychoeducational care from health educators in pre- and postmeasurement encounters. Health educators inquired about patients' feelings towards the coming surgery in two-thirds of the postmeasurement meetings, whereas in the premeasurement encounters they did not.

Although a significant increase was found, inquiries about partners' feelings were still relatively rare. During premeasurement encounters no assessments of patient knowledge and expectations were made, during postmeasurement encounters these were undertaken in approximately one-third of cases (37.0% and 27.8%, respectively).

Figure 4 provides the percentages of patients who were given psychoeducational information and asked questions by

**Figure 3** Proportion of patients who were asked psychoeducational questions on admission by health educators. * $P < 0.01$.

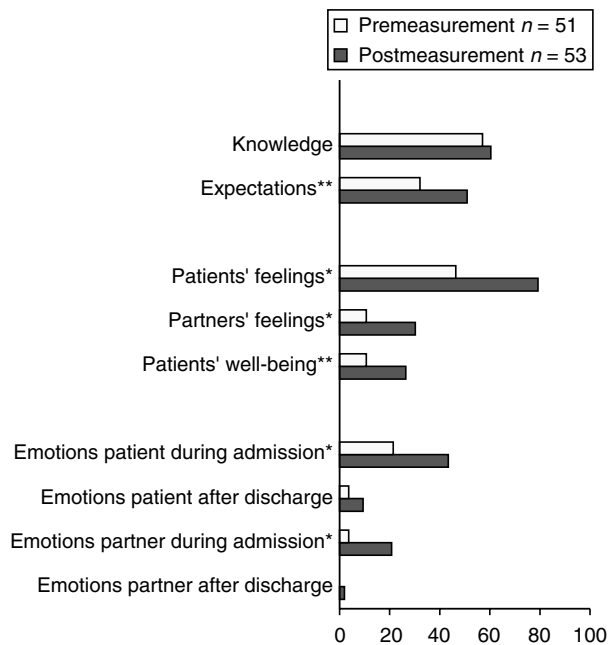


Figure 4 Proportion of patients who received psychoeducational information and questions on admission from nurses. * $P < 0.01$, ** $P < 0.05$.

nurses. In postmeasurement encounters, nurses asked significantly more psychosocial questions. They also gave more psychosocial information to patients, but not to partners. In addition, patients' expectations were assessed more frequently. No difference was found in assessment of patients' knowledge about surgery.

Distribution of information-giving

In order to distribute information more evenly across the course of treatment, and to make the admission day less overloaded, more information was given before the admission, i.e. in the preoperative outpatient clinic, and less information on the day of admission. For this reason, we compared the duration of encounters on the day of admission prior to the change in organization with that of encounters following reorganization.

The average duration of postmeasurement encounters with health educators on the day of admission was significantly shorter (25%) than that of postmeasurement encounters: 12.8 minutes for premeasurement and 9.6 minutes for postmeasurement encounters [$t(103) = 4.056$; $P < 0.001$].

Postmeasurement encounters with nurses on admission day were also significantly shorter (22%): they lasted 25.3 minutes, as opposed to 32.4 minutes premeasurement [$t(102) = 3.485$; $P < 0.001$].

Discussion

This study provides a clear picture of the content and duration of preoperative encounters between cardiac surgery patients, and nurses and health educators. Little research has been conducted about preoperative education in cardiac surgery in terms of the extent to which health care professionals from different disciplines adjust the education they provide to patients to take account of each other's roles. The purpose of this study was to explore the effects of the implementation of an information protocol. The results show that, to a large extent, health educators informed patients according to the information protocol during the outpatient clinic and on admission day. Compared with before implementation of the IP, they seldom mentioned topics that were the responsibility of other health care providers. This points to a reduction of overlap with other health care providers in the provision of information. We also found an increase in discussion of psychosocial issues. In the majority of cases, questions about patients' feelings about the impending surgery were asked. Although this can be seen as a significant difference, there is room for further improvement. For instance, questions about partners' feelings were asked in only one in five patients. Family members can experience a great deal of stress, which may exaggerate patients' concerns. Allowing family members to talk about their concerns can reduce this stress.

In addition, only one-third of patients were asked questions about their knowledge and expectations regarding the cardiac surgery. In providing information, attention should also be directed at individual psychosocial determinants, such as beliefs and risk perception. This is because, provided that the information fits the individual needs of the patient, patient education and counselling have positive effects on cardiac and psychosocial recovery (Van den Borne 1998).

Nurses did not always adhere to the guidelines of the information protocol. For instance, only a minority of patients were asked whether they experienced difficulties in taking their medicines. Also, nurses continued to ask questions about patients' medical histories. If nurses had copied medical information from the medical case notes file, there would have been no need to for them to ask the same questions again. Obviously, from the perspective of health care providers it is important to gather information about certain issues. Many of the questions asked by nurses and physicians are critical for providing safe care. However, from the viewpoint of patients, it might be more satisfying if nurses check the accuracy of the information that they retrieve from medical files, instead of asking the same question again. This would not only save time during the admission interview and

What is already known about this topic

- Patient education in cardiac surgery is complicated by the fact that patients meet many different health care providers.
- Patient-centred care contributes to both cardiac and psychosocial recovery.
- Most surgery patients consider admission day as confusing and fatiguing because the information provided is too detailed.

What this paper adds

- Confirmation of the value of presurgery clinics.
- Gaps and overlaps in the information provision can be avoided by unambiguous delineation of which information will be provided by the different health care providers.

prevent patients from getting tired of answering the same questions again, but also inspire confidence in the teamwork of health care providers. Quality of care might be improved, as there would be additional checks on the information gathered (Van Weert *et al.* 2003).

The reason why nurses kept asking questions about patients' medical histories is difficult to determine. It is possible that the medical files were not complete. As residents in thoracic surgery did not participate in the postmeasurement, this remains unanswered. Successful implementation of an innovation depends on the extent to which its potential users perceive it as beneficial, in terms of cost-effectiveness, time gained and so forth. Possibly, it is too time consuming for nurses to check patients' medical files before each encounter.

Nurses introduced significantly more psychosocial issues in encounters following protocol implementation. However, as with health educators, little attention was given to the family of the patient.

Before implementation of the IP, patients felt that they were overloaded with information on the day of admission. After implementation, patients spent approximately 3 minutes less talking to the health educator and about 7 minutes less talking to a nurse. This suggests that a more time-efficient co-ordination of patient education had been achieved.

Limitations

Residents (junior doctors) in thoracic surgery did not participate in postimplementation measurement because of

other priorities at the time of the study. Although we regretted the fact that the residents could not take part, we did not anticipate much difference in their pre- and post-measurement results because the IP that was implemented after the premeasurement was not designed to bring about many changes in the way that residents provided information to patients because the premeasurement showed that the physicians hardly brought up any nurses' or health educators' topics (Van Weert *et al.* 2003).

In this study no use was made of a control group. This means that there is less certainty that the changes that we found result from implementation of the IP. Finally, because the sample size of this study is small, the findings need to be viewed with caution and may not necessarily be representative of a wider population. Taking these limitations into consideration, however, a number of conclusions can still be drawn from the study.

Conclusions

It can be concluded that the implementation of the information protocol led to better interdisciplinary delineation. The education provided became more patient-centred, in that it was tailored to the individual patient, and incorporated information as well as psychosocial factors. It also led to fewer gaps and overlaps in the information provided by the various health care providers.

A very important finding of this study is that, following protocol implementation, nurses and health educators introduced psychosocial items more often. Before implementation, it was observed that the provision of information at specific times did not match patients' needs. After implementation it was distributed more evenly throughout the course of the treatment; more information was given before admission, i.e. in the preoperative outpatient clinic, and less on the day of admission. Thus, on the day of admission, patients had more time for important activities and processes, such as becoming accustomed to the unfamiliar hospital environment.

Implications for practice

This intervention, which is straightforward to implement, provided very positive results. The project showed, not only that it is enlightening to review a department's method of providing information, but also that it is possible to develop an information protocol that is supported and implemented by all the disciplines involved. Although the residents did not give permission to videotape the encounters with their patients, they did support the implementation of the IP.

Inconsistencies, gaps and overlaps in information provision can be avoided by unambiguous delineation of responsibilities and tasks relating to information provision by different health care providers.

Acknowledgements

We greatly appreciate the participation of the health care providers and the patients who gave permission to videotape their medical visits. We would also like to express our thanks to Peter Bär and Erica Venus and the rest of the staff at the study centre who formulated and implemented the information protocol.

References

- Adviescommissie cijfers van de Nederlandse Hartstichting (2000) Hartoperaties, harttransplantaties en PTCA's 1985–1999. *Hart Bulletin* 6, 163–165.
- Bensing J.M. (1991) *Doctor–patient Communication and the Quality of Care*. Nivel, Utrecht.
- Cupples S.A. (1991) Effects of timing and reinforcement of pre-operative education on knowledge and recovery of patients having coronary artery bypass graft surgery. *Heart & Lung* 20, 654–660.
- Davis T.M., Maguire T.O., Haraphongse M. & Schaumberger M.R. (1994) Preparing adult patients for cardiac catheterisation: informational treatment and coping style interactions. *Heart & Lung* 23, 130–139.
- Devine E.C. (1992) Effects of psycho educational care for adult surgical patients: a meta-analysis of 191 studies. *Patient Education and Counseling* 19, 129–142.
- Grossi E.A., Galloway A.C., Kallenbach K., Miller J.S., Esposito R., Schwartz D.S. & Colvin S.B. (1998) Early results of posterior leaflet folding plasty for mitral valve reconstruction. *Annals of Thoracic Surgery* 65, 1057–1059.
- Mullen P.D., Mains D.A. & Velez R. (1992) A meta-analysis of controlled trials of cardiac patient education. *Patient Education and Counseling* 19, 143–162.
- Nederlandse Hartstichting (1998) *Een bypass- of omleidingsoperatie van de kransslagaders*. Nederlandse Hartstichting, Den Haag.
- Read C. (1998) Patients' information needs in intensive care and surgical wards. *Nursing Standard* 12(28), 37–39.
- Robinson E.J. & Whitfield M.J. (1988) Contributions of patients to general practitioner consultations in relationship to their understanding of doctor's instructions and advice. *Social Science & Medicine* 27, 895–900.
- Roter D. (2000) The medical visit context of treatment decision-making and therapeutic relationship. *Health Expectations* 3, 17–25.
- Roter D.L., Hall J.A., Kern D.E., Barker L.R., Cole K.A. & Roca R.P. (1995) Improving physicians' interviewing skills and reducing patients' emotional distress. A randomised clinical trial. *Archives of Internal Medicine* 155, 1877–1884.
- Van den Borne H.W. (1998) The patient from receiver of information to informed decision maker. *Patient Education and Counseling* 34, 89–102.
- Van Weert J., van Dulmen S., Bär P. & Venus E. (2003) Interdisciplinary preoperative patient education in cardiac surgery. *Patient Education and Counseling* 49, 105–114.