

# A Nurse Communication Manager reduces the number of non-relevant contacts

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## KEY WORDS

Nursing communication, non-relevant contacts, interruptions, releasing time to care, direct patient care, patient focused care.

## ABSTRACT

### Objective

The aim of this study was to reduce interruptions in nursing practice by exploring the effects on the number of non-relevant contacts received by the nursing staff after implementation of a Nurse Communication Manager.

### Design

The study was designed as a pre/post interventional study. All contacts to the nursing staff, either by telephone or in person, were registered 14 days before intervention and 14 days after intervention.

### Setting

The study was set in a department of surgery.

### Subjects

The subjects were contacts either in person or by telephone aimed at nurses and nurse assistants in the surgical department.

### Interventions

During the daytime a Nurse Communication Manager handled all incoming contacts irrespective of whether they were in person or by telephone. When the Nurse Communication Manager was not available and during the evening, night and weekends, telephone contacts were managed by an electronic Call Centre guiding the call to the care teams.

### Main outcome measure(s)

The main outcome measures were the number of non-relevant contacts aimed at the nursing staff.

### Results

Results showed a significant reduction in non-relevant contacts to the nursing staff from a mean of 80 contacts per day (SD 43) to a mean of 18 contacts per day (SD 7),  $p < 0.01$ .

### Conclusion

Implementation of a Nurse Communication Manager (NCM) reduced the number of non-relevant contacts. Reduction of non-relevant contacts is important for nurses in the clinical setting as non-relevant contacts may be perceived as interruptive. When nurses do not have to spend time responding to non-relevant contacts, they have more time to perform direct patient care.

## INTRODUCTION

The nursing staff in the department of surgery felt they were often interrupted by tasks not related to the patients in their care. The nurses felt the many interruptions did not leave enough time for them to participate in direct care of their patients. For several years, worldwide attempts have been made by redesigning and streamlining the way nurses manage their working day, to release time for nurses to participate more in direct care of patients (Wilson 2009). Different models for nursing aim at reducing the amount of time that nurses spend on administrative tasks (Burston et al 2011; Inde 2013). Other researchers have argued for reducing activities that interrupt nurses in their work (Sørensen and Brahe 2014).

The aim of this study was to reduce the number of interruptions by external contacts in nursing practice. The study explored the effects of implementation of a Nurse Communication Manager (NCM) in a department of surgery in a university hospital in the Capital Region of Denmark.

A higher proportion of hours spent by nurses in the clinical care of patients has been reported to improve patient outcome, and reduce harmful events, hospital related complications, and length of stay (Needleman et al 2002). It has been argued that fewer nurses, increased workload, and an unstable nursing environment have been associated with negative patient outcomes, especially in general medical/surgical units (Duffield et al 2011). A Danish study found that nurses spent 32% of their time in the clinical practice in direct contact with their patients (Holm-Petersen et al 2006). An Australian study pointed at similar results, suggesting a general trend towards more administrative work, documentation, and multi-tasking as an integral part of professionals' work (Westbrook et al 2011). In the United Kingdom (UK), "The Productive Ward – Releasing Time to Care" was implemented as a nursing management system offering a systematic way of delivering high quality care to patients (Burston et al 2011; Wilson 2009), leading to an increase of 20% in the time that nurses spent in direct care of patients (Wilson 2009). The model of Patient Focused Care was the basis for the development of the Swedish program for caring called Patient Closer Care (PCC) (Inde 2013). The aim of the PCC-program was to increase focus on patients, and enable the nurses to have a greater role in the direct care of patients. The PCC-program covered several new activities: the central nurses' office was closed down and small working areas were established, strategically placed in the ward and close to the patients. Nursing staff changed their way of performing nursing to cooperation in care pairs with shared responsibility for planning, prioritising, and performing direct care of small groups of patients, in contrast to nurses and nurse assistants working apart with different tasks; nurses often performing administrative tasks rather than direct patient care. Furthermore, administrative tasks were transferred to a coordinator, who amongst other tasks handled all incoming contacts. In Sweden the PCC-program was evaluated positively by nurses working within this new framework for nursing (Inde 2013; Kjörnsberg et al 2010). The issue of interruptions has been explored in several studies (Berg et al 2013; Hopkinson and Jennings 2013; Sørensen and Brahe 2014). However, although the nurses felt disrupted, it was impossible for them to reject incoming contacts, as they could not tell whether it would be a relevant contact or not. As such there is dilemma between distinguishing when an interruption must be handled straight away, be postponed or avoided; a characteristic of the working conditions tied to the nursing profession (Sørensen and Hall 2011). Non-relevant contacts might contribute to a feeling of interruptions among the nursing staff, but to the knowledge of the authors' the issue has not been explored.

Elements of the PCC-program had been implemented in some of the wards in the department of surgery but not the full program. In order to fulfil the PCC program in the ward and to address the issue of interruptions in nursing practice and releasing time for nurses to perform more direct patient care a planned interventional study exploring the effect of implementing a NCM was conducted. The hypothesis was the NCM would be

able to relieve nurses from external inquiries that would be deemed as interruptive. Additionally, the NCM was expected to guide patients, relatives, or professional collaborators at the initial contact with the ward in order to facilitate a direct process of communication.

## **METHOD/METHODOLOGY**

The study was designed as a pre/post interventional study, testing the effect on the number of contacts in total and specifically on non-relevant contacts when implementing an NCM. The NCM handled all incoming contacts irrespective of whether they were in person or by telephone in a surgical ward. Additionally, all telephone contacts during the evening, night and weekend shifts were managed and guided towards the specific care team by an electronic call centre.

The term *relevant contact* was defined as a contact that was related to a specific query regarding a specific patient who was being cared for/known by the specific nurse, nurse assistant, or student nurse. The term *non-relevant contact* was defined as a contact regarding a patient not known to or who was not cared for by the specific nurse, nurse assistant or student nurse that received the contact.

Personal contacts from patients and relatives already in the ward were not registered in the survey, as they would always be welcome to ask the nursing staff for help. Professional contacts from colleagues within the ward were also not registered, as these types of contact were considered necessary for developing a good and confident learning/teaching nursing environment, and should/would not be reduced by implementing the NCM. The NCM role was to focus on answering external contacts, either in person or by telephone, and directing the inquiry to the specific nursing staff or handling the request without interrupting the nursing staff at all.

### **Setting**

The study was carried out in a 50 bed surgical ward in the Department of Gastroenterology at Herlev Hospital, University of Copenhagen, Denmark.

### **Primary outcome**

The primary outcome was the number of non-relevant contacts as perceived by nurses, nurse assistants, secretaries, or students on the ward.

### **Secondary outcome**

The secondary outcome was a breakdown in time intervals of all incoming contacts, type of contacts, and number of contacts handled by the communication manager.

### **Sample size**

In the literature it has been suggested that recruitment of a person with a similar function area might reduce the total number of contacts by 50% (Västerbottens läns landsting 2009), and therefore aimed at a minimal relevant difference of 50%. In order to identify the actual number of contacts in the ward, a mock-registration was carried out. This revealed the total number of contacts would be between 150 and 200 per day; however, the number of non-relevant contacts was unknown. Therefore, the minimal relevant difference was set at 50%, and in a 2 sided test, type I error at 5% and type II error at 10% the needed number of days registering contacts would be 9 days (IBM Sample power). However, as the sample size estimation was based on uncertain data, and as there were no data describing means and standard deviations, it was decided to register contacts for 14 days before and 14 days after implementation.

### **Standard handling of contacts**

The ward was characterised by many incoming contacts covering enquiries related to general issues as well as questions related to specialised and complex problems. As such, the incoming personal contacts varied,

and covered patients waiting to be admitted to the ward, former patients, relatives inquiring about their loved ones and health professionals needing further information about patients.

Furthermore, the telephone often kept ringing, and if it was not answered within a short period of time the hospital's central telephone system redirected the phone call to another telephone in the ward. However, as the nursing staff was engaged in the direct care of patients they could not answer the phone without having to leave the patient. When a secretary answered the telephone, most of the incoming callers were redirected to the nurses' offices, as the secretary could not handle the request.

### **Interventions**

The NCM handled all incoming contacts, both personal contacts and telephone contacts, during daytime from Monday to Friday. The nursing staff was provided with portable phones and the ward was divided into specific areas making it possible for the NCM to get in touch with nursing staff caring for a certain patient or group of patients. In order to direct the telephone calls to the specific nursing staff when the NCM was not present an electronic call centre was established within the ward. This call centre handled all telephone contacts during evenings and nights, and directed the phone contacts directly to the relevant nursing staff by offering different choices. The nursing staff on duty would handle any personal contacts outside daytime on weekdays.

### **Measurements pre-intervention**

The number of contacts was measured, as well as the professional background of the employee, relevance of contacts, and the type of contact (telephone or in person, and professional or non-professional) and time of day before the implementation of the NCM. The pre-intervention registration was done over a period of two weeks from 7am to 11pm and included all contacts irrespective of whether they were in person or by telephone. The registration was done on a pre-specified form.

In order to ensure consistency in the way relevant and non-relevant contacts were assessed, the research group and the nurses and nurse assistants in consensus identified characteristics describing both types of contacts. During the intervention the number of contacts being handled by the NCM was monitored from 8 am to 4 pm. After implementation of the NCM the measurements from before implementation of the intervention were repeated

### **Data Analysis**

Data analysis was based on descriptive statistics and parametric tests using IBM SPSS statistics version 20 and Microsoft Office Excel 2007. Descriptive data were reported as mean (SD). Comparisons between groups were made using independent t-tests. A p-value less than 0.05 were considered statistically significant, and confidence intervals were set with 95% limits.

The study was approved by the Danish Data Protection Agency before initiation of the study. The study was exempt from approval by the Danish Ethical Committee; the study did not include any form of biomedical intervention.

## **FINDINGS**

The study was carried out over a six month period in 2013. Mock registration in January, pre-intervention registration was done during a two week period in January-February. The NCM was implemented after the pre-intervention registration and the post-intervention registration was carried out three months later in May and June 2013.

Results of the pre-intervention monitoring period showed a total of 2,643 contacts, and 45% of these (1,210) were non-relevant contacts (table 1).

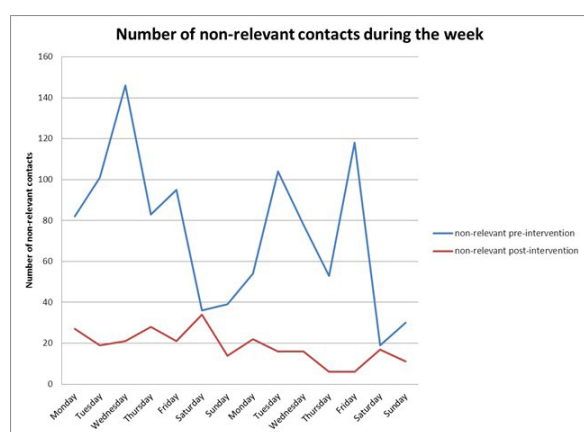
**Table 1: Contacts before and after intervention. Total values are based on periods of 14 days, and presenting mean (SD) number of contacts per day, and reduction in percent based on mean values. \* t-test.**

	Before	Mean (SD)	After	Mean (SD)	Reduction in percent	p-value
Contacts – total	2643	176 (100)	1497	99 (36)	-44%	0.01
Relevant	1428	95 (60)	1186	78 (35)	-18%	0.37
Non-relevant	1210	80 (43)	280	18 (7)	-78%	<0.01

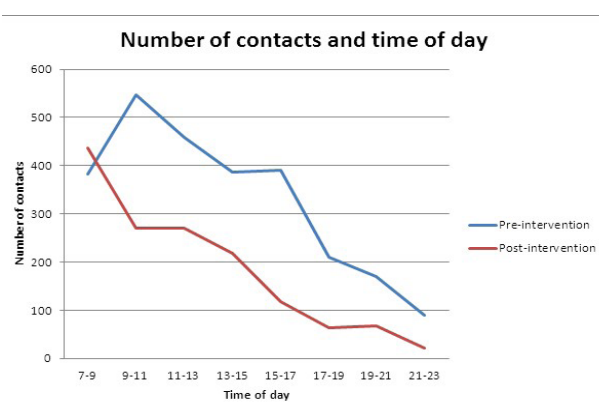
The results showed a significant reduction in non-relevant contacts to the staff from a mean of 80 contacts per day (SD 43) to a mean of 18 contacts per day (SD 7) (independent t-test,  $p < 0.001$ , CI for difference in mean [37.54-86.45]), a reduction of 78% (table 1), although with some day to day variation (figure 1).

The results of the post-intervention monitoring period showed a total of 1,497 contacts which was a significant reduction of 44% ( $p = 0.01$ , CI for difference in mean [18.45-134.34]). Out of these, 280 contacts (19%) were considered non-relevant (table 1).

**Figure 1: Number of non-relevant contacts before and after implementation of the Nurse Communication Manager**



**Figure 2: Number of incoming external contacts (both by telephone and in person) and timing of the contact**



Moreover, when looking at the type of contact the number of personal contacts was reduced by 54% (table 1). Whereas the telephone contacts from non-professionals were reduced by 57% (table 2); the telephone contacts from professionals were reduced by 7% (table 2).

**Table 2: Personal and telephone contacts (36 cases missed registration of contact type).**

		Before intervention	After intervention	Reduction in percent
Personal contacts	Professional	835	382	-54%
	Non-professional	819	375	-54%
Telephone contacts	Professional	572	531	-7%
	Non-professional	412	178	-57%

Adding to this the number of contacts were high in the morning and decreased during the evening (figure 2).

This was matched by the number of contacts handled by the NCM with a total of 66 (mean, SD 23) contacts handled per day. Additionally, the number of contacts handled by telephone was higher than the number handled in person (mean 39 (SD 12), mean 27 (12), respectively). The call centre handled a total of 1078 calls during the two week post-intervention registration.

On a subjective basis, the nurses, the nurse assistants, as well as collaborators reported spontaneously, that the work environment was more pleasant, less noisy, and less disrupted. Patients and relatives remarked that it was easy to get access to the information they needed. When elaborating on this, the patients and relatives explained they would either be informed by the NCM or they would be transferred directly to the specific nurse caring for the patient.

## DISCUSSION

Implementation of the NCM reduced the number of non-relevant contacts, and lowered the total number of contacts. When exploring the differences between the different types of contacts the results showed that the number of personal and telephone contacts from non-professionals were reduced by more than 50%. A similar reduction was found in the group of professional and personal contacts, but not in the telephone contacts from professionals, as contacts from the NCM to the nursing staff regarding a specific patient were regarded as relevant contacts. Furthermore, there was a subjective positive experience tied to the implementation of the NCM.

Interruptions have often been associated with reduction of quality of care, medical errors, negative work flow, and reduced patient safety (Berg et al 2013; Sørensen and Brahe 2014; Westbrook et al 2011; Kalisch and Aebersold 2010). This study did not explore the potential differences between non-relevant contacts, and interruptions and distractions, although this was suggested by a study investigating the complexity tied to interruptions in nurses' work (Hopkinson and Jennings 2013). However, the perception of an activity as being non-relevant should obviously be compared to an interruption or a distraction. A study presented the term communication multitasking where the subject did not initiate the communication events (Spencer et al 2004). These results supported the results of this study, as they found a high number of communication events, defined as a set of messages between one or more persons through any communication channel, were tied to a risk of communication overload with the potential of creating clinical errors (Spencer et al 2004). The present study monitored the number of contacts, showing a reduction in the total number of contacts and this was primarily in the number of non-relevant contacts.

As such, the aspiration was that the NCM would make it possible for the nursing staff to concentrate on working in direct patient care as patient satisfaction with nursing care was highly dependent on responsiveness and reliability of the nursing staff (Lumby and England 2000). Furthermore, a recent report on the implementation of a nurse flow master in an acute ward (Christiansen 2012) pointed at similar benefits for the professional collaborators. These factors were primarily reliant on adequate staff numbers, which supported the argument on releasing time for care if nurses and nurse assistants were not interrupted by non-relevant contacts.

When looking at the time of day it was not surprising that the number of contacts was higher in the morning at the beginning of the day shift. This is the time of day when the hospital wakes up - the surgeons start operating, other professional and clinical co-operators from other departments start planning their day and need to coordinate patient courses, relatives call the hospital to ask about their loved ones. This increase was countered when the NCM had been implemented, as the working hours of the NCM started in the morning. This might add to the positive subjective statements of the working environment being quieter, specifically as phones were not constantly ringing after the implementation of the NCM. There might even be a motivational factor as a contact perceived as relevant would be more important when the nurses were not interrupted by non-relevant contacts to the same extent as before the implementation of the NCM.



## Limitations

The study focused exclusively on external personal and telephone contacts, and did not explore the possible effects of changing the working conditions of the nurses and nurse assistants on the ward. The study did not explore the number of interruptions from relatives, other professionals and colleagues nor did it explore to which extent these interruptions were perceived as disruptive. Therefore, the positive effects related to releasing time to patient care should be explored further in studies exploring the patient perspective. However, the authors do believe that the results are based on a valid method with a high degree of reliability. All data were gathered in real-time and not depending on retrospective methods, which could have hampered the quality. Furthermore, the design of the study was pragmatic, as the testing and implementation of the NCM was done in a real-life setting, thereby covering any contextual aspects occurring in the clinical setting of a busy surgical department.

## CONCLUSION

Based on these findings the authors may conclude that implementation of a Nurse Communication Manager in a department of surgery significantly reduced the number of non-relevant contacts to nursing staff. The results of this study should be further explored in studies investigating issues related to patient safety and medication errors as a reduction in unnecessary interruptions might give a better working environment with a potential effect on patient safety. The Nurse Communication Manager took some of the workload away from the regular nursing staff, but it is not known if the net effect of this would give more time for direct patient care. This should therefore be explored further.

The reduction of non-relevant contacts is important for nurses in the clinical setting as they may be perceived as interruptive. The avoidance of interruptions in the nurses' everyday work in a surgical department is central and may reduce errors. When nurses do not have to spend their time answering non-relevant contacts they are given more time to care for patients. The implementation of a Nurse Communication Manager may support other organisational initiatives aimed at reducing interruption and increasing nurses' time spent in direct care.

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