

✧ RESEARCH PAPER ✧

Quantitative evaluation of regular morning meetings aimed at improving work practices associated with effective interdisciplinary communication

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Quantitative evaluation of regular morning meetings aimed at improving work practices associated with effective interdisciplinary communication

In 2000, an interdisciplinary surgical morning meeting (SMM) was introduced into the infants' and toddlers' ward of a major paediatric hospital to help overcome a number of communication and work process problems among the health professionals providing care to children/families. The objective of this study was to evaluate the impact of the SMM on a range

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of work practices. Comparative design including pre- and postintervention data collection was used. Data were collected on 100 patient records. Twenty children, from each of the five diagnostic-related groups most commonly admitted to the ward, were included. Demographic, medical review, documentation, critical incidents and complaint variables were obtained from three sources: the hospital clinical information system, the children's medical records and the hospital reporting systems for complaints and critical incidents. Children in the postintervention group were significantly more likely to be reviewed regularly by medical staff, to be reviewed in the morning, to have plans for discharge documented regularly throughout their admission and to have admission summary sheets completed at the time of discharge. The findings of the quantitative evaluation add some weight to the arguments for the purposely structured introduction of interdisciplinary teams into acute-care environments.

Key words: clinical documentation, continuity of patient care, interdisciplinary communication, job satisfaction.

INTRODUCTION

The planning, organization and documentation of acute patient care have been described as both demanding and chaotic.¹ The well-documented miscommunication among professionals has been associated with several factors. These include: differing professional philosophies and priorities; varying outcome expectations and views on each profession's contribution to these outcomes; inequities in power; variations across professional cultures and role expectations; and unclear professional boundaries.¹⁻⁴ The introduction of interdisciplinary teams has been put forward as one potential way of overcoming these differences and providing timely and appropriate care to patients.⁵⁻⁸ Not surprisingly, interdisciplinary teams vary in their ability to collaborate effectively,⁹ and the negative consequences of poor team functioning, both for the team members themselves and for the services they are providing to their patients, are well recognized.^{2,10,11}

Nursing and medical staff associated with our infants' and toddlers' ward had been aware of some frustration with nurse-doctor interactions and communication in general. The majority of these frustrations were related to the planning and documentation of medical and nursing care. Frustrations around the organization of care, which involves a range of different professional groups, have been well-described in the literature.^{12,13} Nursing staff often found themselves chasing up medical staff and acting as buffers between doctors and families when communication failed. However, nurses were disorganized in their approach to communicating with medical staff.

In 2000, an interdisciplinary surgical morning meeting (SMM) was introduced on our ward, which cares primarily for surgical infants and toddlers within a major paediatric hospital.

The hope was that the SMM would improve the communication among nursing staff, surgeons and junior medical staff. The nursing team leaders, surgical registrars, residents and a senior surgical staff member attended a daily SMM. The meeting involved an informal, sit-down discussion of all children within the ward. These discussions included the patients' surgical and nursing management, as well as planning for discharge, and assisted team members in gaining an overall view of the day's work priorities.

In 2003, the decision was taken to evaluate the impact of the SMM on work practices. The evaluation was made up of two distinct, but associated, components. The first component involved the qualitative exploration of staff's perspectives of the SMM.¹⁴ That component provided rich accounts of the ways in which the SMM brought about greater predictability in the day-to-day work of all staff, facilitated the exchange of professional knowledge and perspectives, improved professional relationships and provided interdisciplinary support, and led to a general view that the meeting improved staff and child/family outcomes.

The present paper reports the quantitative evaluation of the impact of the SMM on work practices. More specifically, it explores the differences before and after the implementation of the SMM in relation to:

1. Timing and documentation of medical review.
2. Documentation of medical management decisions.
3. Documentation of discharge decisions.
4. Evidence that junior doctors' documentation incorporates a holistic approach to care.
5. The frequency of critical incidents or complaints in which children and/or families were involved and which related to the medical and/or nursing care provided within the ward.

METHOD

Design

A comparative design was used, including pre- and postintervention data collection.

Subjects

The medical records and clinical data of 100 children admitted for surgical procedures were reviewed. Fifty of the records were of children admitted before the introduction of the SMM: the time period for the pre-intervention group was March 1998–March 2000. The other 50 records were of children admitted after the introduction of the SMM: the time period for the postintervention group was March 2001–March 2003. Ten records from each of the five diagnostic-related groupings (DRGs) were included in the pre- and postintervention groups: appendectomy, cellulitis, herniotomy, hypospadias and pyloromyotomy. The 11 months for which no data were collected was deemed to be an implementation and 'settling-in' period for the SMM.

Measures

Information about work practices was obtained from three sources: the hospital clinical information system, the children's medical records and the hospital reporting systems for complaints and critical incidents.

Clinical information system

A range of data was obtained from the hospital clinical information system. They included the reason for admission (appendectomy, cellulitis, herniotomy, hypospadias and pyloromyotomy), length of stay (h), length of stay (days) and the case complexity score.

Children's medical records

Four components of the medical records were reviewed: the admission summary sheet, continuation notes, medical treatment order form and any clinical pathway in use.

Admission summary sheet. Data collected from the admission summary sheet included the gender and time of discharge. When the discharge time was not recorded on the admission summary sheet, it was extracted from the Computerized Patient Information System. The admission summary sheet was checked to see whether the member of the surgical team who was responsible for completing the form as a part of the discharge planning process had done so.

Continuation notes. The written continuation notes were the main source of data. Several measures relating to review by the surgical team were obtained from the notes. The time of day the child was surgically reviewed was obtained for each day of the admission and coded as 'morning' or 'afternoon' or 'no review documented'. A score was allocated, such that morning review = 2, afternoon review = 1 and no review = 0. Each day's score was added and divided by the number of days to calculate a mean review score for admission. The percentage of morning reviews—the most desirable outcome—also was calculated. The morning of discharge review was assessed through evidence of surgical documentation in the continuation notes on the morning of discharge and coded as 'yes' or 'no'.

The content of the surgical review documentation also was scored in relation to the number of references to each of five issues:

- The child's family or social situation
- Clinical management information
- Dietary information
- Pain management
- Discharge planning and follow-up

A score of 1 was allocated each time reference was made to any of the issues and a mean score/day was calculated. Scores were also calculated in relation to the number of times the appropriate doctor had not documented medical orders—and the nursing staff had noted medical orders within their reports.

Medical treatment order form. Information regarding the frequency of documentation of intravenous fluid orders by the surgical team was obtained from the medical treatment order form. Specific information concerning when and where the fluids were commenced, and for how long the infusion continued, was obtained from the notes in order to establish whether the surgical team responsible for the child was appropriately involved in writing up the intravenous fluid chart.

Clinical pathway. The presence of a clinical pathway in the medical records indicated the child was managed using this tool. Such tools are in themselves associated with improvements in some of the study's areas of interest. There were no pathways in place before the implementation of the SMM; two of the DRGs, herniotomy and pyloromyotomy, had pathways introduced around the same time that the SMM was introduced. We collected information on the presence of a pathway in the notes so that we could accommodate this fact in the analysis of the relevant variables.

Critical incidents and complaints system

Critical incidents and complaints are collected centrally within the hospital. The small number and diverse range of critical incidents made comparisons before and after the introduction of the SMM impossible. Similarly, very few complaints had occurred before or after the introduction of the SMM.

Procedure

Approval to undertake the study was obtained from the relevant research and human ethics research committees. The hospital's Clinical Effectiveness Unit was contacted and facilitated the identification of all children falling into each of the five DRGs and admitted to the ward within the time periods identified for the study. These data included the subject's DRG, medical record number, date of birth, age in years or days, the admission and discharge date, and length of stay in days and h. Fifty medical record numbers were then chosen randomly to form the pre-intervention group; the postintervention group was then matched as closely as possible to the pre-intervention group for age and length of stay. The research nurse familiar with the use of medical records undertook data collection over a period of 4 weeks. The data collection process was straightforward as there were few variables requiring the interpretation of material.

Analysis

Descriptive statistics are provided for both the pre- and postintervention groups overall and for each of the five DRGs: means and standard deviations (SDs) are reported when parametric analyses were performed. Medians and interquartile ranges are reported when variables were continuous and non-parametric analyses were undertaken, and percentages are reported for categorical variables. Two-tailed Mann–Whitney *U* analysis was used for all continuous outcome variables as the data were somewhat skewed. χ^2 analysis was used for categorical outcome variables. As the introduction of clinical pathways between the pre- and post-data collection periods might have improved some work practices, the analysis of relevant variables was undertaken with ($n = 100$) and without ($n = 89$) the inclusion of data from subjects who were managed on pathways.

RESULTS

There were no statistically significant differences identified when pre- and postintervention groups were compared using *t*-test analysis for age, case complexity score or length of stay (h). χ^2 analysis of gender differences also revealed no significant differences between the groups (Table 1).

Table 1 Demographic information for pre- and postintervention groups for each of the five conditions and a combined total

DRG	Age (year)		Length of stay (h)		Case complexity score		Gender	
	Before SMM	After SMM	Before SMM	After SMM	Before SMM	After SMM	Before SMM	After SMM
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	Mean (SD)	Mean (SD)	% Males	% Males
A	6.50 (3.70–7.60)	4.90 (3.20–7.40)	93.50 (68.70–130.70)	81.50 (62.00–107.00)	1.00 (0.20)	1.10 (0.03)	60	70
B	2.20 (0.70–5.30)	2.70 (0.70–5.50)	46.50 (40.80–102.30)	66.50 (47.50–69.00)	1.00 (0.04)	1.00 (0.05)	50	60
C	0.14 (0.11–0.19)	0.20 (0.15–0.32)	28.50 (25.80–31.30)	29.50 (25.80–47.30)	0.70 (0.40)	0.83 (0.40)	80	100
D	1.40 (1.00–2.70)	1.60 (0.88–2.90)	91.00 (64.80–176.30)	80.50 (77.50–164.80)	0.90 (0.04)	0.90 (0.04)	100	100
E	0.11 (0.10–0.15)	0.11 (0.08–0.14)	75.50 (61.80–78.30)	68.00 (48.00–82.80)	1.50 (0.04)	1.40 (0.10)	100	80

$n = 10$ for all groups before and after the introduction of the surgical morning meeting (SMM) for all conditions and a total of 50 in each combined group.

DRG, diagnostic-related grouping; A, appendicectomy; B, cellulitis; C, herniotomy; D, hypospadias repair; E, pyloromyotomy; IQR, interquartile range.

Table 2 Review, documentation and discharge information comparing pre- and postintervention groups

Variable	Total (<i>n</i> = 100)				Without pathway (<i>n</i> = 89)	
	Before SMM [†]	After SMM [†]	Test statistic	<i>P</i>	Test statistic	<i>P</i>
Review						
Mean review score for admission	1.70 (1.00–2.00)	2.00 (1.67–2.00)	<i>U</i> = 853.5	0.002	<i>U</i> = 709.00	0.017
Percentage of morning reviews	75.00 (33.30–100.00)	100.00 (75.00–100.00)	<i>U</i> = 829.5	0.001	<i>U</i> = 689.50	0.011
Morning of discharge review	70.00	88.00	$\chi^2 = 4.9$	0.024	$\chi^2 = 2.60$	0.086
Documentation						
Medical management	1.40 (0.00–2.00)	1.40 (0.67–1.76)	<i>U</i> = 1194.0	0.698	<i>U</i> = 923.00	0.666
Medical orders noted only by nursing staff	0.00 (0.00–1.00)	0.00 (0.00–1.00)	<i>U</i> = 1043.0	0.109	<i>U</i> = 810.50	0.128
Appropriate documentation of intravenous orders	34.00	40.00	$\chi^2 = 0.39$	0.339	$\chi^2 = 0.85$	0.241
Discharge						
Documentation of discharge	0.30 (0.13–0.53)	0.70 (0.30–1.00)	<i>U</i> = 889.0	0.012	<i>U</i> = 739.50	0.049
Documentation of follow-up	0.20 (0.00–0.50)	0.30 (0.00–0.50)	<i>U</i> = 1139.5	0.428	<i>U</i> = 902.00	0.531
Admission summary completed	48.00	98.00	$\chi^2 = 31.7$	0.000	$\chi^2 = 25.30$	0.000

[†]Median (interquartile range) was used for continuous variables and percentages were used for categorical variables. χ^2 d.f. = 1 for all analysis.

SMM, surgical morning meeting.

The remaining analyses have been organized into three areas: timing and documentation of medical review, documentation of management decisions and documentation of discharge information. Details of all analyses are provided in Table 2. A fourth area—medical documentation reflecting a holistic approach to care—provided inadequate data for meaningful statistical comparisons to be made, but this finding is in itself interesting and will be discussed later.

Review

Significant differences were found in the mean review score for admission ($P = 0.002$), the percentage of morning reviews ($P = 0.001$) and the morning of discharge review ($P = 0.024$). That is, children in the postintervention group were more likely to be reviewed regularly, more likely to be reviewed in the morning and more likely

to be reviewed on the morning of their discharge. When these analyses were repeated for the 89 subjects not managed on clinical pathways, the morning of discharge review was not significantly different before and after the implementation of the SMM ($P = 0.086$). That is, it was the presence of a clinical pathway that accounted for the apparent difference between the two groups before and after the intervention.

Documentation

No significant differences were found between the pre- and postintervention groups for the documentation of management decisions, documentation of medical orders noted only by nursing staff and documentation of intravenous orders by the appropriate member of the surgical team. The removal of subjects on clinical pathways did not alter these findings.

Discharge

Group comparisons for the pre- and postintervention groups found significant differences for the documentation of discharge ($P = 0.012$) and admission summary sheet completion ($P = 0.000$). There was no significant difference found when documentation of follow-up was compared before and after the intervention. That is, children in the postintervention group were more likely to have plans for discharge documented within the continuation notes regularly throughout their admission and admission summary sheets completed at the time of discharge, but no more likely to have follow-up plans documented. When these analyses were repeated with subjects not managed on clinical pathways, the results were unchanged.

DISCUSSION

The overall aim of the quantitative evaluation of the SMM was to establish whether quantifiable differences could be found in work practices. As the implementation of the SMM was stimulated by frustrations around the planning, organization and documentation of management, several process variables were identified as particularly relevant to the evaluation. Comparisons between the pre- and postintervention groups on these variables identified significant differences on four of these: children in the postintervention group were more likely to be reviewed regularly, more likely to be reviewed in the morning, more likely to have plans for discharge documented within the continuation notes regularly throughout their admission and more likely to have admission summary sheets completed at the time of discharge.

The research design used prevented clear causal relationships to be established within this study. For instance, we could not establish whether medical documentation had improved without nurses having to chase up medical staff, although this was a finding of the qualitative evaluation.¹⁴ Furthermore, the introduction of clinical pathways made the interpretation of the changes we found in documentation challenging. We took the more conservative approach of removing children who were cared for on pathways from analyses. It was impossible to factor out the relative contribution of the SMM to improvements. There is reasonable evidence generated through the qualitative component of the evaluation to support that the acceptance and success of the pathways might in part be related to procedural and cultural changes associated with the SMM.

Another finding of the qualitative component, which we attempted to quantify, was the move to more holistic

views of children and families.¹⁴ However, more holistic decision-making was not evident within the continuation notes. These findings are not necessarily contradictory. The challenge of improving the documentation of contextual and other information underpinning the interpretation of patient assessments and management decisions has been discussed for many years.^{13,15} Different approaches to improving documentation also have been described in the literature.¹⁶ The move to computer-based or non-paper-based documentation, with a focus on tick-boxes and other 'reductionistic' techniques, will undoubtedly increase the challenge of holistic documentation and explicit decision-making.¹² The challenge is to establish a culture of holistic decision-making that demands documentation and the creation of software to facilitate this.

The earlier and more consistent patient review practices reflected within the continuation notes of children cared for after the introduction of the SMM support the view that the meeting had a positive impact in this area. This provides some evidence for the perceived improvements in the organization and predictability of the work described in the qualitative evaluation.¹⁴ However, the lack of improvement in the documentation of care indicates that the suggested improvements in interdisciplinary planning and verbal communication identified by the team members is rarely captured within the documentation process.

CONCLUSION

The findings of the quantitative evaluation add some weight to the arguments for the introduction of purposely structured interdisciplinary teams into acute-care environments. We strongly suggest that others introducing similar initiatives plan experimental research or program evaluation before the implementation of changes to practice in order to overcome the limitations of comparative research designs.

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