

NURSE-PHYSICIAN COLLABORATION IN AN INTENSIVE CARE UNIT

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- **BACKGROUND** Collaborative interaction between nurses and physicians on critical care units is significantly related to mortality rates and length of stay in the units. For this reason, collaborative interaction should be an integral part of quality improvement programs.
- **OBJECTIVES** To examine perspectives of nurses and physicians on collaborative interaction in an intensive care unit, to examine differences between groups in perceptions of collaborative interaction in the unit, and to compare this unit with units examined in a national study.
- **METHODS** A modification of the ICU Nurse-Physician Questionnaire was used to collect data from 35 nurses and 45 physicians. Descriptive statistics and analysis of variance were used to determine group scores and to examine differences between groups.
- **RESULTS** The level of collaborative interaction in the unit was high. However, nurses and physicians and all other staff groups examined except one had significant differences in perceptions of collaborative interaction. The high level of collaborative interaction was confirmed by a comparison of the results with the results from a national sample.
- **CONCLUSIONS** Critical care units can use this example to incorporate an assessment of the level of collaborative interaction into their quality improvement program. (*American Journal of Critical Care*. 2001;10:341-350)

Compared with other intensive care units (ICUs), units with poor leadership and poor collaborative communication between nurses and physicians have as much as an 1.8-fold increase in risk-adjusted mortality¹ and significant increases in length of stay.^{2,3} Higher collaborative interaction is also associated with higher job satisfaction of nurses and higher retention of nurses.^{2,4} In light of these findings, why is collaborative communication not an integral part of the quality improvement programs of all critical care units? In this article, I present a case study as an example of how the level of collaborative interaction of any unit can be assessed.

Case studies are useful methods of organizational assessments of critical care units.^{5,6} The case study reported here was prompted by the concerns of the

leaders of an ICU in a suburban hospital about the level of collaborative interaction on their unit. Because of their awareness of the growing body of research that supports the beneficial results of nurse-physician collaboration in critical care on patients' and organizations' outcomes, they decided to assess the level of collaboration on their unit, establishing a basis for interventions if needed.

Three groups of researchers have contributed to the research on collaboration with single-site^{6,8} and multi-site^{1-4,9-11} studies. Mitchell and colleagues^{4,6} used the Charnes Organizational Diagnosis Survey and the Moos Work Environment Scale to measure collaboration. In their case study of an ICU selected for such desired organizational attributes as high nurse-physician collaboration, Mitchell et al⁶ found positive outcomes for patients and the organization, including high staff satisfaction, low turnover, high satisfaction among patients, and lower than expected unit mortality rates. In an examination of 25 ICUs, Mitchell et al⁴ found an

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association between (1) ideal-type organizational structure and processes, which included nurse-physician collaboration, and (2) positive organizational outcomes, such as retention of nurses.

Baggs and colleagues^{7,8} used the Collaborative Practice Scales and developed the Decision About Transfer scale for their examination of collaboration associated with the decision to transfer patients out of an ICU. They found that the amount of interdisciplinary collaboration perceived by nurses in the ICU was a significant predictor of the negative outcomes of ICU readmission and higher than expected unit mortality rates.⁸ In their study of 3 ICUs, Baggs and colleagues^{9,11} measured unit-level collaboration by scoring each unit for the number of 8 possible collaboration variables present, such as scheduled interdisciplinary meetings. They found a perfect rank order correlation between unit-level collaboration scores and the outcome of expected unit mortality rates for these 3 units.¹¹

Knaus et al,¹ in an examination of 19 ICUs, found that the level of collaboration between a unit's nurses and physicians differentiated units with greater than expected mortality rates from units with less than expected mortality rates. The best performing ICUs had 41% lower death rates than predicted, and the worst had 58% higher death rates than predicted.¹ This study was followed by the National ICU Study conducted by Shortell, Knaus, Zimmerman, and colleagues.^{2,3,5,10} The results indicated an association between higher levels of nurse-physician collaboration and lower than expected length of stay and lower nurse turnover in 42 ICUs.^{2,3}

The instrument selected for use in the case study reported here was the ICU Nurse-Physician Questionnaire, which was developed by Shortell et al¹⁰ for the National ICU Study. Shortell and colleagues, who published results of content validity, factor analysis, and beginning construct validity for this instrument,¹⁰ encouraged its use in continuous quality improvement efforts in ICUs.¹² Shortell et al^{2(p511)} described collaboration as "a composite concept which . . . includes subdimensions involving unit culture, leadership, communication, coordination, and problem solving/conflict management." Because of the fit of the elements assessed and its quality improvement nature, the framework created by Shortell et al was selected for this case study.

Research Questions

Three questions guided the case study assessment:

1. What is the perception of the unit's staff of the level of collaborative interaction in the unit, including physician leadership; communication

openness, timeliness, and satisfaction; problem solving; physician expertise; meeting effectiveness; and technical quality of care?

2. Do differences exist between various groups in the unit in perceptions of collaborative interaction?

3. How do the findings for this unit compare with those for units in the National ICU Study?

The assessment of collaboration was individualized to the unit studied. The specific concerns of the unit's leaders guided both the selection of research questions and a modification of the ICU Nurse-Physician Questionnaire. These concerns included the effects of recent organizational changes and the association of the medical director with these changes. Accordingly, the assessment focused on physician leadership rather than nursing leadership, because the latter was not a current concern. Additional concerns, including the effects of redesign initiatives, such as multidisciplinary team meetings, and other issues currently surfacing in the unit, guided the selection of unit groups compared in the assessment.

Methods

Setting and Subjects

The setting for this study was the 22-bed combined medical-surgical critical care unit in a 383-bed suburban community hospital in the Midwest. During the 3-month period before the study, 329 patients were admitted to the unit. Patients' ages ranged from 14 to 97 years, with a mean of 62.4 years. All nurses and physicians who practiced in the unit were sent questionnaires.

Instrument

A modification of the short form of the ICU Nurse-Physician Questionnaire was used to collect data. The instrument has separate forms for nurses and for physicians, to allow greater clarity of the referents for many questions. The 5-option Likert-type responses of each scale ranged from "strongly agree" to "strongly disagree," with the exception of the problem-solving scales, which ranged from "not at all likely" to "almost certain." Scale scores were computed, after negatively worded items were reverse scored, by adding the values of the responses and dividing that sum by the number of nonmissing items in the scale.

The specific concerns of the unit's leaders guided both the selection of research questions and the modification of the ICU Nurse-Physician Questionnaire. On the basis of the concerns they had identified, they selected the scales from the instrument to be used and added items and open-ended questions to some scales. For instance, their concerns about the effect of recent organizational changes led to the selection of

the physician leadership and meeting effectiveness scales. Issues currently surfacing in the unit about generalist and specialist physicians led to the creation of a new scale to measure the perception of physicians' expertise.

The number of items in each scale in the original instrument and in the modified instrument are listed in Table 1. Also given in Table 1 are the coefficient estimates of reliability calculated from (1) the original scales reported by Shortell et al,¹⁰ (2) the original scale items with the case study sample, and (3) the modified scale items with the case study sample. Principal components factor analysis with Varimax rotation procedures were used to determine if the new items fit with the old items for each individual scale and are available upon request.

The physician leadership scale involves the extent to which staff perceive that the physician leader of the unit emphasizes standards of excellence, communicates clear goals and expectations, responds to changing needs and situations, and is "in touch" with the perceptions and concerns of members of the unit.

The scale for communication openness between groups examines the extent to which nurses and physicians perceive they can say what they mean when speaking with one another without repercussion or misunderstanding, and the scale for communication openness within groups examines the same

issues within the respective group of nurses or physicians.

Communication timeliness involves the perceived degree to which information about patients' care is related promptly to the persons who need to be informed. Satisfaction with communication involves the degree of satisfaction with nurses' or physicians' communication with patients and patients' families and with one another.

The scale for problem solving between groups examines the extent to which physicians and nurses work actively to make sure that all available expertise is brought to bear on a problem, with the goal of arriving at the best possible solution. The scale for problem solving within groups examines the same issues within the groups of nurses or physicians. An open-ended item was added to this scale: "If you have experienced conflict that has not been resolved, please indicate reason(s) resolution was not reached." The remaining 3 scales examine the perceived expertise of physicians, effectiveness of unit meetings in addressing important issues, and the technical quality of care provided.

Demographic information collected from nurses included the shift they worked and the number of years they had been in practice. Physicians were asked their area of practice (ie, family practice, internal medicine, or surgery), specialty, and the number of years they had been in practice.

Table 1 Scale reliabilities in the case study and in the National ICU Study¹⁰

Scale	Original instrument			Modified instrument	
	No. of items	National ICU Study α	Case study α	No. of items	Case study α
Physician leadership	8	.88	.81	8	.81
Communication openness within groups	4	.83	.86	6	.88
Communication openness between groups	4	.88	.94	6	.94
Communication timeliness	3	.64	.89	8	.87
Satisfaction with MD communication	4	.80	.83	*	*
Satisfaction with RN communication	3	.68	.70	*	*
Communication satisfaction	*	*	*	7	.85
Problem solving within groups	4	.81	.86	6	.88
Problem solving between groups	4	.82	.90	6	.91
Physician expertise	†	†	†	4	.69
Meeting effectiveness	3	‡	.81	3	.81
Technical quality of care	5	‡	.88	5	.88

*The Satisfaction with MD communication and Satisfaction with RN communication scales in the original instrument were combined to create the Communication satisfaction scale for the modified instrument.
†The Physician expertise scale was not part of the original instrument but was created for the modified instrument.
‡Reliability was not reported for this scale.

Data Collection Procedure

Because the purpose of the study was to assess the level of collaborative interaction in the unit, attempts were made to include all nurses and physicians who practiced in the unit. The questionnaire was put in the mailbox of all nurses, including "as-needed" staff. Questionnaires were mailed to the offices of all physicians who had admitted more than 1 patient to the ICU during the past year. Physicians' questionnaires were coded so that a reminder letter could be sent to the physicians who did not respond within 2 weeks. Because nurses were considered a more vulnerable group, their questionnaires were not coded. Informal reminders were directed to the nursing staff as a whole. The institutional review board determined that this project was exempt status.

Data Analysis

Data were analyzed by using the SPSS for Windows (version 6.0, SPSS, Inc, Chicago, Ill). Descriptive statistics, including means and SDs, were used to examine the first question guiding this case study: What is the perception of the unit's staff of the level of collaborative interaction in the unit, including physician leadership; communication openness, timeliness, and satisfaction; problem solving; physician expertise; meeting effectiveness; and technical quality of care?

Multiple analysis of variance (MANOVA) procedures were used to answer the second question: Do differences exist between various groups in the unit in perceptions of collaborative interaction? Each of the 5 MANOVA procedures were used to look for differences between one of the following grouping pairs: nurses and physicians, those who attend multidisciplinary meetings and those who do not, day- and night-shift nurses, less and more experienced nurses, and primary and specialty care physicians. The collaboration scale totals were the dependent variables in each MANOVA. The F ratio with the Hotelling *T* statistic was calculated to determine whether any differences existed between groups on questionnaire scales.

If differences were significant, analysis of variance (ANOVA) procedures were used as univariate follow-up tests to determine on which specific scale or scales the difference existed. For ANOVA, the mean, SD, F ratios, and level of significance were calculated. The meeting effectiveness scale was not included in the MANOVA procedures because of the small number of responses; rather, ANOVA procedures were used for each grouping pair. For this analysis, the mean, SD, F ratios, and level of significance were calculated. The significance level was set at $<.05$ for

MANOVA results and $<.01$ for ANOVA results.

Descriptive statistics, including means and SDs, were used to examine the third question: How do the findings for this unit compare with those for units in the National ICU Study^{10?}

Results

Characteristics of the Sample

At the time of the case study, the medical director had held the position for 3 years and was board certified in critical care and pulmonary medicine. All physicians with hospital admitting privileges also had admitting privileges to the ICU. The nurse manager had 12 years of critical care experience and had been employed in that position for 5 years. Fifty-two registered nurses staffed the unit, 42 full-time and 10 part-time (as-needed) nurses. All full-time nurses worked 12-hour shifts and were not required to rotate; 22 were assigned to the day shift and 20 to the night shift. Staffing gaps were filled by the part-time nurses and by nurses who "float" from other units. The ratio of registered nurses to patients was 1:1 or 1:2, on the basis of the unit's acuity system. All staff nurses were required to be certified in Advanced Cardiac Life Support within 1 year of employment. Twenty percent were certified by the American Association of Critical-Care Nurses as Critical Care Registered Nurses. Years in practice ranged from 1 to 27 (mean, 11 years; SD, 6.2 years).

Of 174 questionnaires sent, 80 were returned, for an overall response rate of 46%. Of the total responses, 44% ($n=35$) were from nurses and 56% ($n=45$) were from physicians. The response rates were 67% for nurses and 37% for physicians. Nurses' returns were compared by shift and experience level. The day shift accounted for 57% ($n=20$) of the returns and the night shift for 43% ($n=15$). The relatively high experience level of 6 years was chosen as the divider between less and more experienced nurses to provide an adequate number in the less experienced group from this nursing staff, whose mean years of experience was 11. Those nurses who had 6 years or less of experience accounted for 29% ($n=10$) of the returns and those who had greater than 6 years of experience accounted for 71% ($n=25$).

Physicians' returns were compared by practice area. The response rate of specialty care physicians was 47% ($n=27$); of primary care physicians, 27% ($n=17$). According to ICU admission data for the 3-month period before data collection, specialty care physicians accounted for 81% of the admissions and 60% of the physicians' responses, whereas primary care physicians accounted for 18% of the admissions

Table 2 Perception of collaborative interaction

Variable	No. of responses	Mean	SD	Actual range*
Physician leadership	73	4.19	0.63	2.75-5.00
Communication openness between groups	80	3.90	0.91	1.33-5.00
Communication openness within groups	80	4.28	0.76	1.17-5.00
Communication timeliness	80	3.95	0.71	1.00-5.00
Communication satisfaction	78	4.05	0.65	2.57-5.00
Problem solving between groups	69	3.25	0.90	1.67-5.00
Problem solving within groups	70	3.39	0.81	1.00-5.00
Physician expertise	78	3.42	0.85	1.50-5.00
Meeting effectiveness	45	3.36	0.82	1.33-5.00
Technical quality of care	78	4.37	0.64	1.40-5.00

*Possible range on all scales is 1-5.

and 38% of the physicians' responses. Because of missing responses, the number of responses varies in different analyses.

Perception of Collaborative Interaction

The results indicated a high level of collaborative interaction in this unit. The actual range, mean, and SDs for each scale are listed in Table 2; the possible range for each scale is 1 to 5. The mean scores on the scales of physician leadership, communication openness within groups, satisfaction with communication, and technical quality of care were 4.05 or greater, indicating high perceptions of these aspects of interaction. The mean scores on the remaining scales (communication openness between groups, communication timeliness, problem solving between groups, problem solving within groups, physician expertise,

and meeting effectiveness) were all 3.25 or greater, indicating relatively high perceptions of these aspects of interaction.

Differences Between Groups

Differences Between Nurses and Physicians.

Overall, perceptions of collaboration differed significantly between nurses and physicians (Hotelling MANOVA=0.96, $F=5.85$, $P<.001$; Table 3). With the exception of physician leadership, physicians' scores were higher than nurses' scores on every variable. Univariate follow-up tests indicated significant differences for 7 of the 9 variables studied. Physicians had significantly higher perceptions than did nurses of communication openness between nurses and physicians, communication timeliness, satisfaction with communication, problem solving between nurses and

Table 3 Differences between nurses and physicians in perceptions of collaboration

Scale	Nurses (n=35)		Physicians (n=45)		$F_{1,63}$	P
	Mean	SD	Mean	SD		
Physician leadership	4.31	0.48	4.13	0.71	1.37	.25
Communication openness between groups	3.58	0.80	4.22	0.83	9.72	.003*
Communication openness within groups	4.06	0.74	4.43	0.78	3.68	.06
Communication timeliness	3.75	0.62	4.11	0.76	4.54	.04*
Communication satisfaction	3.62	0.53	4.35	0.57	28.61	<.001*
Problem solving between groups	2.79	0.74	3.70	0.85	21.14	<.001*
Problem solving within groups	3.14	0.83	3.58	0.72	5.17	.03*
Physician expertise	3.09	0.73	3.73	0.76	12.14	<.001*
Technical quality of care	4.17	0.48	4.23	0.75	5.35	.04*

*Significant at $P<.05$.

physicians, problem solving within their group (ie, physicians), physician expertise, and technical quality of care.

Responses to 2 open-ended questions that were added provide insight into the differences between nurses and physicians. The question "If I do not receive a timely or appropriate response, the next step I take is . . ." was added to the communication timeliness scale. Whereas only 3 of the 45 physicians responded to this question, 27 of the 35 nurses did. Each of the 3 physicians indicated that the next step would be to speak to the nurse manager or charge nurse. The clarity of the physicians' responses was in sharp contrast to the collective uncertainty of the nurses' responses. One nurse responded that she would "go through the communication chain," although little consistency was found on the order of this "chain" when all the nurses' responses were compared. Additional comments included "hope the patient doesn't get worse," "handle it myself until I get orders," and "feel at risk making suggestions regarding orders [to] a partner who doesn't know patient." These comments reveal the nurses' perception that a timely or appropriate response was critical. One nurse noted, "Another problem is updating all the physicians about patient status—some get upset because you called one before the other." Obtaining physicians' responses was an area of great concern to nurses, although it was not always clear if the concern focused on the timeliness or the appropriateness of the physicians' responses.

The question "If you have experienced conflict which has not been resolved, please indicate reason(s) resolution was not reached" was added to the scale for problem solving between groups. A total of 9 nurses

and 2 physicians responded to this question. The reasons given by most of the nurses included denial and avoidance: a physician's "failure to see need," "would not consider collaborative discussion," "unwilling to discuss the issue," "did not acknowledge the problem," and "lack of participation on MD's part." One nurse, who wrote that nurses were treated "as handmaidens—no respect," alluded to domination of nurses by physicians. This nurse suggested a "professional/interpersonal incident report to document disrespectful or unprofessional behavior." These responses fit with descriptions of common alternatives to collaborative problem solving, which include denial, avoidance, domination, and capitulation.¹³

Two nurses reported "too many physicians on the case" and a "power struggle" between primary care and specialty care physicians as reasons why conflicts between nurses and physicians were not resolved. The 2 physicians who had unresolved conflicts with nurses were both primary care physicians. One thought that "some of the nurses are disrespectful/difficult to work with when your medical opinion differs from what they think is right." The other wrote of a concern with nurses engaging in "doctor shopping; i.e., if they don't get the therapy they want from me, they call subspecialists until they find someone who will do what they think is appropriate."

Differences Between Those Who Attend Multidisciplinary Meetings and Those Who Do Not. Overall, differences between those who attend multidisciplinary meetings and those who do not were not significant (Hotelling MANOVA = 0.29, $F = 1.76$, $P = .10$).

Differences Between Day- and Night-Shift Nurses. Differences between day- and night-shift nurses were

Table 4 Differences between day- and night-shift nurses in perceptions of collaboration

Scale	Day shift (n=20)		Night shift (n=15)		$F_{1,32}$	P
	Mean	SD	Mean	SD		
Physician leadership	4.38	0.48	4.21	0.47	1.11	.30
Communication openness between groups	4.02	0.65	3.03	0.63	19.81	<.001*
Communication openness within groups	4.11	0.82	4.01	0.64	0.13	.72
Communication timeliness	3.74	0.74	3.76	0.45	0.01	.94
Communication satisfaction	3.70	0.56	3.52	0.49	0.91	.35
Problem solving between groups	2.78	0.75	2.80	0.75	0.00	.95
Problem solving within groups	3.36	0.86	2.86	0.72	3.33	.08
Physician expertise	3.00	0.78	3.20	0.66	0.66	.42
Technical quality of care	4.20	0.43	4.13	0.54	0.16	.69

*Significant at $P < .05$.

Table 5 Differences between less experienced and more experienced nurses in perceptions of collaboration

Scale	Less experienced (n = 10)		More experienced (n = 25)		F _{1,32}	P
	Mean	SD	Mean	SD		
Physician leadership	4.09	0.30	4.40	0.51	3.14	.09
Communication openness between groups	3.52	0.57	3.61	0.89	0.09	.76
Communication openness within groups	3.65	0.69	4.24	0.70	5.00	.03*
Communication timeliness	3.83	0.62	3.71	0.63	0.24	.63
Communication satisfaction	3.81	0.42	3.54	0.56	1.90	.18
Problem solving between groups	3.13	0.77	2.64	0.69	3.30	.08
Problem solving within groups	2.70	0.93	3.32	0.72	4.36	.05*
Physician expertise	3.43	0.57	2.94	0.75	3.30	.08
Technical quality of care	4.26	0.41	4.13	0.51	4.89	.49

*Significant at $P < .05$.

significant (Hotelling MANOVA = 1.06, $F = 2.84$, $P = .02$; Table 4). One significant univariate follow-up test indicated that the day-shift nurses' perceptions of communication openness with physicians was significantly higher than that of the night-shift nurses.

Differences Between Less Experienced and More Experienced Nurses. Differences between nurses with 6 or fewer years of experience and nurses with greater than 6 years of experience were significant (Hotelling MANOVA = 0.89, $F = 2.37$, $P = .04$; Table 5). Univariate follow-up tests indicated that more experienced nurses rated their communication openness and problem solving with other nurses significantly higher than did the less experienced nurses.

Eight nurses responded to the open-ended question "If you experienced conflict that has not been

resolved, please indicate reason(s) resolution was not reached" added to the scale for problem solving within groups. Three nurses reported conflict between "old nurses vs new nurses [referring to length of employment at the medical center, not age]," and another stated, "What the old nurses want, the old nurses get." The nursing staff of this unit as a whole was very experienced. Of the 35 nurses who returned the questionnaire, 25 had more than 6 years of practice experience (Table 5).

Differences Between Primary and Specialty Care Physicians. Differences between primary and specialty care physicians were significant (Hotelling MANOVA = 0.89, $F = 2.37$, $P = .04$; Table 6). Scores of specialty care physicians were higher than those of primary care physicians on every variable except

Table 6 Differences between primary care and specialty care physicians in perceptions of collaboration

Scale	Specialty care (n = 27)		Primary care (n = 17)		F _{1,29}	P
	Mean	SD	Mean	SD		
Physician leadership	4.50	0.43	3.74	0.75	12.30	.001*
Communication openness between groups	4.65	0.42	3.76	0.83	12.19	.002*
Communication openness within groups	4.63	0.38	4.21	1.03	2.27	.14
Communication timeliness	4.16	0.44	4.06	1.01	0.12	.73
Satisfaction	4.46	0.47	4.24	0.66	1.08	.31
Problem solving between groups	3.91	0.86	3.47	0.82	2.08	.16
Problem solving within groups	3.65	0.79	3.50	0.65	0.31	.58
Physician expertise	3.60	0.77	3.87	0.75	0.96	.34
Technical quality of care	4.71	0.34	4.33	1.01	2.03	.17

*Significant at $P < .05$.

physician expertise. Univariate follow-up tests indicated that specialty care physicians rated physician leadership significantly higher than did primary care physicians. In addition, the specialty care physicians' perceptions of communication openness with nurses were significantly higher than those of primary care physicians. Of the 2 physicians who responded to the open-ended question "If you have experienced conflict which has not been resolved, please indicate reason(s) resolution was not reached," one indicated the reason was a "personality clash or poor communication," and the other indicated an inability "to get some physicians to work with others."

Comparison With the National ICU Study

The results of this case study are compared in Table 7 with results of the National ICU Study, which included more than 17 000 respondents from 42 ICUs in the United States.³ The hospitals and ICUs in the National ICU Study were similar to the ICU of this case study. The case study's hospital is a nonprofit organization, is not affiliated with a medical school, and has 383 beds. In the National ICU Study, 88% of the hospitals were nonprofit, 47% were not affiliated with a medical school, and the mean number of beds was 358. The ICU in the case study had 22 beds, compared with a mean of 13 beds in the National ICU Study, and was a mixed medical-surgical unit, as were 71% of the units in the National ICU Study.³

As described previously, the questionnaire used in the case study was a modification of the short form of the ICU Nurse-Physician Questionnaire developed for the National ICU Study. Comparisons are made for

the scales selected for use in the case study, when data are available. As illustrated in Table 1, for the modified instrument, new items were added to every scale of the original instrument except physician leadership, satisfaction, meeting effectiveness, and technical quality of care. Results of the factor analysis in the case study indicated that 2 scales, satisfaction with nurses' communication and satisfaction with physicians' communication, loaded on a single factor. The scale for physician expertise was developed for this project. For every scale except communication timeliness, the scores in the case study are higher than those in the National ICU Study sample (Table 7). The greatest difference occurs in the scale for physician leadership. No statistical analysis was done of the differences between the results of the case study and the results of the National ICU Study.

Discussion

Comparisons Between Nurses and Physicians

Differences between nurses and physicians were significant for 7 of the 9 scales (Table 3). Although my colleagues and I expected to find differences between nurses and physicians, we did not expect to find that physicians rated every scale higher than nurses did. Physicians rated physicians' communication openness with nurses significantly higher than nurses rated nurses' communication openness with physicians (Table 3). This finding suggests that physicians had less fear of repercussion or misunderstanding when speaking with nurses than nurses did when speaking with physicians. This finding also implies that physicians held more power on this unit than

Table 7 Comparison of case study unit with units in the National ICU Study¹⁰ in perceptions of collaboration

Scale*	Case study unit		National ICU Study (42 units)	
	Mean	SD	Mean	SD
Physician leadership	4.19	0.63	3.25	0.72
Communication openness between groups	3.90	0.91	3.60	0.77
Communication openness within groups	4.28	0.76	3.92	0.67
Communication timeliness	3.95	0.71	4.01	0.52
Communication satisfaction	4.05	0.65	†	†
Satisfaction with MD communication	†	†	3.37	0.76
Satisfaction with RN communication	†	†	3.94	0.56
Problem solving within groups	3.39	0.81	3.20	0.70
Problem solving between groups	3.25	0.90	3.12	0.72

*Possible range on all scales is 1-5.

†The Satisfaction with MD communication and the Satisfaction with RN communication scales in the original instrument used in the National ICU Study were combined to create the Communication satisfaction scale for the modified instrument used in the case study unit.

nurses did. Physicians' higher rating on communication timeliness may indicate that nurses were simply timelier when responding to physicians than physicians were when responding to nurses.

Similarly, the physicians' higher ratings of problem solving with nurses compared with nurses' lower ratings of problem solving with physicians (Table 3) may indicate that physicians were more confident than were nurses that expertise in the unit was used in arriving at solutions. This finding also may indicate that nurses did not feel their expertise was being used in problem solving in the unit. Physicians also rated physicians' problem solving with other physicians significantly higher than nurses rated nurses' problem solving with other nurses (Table 3). This finding suggests that physicians were more comfortable with their communication skills in general and with their problem-solving skills in particular than nurses were with the nurses' skills.

When these findings are considered, it is not surprising that physicians rated their satisfaction with communication significantly higher than nurses did (Table 3). Nor is it surprising that physicians' perceptions of the expertise of primary care physicians and of technical quality of care were significantly higher than those of nurses (Table 3). Although the response rate was higher for nurses (67%) than for physicians (32%), and the nurses made more comments ($n=70$) than did physicians ($n=40$), a typical pattern, these characteristics may suggest that collaboration was a more meaningful issue to nurses than to physicians.

Comparisons Between Nurses

The rating for communication openness with physicians was significantly higher for day-shift nurses than for night-shift nurses (Table 4). This finding was expected because most of the day-shift nurses' communication would take place during "regular" work hours. The finding that no differences between day- and night-shift nurses were significant reinforces the finding of high levels of collaboration on this unit.

Differences between less experienced and more experienced nurses were significant for 2 scales. The more experienced nurses rated the 2 within-the-group variables significantly higher than did the less experienced nurses (Table 5). This finding suggests that more experienced nurses were more able to say what they meant without fear of repercussion or misunderstanding when speaking with other nurses than were less experienced nurses. This finding also implies that nurses who had more experience held more power than did nurses who had less experience. In addition, this finding may indicate that more experienced nurses

were more comfortable with their communication skills in general and their problem-solving skills in particular than were less experienced nurses.

Comparisons Between Physicians

Specialty care physicians rated both physician leadership and communication openness between groups higher than did primary care physicians (Table 6). The physician leadership scores may indicate that the medical director was less in touch with the perceptions and concerns of the primary care physicians. These scores may also indicate that the expectations of primary care physicians were less clear than those of specialty care physicians in the unit or that the practice concerns of primary care physicians were less accepted than those of the specialty care physicians.

The response rate (27%) of primary care physicians was lower than that of specialty care physicians (47%). This finding is probably reasonable because primary care physicians were responsible for only 18% of admissions to the unit. Nevertheless, the number of lengthy comments made by primary care physicians seems to imply that collaboration was a meaningful issue to them. Both the demonstrated interest of the primary care physicians and the more positive responses of the specialty care physicians may support the view that within the ICU, specialty care physicians were in a more powerful position than were primary care physicians.

Comparisons Between Attendees at Multidisciplinary Meetings

Surprisingly, no differences were found between those who attended multidisciplinary meetings and those who did not. Perhaps the level of collaborative interaction on this unit was so high that multidisciplinary meetings did not make an additional contribution to the level. Alternatively, this finding may indicate that the different concerns of the various members of the multidisciplinary team were not being adequately addressed.

Implications

The ICU Nurse-Physician Questionnaire,¹² an effective tool for assessment of collaborative interaction, was modified for use in this study to more closely fit the specific concerns of the unit. Data obtained provided unit leaders with a valuable assessment of the level of nurse-physician collaboration in this unit.

The results of the assessment can be used to identify target areas for improving collaboration in the unit. Although the results indicate a high level of collaborative interaction, areas to target for improvement are

revealed in the significant differences found between various groups in the unit. The first area of concern is the groups who seem to be in less powerful or more vulnerable positions, such as nurses in general, less experienced nurses in particular, and primary care physicians. The unit's level of collaborative interaction could be improved by enhancing the involvement of these 3 groups. Second, nurses and physicians should share expectations for communication timeliness. Establishing as clear a chain of communication for physicians as exists for nurses might improve collaboration by decreasing this source of uncertainty among nurses. Finally, multidisciplinary team meetings, which currently have no effect on collaborative interaction between participants, might benefit from a facilitator who can ensure that the concerns of the entire multidisciplinary team are addressed.

Both the unit's quality team and the unit's caregivers should review the results of this assessment. Ideas for improvement of collaborative interaction can best be generated with input from the unit's caregivers. A follow-up survey in which the same instrument is used could be done after specific interventions are implemented, after changes occur in the unit (such as unit leadership), in response to heightened concerns about the current level of collaboration, or at regular intervals. This type of assessment also could be applied to specific issues of patients' care, such as end-of-life care. Efforts to increase the response rate, particularly among physicians, would need to be addressed in any follow-up survey.

Summary

Collaborative interaction between nurses and physicians is significantly related to mortality rates

and length of stay on ICUs and should be an integral part of every unit's quality improvement program. Because interactions between caregivers is influenced and controlled by caregivers and managers in the unit, such interactions "represent levers for corrective action and continuous quality improvement."³

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