

The University of Chicago
Graduate School of Business
Center for Health Administration Studies (CHAS)
1101 East 58th Street, Walker 111
Chicago, Illinois 60637
(312) 702-7104

WORKSHOP IN HEALTH ADMINISTRATION STUDIES

STEVE SHORTELL, Ph.D.
A. C. Buehler Professor
J. L. Kellogg Graduate
School of Management
Northwestern University
Evanston, Illinois

"Do Organization and Management Influence Outcome in Intensive
Care: Findings from a National Study."

for

Thursday, October 18, 1990

Rosenwald 405

3:30 - 5:00

NOT FOR CITATION
OR QUOTATION WITHOUT
AUTHOR'S PERMISSION

ORGANIZATIONAL ASSESSMENT IN INTENSIVE

CARE UNITS:

CONSTRUCT DEVELOPMENT, RELIABILITY,

AND VALIDITY OF THE ICU NURSE-

PHYSICIAN QUESTIONNAIRE

Stephen M. Shortell, Ph.D., A.C. Buehler
Distinguished Professor of Hospital and
Health Services Management, Professor of
Organization Behavior, J.L. Kellogg Graduate
School of Management, Center for Health Services
and Policy Research, Northwestern University

Denise M. Rousseau, Ph.D., Professor of Organization
Behavior, J.L. Kellogg Graduate School of
Management, Northwestern University

Robin R. Gillies, Ph.D., Project Director, ICU Research
Project, The Center for Health Services and Policy
Research, Northwestern University

Kelly J. Devers, M.A., Department of Sociology,
Northwestern University

Tony L. Simons, B.A., Department of Organization
Behavior, Northwestern University

Table 1: Characteristics of the Hospitals and ICUs Involved in the Study Compared to Hospitals and ICUs Nationwide¹

	ICU STUDY (HOSPITALS=40) (ICUS=43)	NATIONALLY (HOSPITALS=1691)
Percent of Types of Hospitals:		
Non-Profit	88	77
For-Profit	8	8
State or Local Government	5	13
Percent of Hospitals Affiliated with a Medical School:		
	53	53
Percent of Hospitals in Each Geographic Region:		
Northeast (N=7)	16.2	25.1
South (N=13)	35.1	32.2
Midwest (N=15)	29.7	27.3
West (N=8)	18.9	15.3
Average Number of Hospital Beds: (N=26 random hospitals)		
	358	371.5
Average Number of ICU Beds:		
	13	24 ²
Average Hospital Occupancy Rate:		
	71.1	70.6
Average ICU Occupancy Rate:		
	79.1	*
Average Number of Registered Nurses Working per Shift:		
Day	7.2	*
Evening	6.1	*
Night	6.7	*
Average Number of Physicians:		
Full-time Paid (N=17)	5	*
Part-time Paid (N=12)	3	*
Attending (N=41)	25	*
House Staff (N=26)	27	*
Percent of types of ICUs:		
Medical	9	*
Surgical	16	*
Mixed	70	*
Specialty	5	*

RESPONSE RATES OF INDIVIDUAL QUESTIONNAIRES

TYPE	# RETURNED	% RETURNED	RANGE
NURSES	1,418	78	39 - 100
PHYSICIANS	790	65	25 - 100
WARD CLERKS/UNIT SECRETARIES	111	65	0 - 100
ALL ICU CATEGORIES	2,319	72	39 - 97
HOSPITAL ADMINISTRATORS	221	85	57 - 100

STNDIR: Nursing Leadership

DEF: The degree to which nursing leadership sets and communicates clear goals and expectations, and is responsive to changing needs and situations.

Cite: Northwestern

- TNDIR1 ICU nursing leadership emphasizes standards of excellence to the staff.
- TNDIR2 ICU nursing leadership is sufficiently sensitive to the different needs of unit members.
- TNDIR3 The ICU nursing leadership fails to make clear what they expect from unit members. (NEG)
- TNDIR4 ICU nursing leadership discourages physicians from taking initiative. (NEG)
- TNDIR5 Unit physicians are uncertain where they stand with the ICU nursing leadership. (NEG)
- TNDIR6 The ICU nursing leadership is out of touch with physician perceptions and concerns. (NEG)
- TNDIR7 ICU nursing leadership often makes decisions without input from unit physicians. (NEG)
- TNDIR8 ICU nursing leadership effectively adapts its problem-solving style to changing circumstances.

STIME: Communication Timeliness

DEF: The degree to which patient care information is relayed promptly to the people who need to be informed.

Cite: Northwestern

ITIME1 I get information on the status of patients when I need it.

ITIME2 When a patient's status changes, I get relevant information quickly.

ITIME4 In matters pertaining to patient care, nurses call physicians in a timely manner.

STUNIT: Unit Relations with other Units

DEF: The degree to which relationships with other units in the hospital facilitate ICU performance.

Cite: Northwestern

TUNIT1 Our unit has constructive work relationships with other groups in this hospital.

TUNIT2 Our unit does not receive the cooperation it needs from other hospital units. (NEG)

TUNIT3 Other hospital subunits seem to have a low opinion of us. (NEG)

TUNIT5 Inadequate working relationships with other hospital groups limit our effectiveness. (NEG)

SCPSBG: Between-group Problem-solving Conflict Strategy

DEF: The degree to which parties to a disagreement between nurses and physicians communicate actively to make sure that all available expertise is brought to bear on a problem, and that the best possible solution is developed.

Cite: Blake & Mouton (1964), Lewicki & Litterer (1985)

CPSBG1 All points of view will be carefully considered in arriving at the best solution of the problem.

CPSBG2 The nurses and physicians will work hard to arrive at the best possible solution.

CPSBG3 Both parties involved will not settle the dispute until all are satisfied with the decision.

CPSBG4 Everyone contributes from their experience and expertise to produce a high quality solution.

SPEABSTQ: Absolute Technical Quality of Care

DEF: The perceived effectiveness of the unit with regard to patient care needs and outcomes.

Cite: Northwestern

PEFFABS1 Our unit almost always meets its patient care treatment goals.

PEFFABS2 Given the severity of the patients we treat, our unit's patients experience very good outcomes.

PEFFABS4 Our unit does a good job of applying the most recently available technology to patient care needs.

PEFFABS9 Overall, our unit functions very well together as a team.

PEFFABS0 Our unit is very good at responding to emergency situations.

Table 1: Descriptive Statistics & Cronbach's Alphas for Scales

Scale	# of Items	Mean	Std Dev	Alpha
Leadership				
Nursing Leadership (STNDIR)	8	3.50	.68	.87
Physician Leadership (STMDIR)	8	3.25	.72	.88
Culture				
Team/Satisfaction (FOCITEAM)	(factor)	-0.10	1.00	-
People/Security (FOCIPS)	(factor)	-0.20	1.00	-
Task/Security (FOCITS)	(factor)	0.10	1.00	-
Coordination				
Within-Unit (SWUCOORD)	5	3.62	.69	.80
Between-Unit (SBUCOORD)	4	3.41	.74	.81
Unit Relations with Other Units (STUNIT)	4	3.36	.70	.75
Communication				
Openness – WG (SOPENWG)	4	3.92	.67	.83
Openness – BG (SOPENBG)	4	3.60	.77	.88
Accuracy – WG (SACCWG)	4	3.55	.77	.78
Accuracy – BG (SACCBG)	3	3.45	.75	.74
Accuracy – Overall (SACC)	8	3.52	.64	.82
Shift Communication (SSH CWG)	2	3.64	.74	.68
Understanding (SUNDERBG)	8	3.29	.67	.86
Timeliness (STIME)	3	4.01	.52	.64
Satisfaction with Nurse Communication (SSATN)	3	3.94	.56	.68
Satisfaction with Physician Communication (SSATD)	4	3.37	.76	.80

Table 1 (continued)

Scale	# of Items	Mean	Std Dev	Alpha
Conflict Management				
Problem-Solving – WG (SCPSWG)	4	3.20	.70	.81
Problem-Solving – BG (SCPSBG)	4	3.12	.72	.82
Arbitration – WG (SCARBWG)	3	2.66	.78	.77
Arbitration – BG (SCARBWG)	3	2.90	.82	.83
Avoiding – WG (SCAVWG)	3	2.29	.70	.72
Avoiding – BG (SCAVBG)	3	2.12	.65	.76
Forcing – WG (SCFORCWG)	3	2.93	.66	.62
Forcing – BG (SCFORCBG)	3	3.06	.66	.61
Team Cohesion (SCOH)	5	3.83	.63	.79
Perceived Unit Effectiveness				
Absolute Technical Quality (SPEABSTQ)	5	3.92	.55	.76
Meeting Family Needs (SPEFAM)	2	3.67	.77	.75

WG = Within Group

BG = Between Group

Table 3: Pearson Correlations of Scales*

	a.	b.	c.	d.	e.	f.	g.	h.	i.	j.	k.	l.	m.	n.	o.	p.	q.	r.
Leadership	1.00																	
A. STYDIA	.38	1.00																
Culture																		
C. FOCITEAM	.49	.31	1.00															
D. FOCIFB	-.30	-.18	(.00)	1.00														
E. FOCIFB	-.18	-.14	(.00)	(.01)	1.00													
Coordination																		
F. SWCOORD	.52	.35	.45	-.07	-.10	1.00												
G. SECOORD	.37	.34	.34	(-.03)	-.06	.68	1.00											
H. STONIT	.49	.44	.35	-.20	-.17	.38	.37	1.00										
Communication																		
I. SOPENWG	.40	.31	.39	-.17	-.19	.35	.23	.37	1.00									
J. SOPENBG	.31	.54	.27	-.13	-.09	.26	.25	.32	.34	1.00								
K. SACCWG	.41	.37	.30	-.19	-.19	.32	.25	.42	.51	.34	1.00							
L. SACCWG	.29	.34	.20	-.09	-.14	.23	.22	.25	.21	.43	.43	1.00						
M. SACC	.45	.45	.31	-.17	-.20	.34	.29	.42	.45	.80	.87	.80	1.00					
N. SSWWG	.36	.30	.34	-.12	-.13	.37	.29	.33	.60	.27	.30	.30	.50	1.00				
O. SUNDWBG	.41	.65	.34	-.16	-.09	.38	.38	.43	.38	.49	.47	.49	.60	.43	1.00			
P. STIWE	.35	.28	.38	-.06	-.13	.34	.28	.30	.39	.39	.34	.39	.42	.40	.47	1.00		
Q. SBAIN	.38	.22	.38	-.02	-.16	.37	.27	.33	.46	.31	.39	.30	.42	.44	.37	.46	1.00	
R. SBAID	.33	.61	.26	-.16	-.11	.32	.33	.39	.33	.62	.45	.43	.55	.44	.77	.35	.46	1.00
Conflict Management																		
S. SCPWNG	.47	.46	.45	-.19	-.14	.44	.35	.42	.49	.28	.43	.21	.40	.38	.44	.29	.32	.40
T. SCPWBG	.40	.55	.40	-.16	-.07	.40	.38	.39	.32	.43	.35	.29	.40	.31	.55	.28	.26	.51
U. SCARBWG	(.02)	(.00)	(.01)	.16	.13	.04	(.03)	-.09	-.09	-.13	-.15	-.10	-.16	-.07	-.10	-.04	-.06	-.11
V. SCARBWG	(.00)	(.00)	(.01)	.09	(.03)	.08	(.03)	-.04	(-.03)	-.09	-.06	-.09	-.09	(-.04)	-.05	-.05	-.07	(-.01)
W. SCAVWG	-.36	-.35	-.27	.22	.17	-.30	-.26	-.34	-.34	-.21	-.33	-.17	-.31	-.30	-.32	-.19	-.21	-.28
X. SCAVBG	-.28	-.35	-.24	.13	.14	-.25	-.20	-.25	-.21	-.27	-.24	-.22	-.29	-.20	-.33	-.21	-.15	-.29
Y. SCVRCWG	-.26	-.23	-.13	.22	.29	-.18	-.15	-.25	-.29	-.10	-.28	-.17	-.27	-.23	-.19	-.12	-.20	-.21
Z. SCVRCBG	-.20	-.36	-.07	.20	.20	-.12	-.12	-.24	-.15	-.25	-.21	-.22	-.26	-.15	-.34	-.09	-.12	-.34
Team Cohesion																		
AA. SCOR	.49	.33	.48	-.16	-.15	.44	.32	.37	.55	.40	.37	.30	.41	.43	.45	.55	.48	.35
Performance																		
BB. SPEBSTQ	.48	.41	.47	-.11	-.15	.48	.35	.45	.47	.43	.44	.33	.47	.44	.52	.48	.48	.44
CC. SPEFAM	.32	.27	.34	(-.02)	-.10	.36	.28	.30	.28	.27	.27	.20	.29	.27	.31	.30	.48	.48

Table 3 (continued)

	B.	t.	u.	v.	w.	x.	y.	z.	aa.	bb.	cc.
Conflict Management											
g. SCPSNG	1.00										
t. SCPSBG	.65	1.00									
u. SCARNG	(.01)	(.00)	1.00								
v. SCARBG	.04	.04	.04	1.00							
w. SCAYNG	-.21	-.39	(.02)	-.04	1.00						
x. SCAYBG	-.32	-.43	(.03)	(-.03)	.54	1.00					
y. SCTRNG	-.36	-.20	.17	(.03)	.26	.13	1.00				
z. SCTRBG	-.25	-.26	.13	.15	.23	.20	.52	1.00			
Team Cohesion											
aa. SCOH	.38	.33	-.06	-.04	-.24	-.20	-.20	-.14	1.00		
Performance											
bb. SPEBSTQ	.45	.44	-.08	(-.03)	-.30	-.26	-.19	-.18	.56	1.00	
cc. SPEFAM	.31	.30	(.00)	(.01)	-.19	-.20	-.18	-.37	.47	.47	1.00

* Correlations in parentheses not significant at $p > .05$; all other correlations are significant at the $p > .05$ level.

Table 4: Analysis of Variance of Scales

	Total Responses (N=2208)			Nurses (N=1418)			Physicians (N=790)		
	n ²	F	P	n ²	F	P	n ²	F	P
Leadership									
Nurse Leadership	.14	8.42	.00	.22	8.98	.00	.11	1.96	.00
Physician Leadership	.09	5.06	.00	.15	5.74	.00	.12	2.22	.00
Culture									
Team/Satisfaction	.07	3.58	.00	.14	4.61	.00	.10	1.69	.00
People/Security	.07	3.59	.00	.11	3.67	.00	.11	2.01	.00
Task/Security	.05	2.33	.00	.05	1.62	.01	.09	1.53	.02
Coordination									
Within-unit Coordination	.10	5.49	.00	.15	5.71	.00	.10	1.85	.00
Between-unit Coordination	.08	3.42	.00	.10	3.01	.00	.13	1.95	.00
Unit Relations w/ Other Units	.12	6.66	.00	.07	6.80	.00	.13	2.32	.00
Communication									
Within-group Openness	.08	4.35	.00	.14	5.38	.00	.11	2.11	.00
Between-group Openness	.08	4.57	.00	.12	4.26	.00	.11	2.15	.00
Within-group Accuracy	.10	5.41	.00	.15	5.90	.00	.15	2.95	.00
Between-group Accuracy	.07	3.74	.00	.11	3.91	.00	.10	1.98	.00
Overall Accuracy	.09	4.99	.00	.13	4.76	.00	.14	2.76	.00
Within-group Shift Communication	.09	4.78	.00	.15	5.75	.00	.10	1.78	.00
Between-group Understanding	.08	4.13	.00	.13	4.84	.00	.10	1.95	.00
Timeliness	.05	2.89	.00	.10	3.50	.00	.10	1.88	.00
Satisfaction with Nurse Communication	.07	4.09	.00	.12	4.40	.00	.10	1.93	.00
Satisfaction with Physician Communication	.06	3.40	.00	.09	3.38	.00	.09	1.74	.00

Table 4 (continued)

	Total Responses (N=2208)			Nurses (N=1418)			Physicians (N=790)		
	n ²	F	P	n ²	F	P	n ²	F	P
Conflict Management									
Within-group Problem-Solving	.07	3.62	.00	.12	4.33	.00	.13	2.50	.00
Between-Group Problem-Solving	.05	2.89	.00	.06	2.16	.00	.12	2.23	.00
Within-group Arbitration	.07	3.60	.00	.12	4.46	.00	.15	3.03	.00
Between-group Arbitration	.07	3.64	.00	.11	3.94	.00	.08	1.41	.05
Within-group Avoiding	.05	2.74	.00	.08	2.64	.00	.14	2.82	.00
Between-group Avoiding	.04	2.26	.00	.06	2.00	.00	.09	1.80	.00
Within-group Forcing	.06	3.07	.00	.09	3.22	.00	.10	1.84	.00
Between-group Forcing	.04	2.23	.00	.05	1.77	.02	.10	1.97	.00
	n ²	F	P	n ²	F	P	n ²	F	P
Team Cohesion	.07	3.62	.00	.12	4.29	.00	.09	1.70	.00
	n ²	F	P	n ²	F	P	n ²	F	P
Perceived Unit Effectiveness									
Absolute Technical Quality	.13	7.79	.00	.18	7.29	.00	.19	3.97	.00
Meeting Family Needs	.14	7.54	.00	.15	5.50	.00	.22	4.31	.00