OREGON HEALTH AND SCIENCE UNIVERSITY
OFFICE OF CLINICAL INTEGRATION AND EVIDENCE-BASED PRACTICE
Evidence-Based Practice Summary
Strategies for nursing leadership to improve engagement and satisfaction

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BACKGROUND AND RATIONALE

Nursing staff has a big impact on the quality of care that patient's receive, and on the possible occurrences of adverse events (Aiken et al., 2011). The decrease in the nursing staff, and therefore, a higher ratio directly influence the nurses' working conditions, causing an increase in stress levels, burnout occurrence, job dissatisfaction, demotivation, risk of accidents at work, unfavorable perception of the working environment, and work absenteeism (Aiken, Sloane, Bruyneel, Van den Heede & Sermeaus, 2013). Thus, having a suitable nurse workforce translates into the prevention of complications, and the reduction of health care costs (Rochefort, Ward, Ritchie, Girard, & Tamblyn, 2012). Nurse interventions have implications for health systems in terms of cost reduction and quality (Barrientos 2018).The goal of this evidence brief is to analyze the interventions presented in the evidence in order to determine which strategies will be most effective at improving nurse leadership's, and in turn, all nursing staff's job satisfaction.

ASK THE QUESTION

PICO 1: What strategies (activities, priorities, schedules, etc.) for nursing leadership (supervisor, manager, lead) have shown increased engagement and/or job satisfaction (work/life balance, less burn-out)?

SEARCH FOR EVIDENCE

Appendix C

CRITICALLY ANALYZE THE EVIDENCE

Summary: Fourteen studied are included in the appraisal examining what strategies for nursing leadership have shown increased engagement and/or job satisfaction. The studies have been summarized into seven categories including: leadership styles, cognitive-behavioral training, mindfulness, workgroups for improving work conditions and quality, improving job satisfaction and organizational commitment, interventions to improve work environment and clinical supervision. *Overall there was low to very low quality of evidence*. A limitation to note is that the evidence was indirect due to populations studied including all nursing staff, no studies were found monitoring impact on nursing leadership alone.

Leadership Styles

- One systematic review (Cummings 2010) examined the relationships between various styles of leadership and outcomes for the nursing workforces and their work environment. Distinctive patterns between relational and task focused leadership styles and their outcomes for nurses and their work environments emerged from the analysis. For example, 24 studies reported that leadership styles focused on people and relationships (transformational, resonant, supportive, and consideration) were associated with higher nurse job satisfaction, whereas 10 studies found that leadership styles focused on tasks (dissonant, instrumental and management by exception) were associated with lower nurse job satisfaction. Similar trends were found for each category of outcomes.

- Another study (Morsiani 2017) utilizing the mixed-method approach described the perceptions of staff nurses related to the style of leadership adopted by their ward managers. Ward nurse managers mostly adopted a transactional leadership style ('Management by exception active') aimed at monitoring errors and intervening to correct errors and punish, which had a negative impact on staff nurses' levels of job satisfaction. In contrast, the transformational leadership style, which is mostly correlated with satisfaction ('Idealized Influence Attributed', which staff nurses perceived as 'respect', 'caring for others', 'professional development' and 'appreciation'), was rarely practiced by nurse managers.

- In conjunction, a cross-sectional study (Lievens and Vlerick 2014) investigated the relationship between head nurses' transformational leadership style and hospital nurses' safety performance. Transformational leadership was defined as leaders who are charismatic and will encourage their employees to do more than is formally expected from them. They will inspire their followers and act as role models, creating acceptance of the mission and purpose of the team. This leadership style consists of four leader behaviors: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration. A higher score on transformational leadership was associated with more nurse safety compliance (b = 0.20, P = 0.010). The more transformational the leader was perceived, the more nurses participated in safety (b = 0.30, P < 0.001).

- Furthermore, one survey study (Wong 2010) tested a theoretical model linking authentic leadership with staff nurse' trust in their manager, work engagement, voice behavior and perceived unit care quality. Authentic leadership focuses on positive role modelling of honesty, integrity, and high ethical standards in the development of leader-follower relationships. Authentic leadership had a significant positive direct (b = 0.43, P < 0.001) and an indirect effect on trust (b = 0.26, P < 0.001) and an

indirect effect on work engagement (b = 0.22, P < 0.001). Trust had a significant positive direct effect on work engagement (b = 0.19, P < 0.001) and in turn, work engagement had a significant direct positive effect on voice (b = 0.22, P < 0.001) and perceived quality (b = 0.23, P < 0.001). There was no relationship between voice behavior and quality. In addition, social identification had direct significant positive effects on work engagement (b = 0.41, P < 0.001), voice (b = 0.19, P= 0.003) and care quality (b = 0.35, P < 0.001) which were not hypothesized but were theoretically plausible.

Cognitive-behavioral training:
- One systematic review (Ruotsalanien 2015) found that cognitive-behavioral training with or without relaxation leads to modest decreases in stress levels (relative risk reduction 13%; CI 5% to 20%), with a higher impact at 6 months compared to 1 month.

Mindfulness
- The systematic review (Ruotsalanien 2015) found that relaxation techniques, either physical such as massage or mental such as mindfulness, decreases stress levels by 23% compared to no intervention. In comparison, one RCT (Moody 2013) tested the efficacy of a mindfulness-based course (MBC) on burnout, stress, and depression. Participants, mostly nurses, were randomized to either the MBC intervention or a control group. MBC participants received eight weekly sessions of mindfulness education. Nearly 100% of the subjects exhibited signs of burnout at baseline and MBC did not result in any significant improvement in scores on burnout, perceived stress or depression scales.

Workgroups for improving work conditions and quality
- One cross-sectional study (Lu 2015) demonstrated the importance of workgroups to improve conditions and quality by finding that locations lacking resources, with a higher number of work documents and night shifts are related to nursing staff having higher stress levels.
- A retrospective observational study (d'Ettore and Greco 2015) conducted a study to analyze how frequent meetings where problems were discussed and improvement plans were developed, affected nurses' stress levels. After implementing improvement organizational interventions, there was a 34% reduction in the score of indicators of work-related stress.
- One descriptive study (Costa 2014) asked nurses to complete a self-administered questionnaire analyzing the quality program's effect on working conditions, approval, belongingness, tranquility, interpersonal relations and private life. The study found that 55.6% of nurses believed that the program influenced positively in their working conditions and in the interpersonal relationships at work, however, did not feel part of the program.

- Another descriptive study (Navback-Beebe 2013) implemented a healthy working environment workgroup and facilitated group discussion and problem solving. The study found there was a decrease in staff absenteeism by 48.5% over the first 3-month period of implementation when compared with the 3 months prior to implementation of the leadership initiatives. With regard to patient outcomes and quality care, patient falls on the unit had decreased by 75%, and the number of patient safety reports filed by staff members decreased by 20%. Additionally, the unit's monthly reported performance improvement metrics (pain management, falls risk, and medication reconciliation) had all improved from baseline; falls risk had exceeded benchmark criteria.
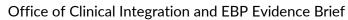
Improving Job Satisfaction and Organizational Commitment
- The first cross-sectional study (Chen 2015) investigated how job satisfaction and organizational commitment of nursing professionals can be enhanced and developed by job rotation and internal marketing practices. For the purposes of this study, internal marketing was defined as treating nurses as customers and corporate partners, providing adequate management support for nurses and enabling them to grow professionally, viewed as product development. Job rotation and internal marketing were both found to positively affect job satisfaction (t-value = 17.93, $p < .05$; t-value = 11.08; $p < .05$) and organizational commitment of nurses (t = 4.12, $p < .05$; t = 5.76, $p < .05$).
- The second cross-sectional study (Weng 2010) examined the effects of mentoring functions on job satisfaction and organizational commitment. The study found that career development (ß = 0.31, $p < .01$; ß = 0.28, $p < .01$) and the role modeling (ß = 0.30, $p < .01$; ß = 0.26, $p < .01$) were found to be significantly and positively related to job satisfaction and organizational commitment, respectively.

Interventions to improve work environment
- One RCT (Uchiyama 2013) investigated the effect on mental health among nurses of a participatory intervention to improve the psychosocial work environment. Nurses in 24 units were randomly allocated to 11 intervention units (n=183) and 13 control units (n=218). A participatory program was provided to the intervention units for 6 months. No significant intervention effect was observed for mental health status. However, significant intervention effects were observed in psychosocial work environment aspects, such as Coworker Support ($p < 0.01$) and goals ($p < 0.01$), and borderline significance was observed for Job Control ($p < 0.10$).

Clinical Supervision

- One cohort study (Koivu 2012) explored the effects of clinical supervision (CS) on the development of medical-surgical nurses' well-being at work over a four year period. 15 clinical supervisors implemented 19 CS groups lasting 1 – 3 years in 14 medical and surgical inpatient or outpatient units. Participants received higher evaluations of CS in group 1, lower evaluations in group 2 and no CS in group 3. Improvement in job resources as well as reduction in professional inefficacy and psychological distress were found among nurses who received effective CS (n = 41), but were not present among the nurses who found their CS less effective (n = 43) or who did not attend CS.

In conclusion, many different strategies were found, but two themes to point out include: (1) transformational and authentic leadership consistently having a positive effect on work environment and engagement, and (2) involving nurses in increases engagement and quality, but ways to help nurses feel more involved in the process should be considered.

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: Nursing Leadership

Modality: Leadership Styles

Outcome: Work environment

Quality (certainty) of evidence for: (outcome)

☐ High

☐ Moderate

☒ Low

☐ Very Low

Risk of Bias across studies: ☐ High ☒ Medium ☐ Low	Lower Quality Rating if: ☒ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☐ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	Other Considerations: Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Cummings, G.G., et al. Year Published: 2010	To examine the relationships between various styles of	**Size:** 52 studies	**Type:** Systematic Review	**Results:** 64 outcomes were grouped into five categories:	**Study Limitations:** ☐ None *Systematic Review*

Location: University of Alberta, Canada Journal: *International Journal of Nursing Studies*	leadership and outcomes for the nursing workforces and their work environments	<u>**Inclusion Criteria**</u>: (1) peer reviewed research; (2) studies that measured leadership by nurses; (3) studies that measured one or more outcomes of nursing leadership; and (4) studies that examined the relationship between leadership and outcomes for the nursing workforce or nursing work environments. <u>**Exclusion Criteria**</u>: Qualitative studies and grey literature		staff satisfaction with work, role and pay, staff relationships with work, staff health and wellbeing, work environment factors, and productivity and effectiveness. **Distinctive patterns between relational and task focused leadership styles and their outcomes for nurses and their work environments emerged from the analysis. For example, 24 studies reported that leadership styles focused on people and relationships (transformational, resonant, supportive, and consideration) were associated with higher nurse job satisfaction, whereas 10 studies found that leadership styles focused on tasks (dissonant, instrumental and management by exception) were associated with lower nurse job satisfaction.** Similar trends were found for each category of outcomes. 	☒ Review did not address focused clinical question ☐ Search was not detailed or exhaustive ☐ Quality of the studies was not appraised ☐ Inappropriate pooled analysis

References:

1. Cummings, G. G., et al. (2010). "Leadership styles and outcome patterns for the nursing workforce and work environment: a systematic review." International Journal of Nursing Studies **47**(3): 363-385.

BODY OF EVIDENCE APPRAISAL TABLE FOR:					
Population: Nursing Staff					
Modality: Transformational leadership style					
Outcome: Work Environment					
Quality (certainty) of evidence for: (outcome) ☐ High ☐ Moderate ☒ Low ☐ Very Low					
Risk of Bias across studies: ☐ High ☒ Medium ☐ Low		**Lower Quality Rating if:** ☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☐ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)		**Other Considerations:** Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect	
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**

Author: Morsiani, G., et al. Year Published: 2017 Location: Genoa, Italy Journal: *Journal of Nursing Management*	To describe the perceptions of staff nurses related to the style of leadership adopted by their ward managers	**Size:** 82 staff nurses, 29 nurse managers **Inclusion Criteria**: Staff nurses from the Departments of Internal Medicine of three acute hospitals. Staff nurses used to assess nurse managers had worked for at least 1 year in the same ward that was staffed by at least 10 nurses. **Exclusion Criteria**: Nurse managers working in the field of education, administration, outpatients' clinics, in the community and in wards with less than 10 staff nurses	**Type:** Mixed method study, including administration of questionnaire and focus groups	**Results:** Ward nurse managers mostly adopted a transactional leadership style ('Management by exception active') aimed at monitoring errors and intervening to correct errors and punish, which had a negative impact on staff nurses' levels of job satisfaction. In contrast, the transformational leadership style, which is mostly correlated with satisfaction ('Idealized Influence Attributed', which staff nurses perceived as 'respect', 'caring for others', 'professional development' and 'appreciation'), was rarely practiced by nurse managers. Table 5 Correlations between nurse manager leadership styles and staff nurses' satisfaction | Leadership style	Satisfaction (P-value)
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Idealized Influence Attributed (IIA)	0.59
Idealized Influence Behaviour (IIB)	0.71*
Inspirational Motivation (IM)	0.56*
Intellectual Stimulation (IS)	0.50*
Individual Consideration (IC)	0.61*
Transactional Leadership	0.55*
Contingent Reward (CR)	0.13
Management by Exception Active (MBEA)	0.59*
Management by Exception Passive (MBEP)	0.22*
Laissez Faire	-0.42*
Idealized Influence Attributed (IIA)	-0.34*	 *Statistically significant values with $P = 0.01$.	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☒ Flawed measurement of both exposure and outcome ☐ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up
Author: Lievens, I. and P. Vlerick Year Published: 2014 Location: Ghent University, Belgium Journal: *Journal of Advanced Nursing*	To first investigate the relationship between head nurses' transformational leadership style and hospital nurses' safety performance Transformational leadership is defined as leaders who are charismatic and will encourage their employees to do more than is formally expected from them. They will inspire their followers and act as role models, creating acceptance of the mission and purpose of the	**Size:** 498 nurses were approached, 152 completed survey **Inclusion Criteria**: All nurses of a large Belgian hospital were invited to participate	**Type:** Cross-sectional research design **Methods**: A self-administered questionnaire was sent to nurses to measure their perceptions of their head nurses' transformational leadership style	**Results:** A higher score on transformational leadership was associated with more nurse safety compliance (b = 0.20, P = 0.010). The more transformational the leader was perceived, the more nurses participated in safety (b = 0.30, P < 0.001).	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☒ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

	team. This leadership style consists of four leader behaviors: idealized influence, inspirational motivation, intellectual stimulation and individualized consideration.				

References:

1. Lievens, I. and P. Vlerick (2014). "Transformational leadership and safety performance among nurses: the mediating role of knowledge-related job characteristics." Journal of Advanced Nursing **70**(3): 651-661.
2. Morsiani, G., et al. (2017). "How staff nurses perceive the impact of nurse managers' leadership style in terms of job satisfaction: a mixed method study." Journal of Nursing Management **25**(2): 119-128.

BODY OF EVIDENCE APPRAISAL TABLE FOR:
Population: Nursing staff
Modality: Authentic Leadership
Outcome: Trust and work engagement

Quality (certainty) of evidence for: (outcome)
☐ High
☐ Moderate
☐ Low
☒ Very Low

| **Risk of Bias across studies:**
☐ High
☒ Medium
☐ Low | | **Lower Quality Rating if:**
☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available**

☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*)

☐ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*) | | **Other Considerations:**
Lower Quality Rating if:
☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*)

Increase Quality Rating if:
☐ Large effect
☐ Dose-response gradient
☐ Plausible confounders or other biases increase certainty of effect | |

Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**
Author: Wong, C.A., et al. Year Published: 2010	To test a theoretical model linking authentic leadership with staff nurse' trust in their manager, work engagement,	**Size:** 600 nurses were outreached, 280 completed survey	**Type:** Non-experimental, predictive survey	**Results: Authentic leadership had a significant positive direct (b = 0.43, P < 0.001) and an indirect effect on trust**	**Study Limitations:** ☐ None **Non-Randomized Studies**

Location: London, Ontario, Canada Journal: *Journal of Nursing Management* Authentic leadership focuses on positive role modelling of honesty, integrity, and high ethical standards in the development of leader-follower relationships.	voice behavior and perceived unit care quality	**Inclusion Criteria**: Registered nurses employed full-time and part-time in staff direct care nursing positions.	**Intervention**: Survey was used to test the hypothesized model of authentic leadership in a random sample of registered nurses in acute care hospitals.	**(b = 0.26, P < 0.001) and an indirect effect on work engagement (b = 0.22, P < 0.001). Trust had a significant positive direct effect on work engagement (b = 0.19, P < 0.001) and in turn, work engagement had a significant direct positive effect on voice (b = 0.22, P < 0.001) and perceived quality (b = 0.23, P < 0.001). There was no relationship between voice behavior and quality. In addition, social identification had direct significant positive effects on work engagement (b = 0.41, P < 0.001), voice (b = 0.19, P= 0.003) and care quality (b = 0.35, P < 0.001) which was not hypothesized but were theoretically plausible.**	☐ Failure to develop and apply appropriate eligibility criteria ☒ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

References:

1. Wong, C. A., et al. (2010). "Authentic leadership and nurses' voice behaviour and perceptions of care quality." Journal of Nursing Management **18**(8): 889-900.

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: Nursing staff

Modality: Cognitive-behavioral intervention vs. no Intervention

Outcome**:** Stress

Quality (certainty) of evidence for: (outcome)
☐High
☐ Moderate
☒ Low
☐ Very Low

Risk of Bias across studies: ☐ High ☒ Medium ☐ Low	**Lower Quality Rating if:** ☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*)	**Other Considerations:** Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient

		☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)		☐ Plausible confounders or other biases increase certainty of effect	
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**
Author: Ruotsalanien, J.H., et al. Year Published: 2015 Location: Finnish Institute of Occupational Health, Kuopio, Finaland Journal: *Cochrane Database of Systematic Reviews*	To evaluate the effectiveness of work- and person-directed interventions compared to no interventions or alternative interventions in preventing stress at work in healthcare workers	<u>Size:</u> 1 Study; 36 participants included in analysis for follow-up up to 1 month 6 studies; 403 participants included in analysis for follow-up 1 -6 months <u>Inclusion Criteria</u>: RCTs of interventions aimed at preventing psychological stress in healthcare workers.	<u>Type:</u> Systematic Review	<u>Results</u>: **There is low-quality evidence that cognitive-behavioral training with or without relaxation leads to modest decreases in stress levels (relative risk reduction 13%; 95% CI 5% to 20%) compared to no intervention.** *Analysis Breakdown:* <u>Follow-up up to 1 month:</u> Std. Mean Difference (IV, Random, 95% CI) -0.18 [-0.84, 0.48] <u>Follow-up 1 – 6 months:</u> Std. Mean Difference (IV, Random, 95% CI) -0.34 [-0.64, 0.04] 	**Study Limitations:** ☒ None *Systematic Review* ☐ Review did not address focused clinical question ☐ Search was not detailed or exhaustive ☐ Quality of the studies was not appraised ☐ Inappropriate pooled analysis

References:

1. Ruotsalainen, J. H., et al. (2015). "Preventing occupational stress in healthcare workers." <u>Cochrane Database of Systematic Reviews</u>(4).

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: Nursing staff

Modality: Relaxation vs. no intervention

Outcome: Stress

Quality (certainty) of evidence for: (outcome)
☐ High
☐ Moderate
☐ Low
☒ Very Low

Risk of Bias across studies: ☐ High ☒ Medium ☐ Low	Lower Quality Rating if: ☒ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	Other Considerations: Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Ruotsalanien, J.H., et al. Year Published: 2015 Location: Finnish Institute of Occupational Health, Kuopio, Finland Journal: *Cochrane Database of Systematic Reviews*	To evaluate the effectiveness of work- and person-directed interventions compared to no interventions or alternative interventions in preventing stress at work in healthcare workers	**Size:** 2 studies; 43 participants included in analysis for follow-up up to 1 month 7 studies; 288 participants included in analysis for follow-up 1 -6 months **Inclusion Criteria**: RCTs of interventions aimed at preventing psychological stress in healthcare workers. Subgroup analysis conducted for nursing staff outcomes.	**Type:** Systematic Review	**Results: There is low-quality evidence that relaxation techniques, either physical such as massage or mental such as mindfulness, decreases stress levels by 23% compared to no intervention.** Follow-up up to 1 month: Std. Mean Difference (IV, Random, 95% CI) -0.70 [-1.32, 0.07] 	**Study Limitations:** ☒ None *Systematic Review* ☐ Review did not address focused clinical question ☐ Search was not detailed or exhaustive ☐ Quality of the studies was not appraised ☐ Inappropriate pooled analysis

| | | | | Follow-up 1 – 6 months: Std. Mean Difference (IV, Random, 95% CI) -0.59 [-1.02, -0.16] | |

References:

1. Ruotsalainen, J. H., et al. (2015). "Preventing occupational stress in healthcare workers." Cochrane Database of Systematic Reviews(4).

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: Nursing Staff

Modality: Mindfulness-based course

Outcome: Burnout, Stress, and Depression

Quality (certainty) of evidence for: (outcome)
- ☐ High
- ☐ Moderate
- ☒ Low
- ☐ Very Low

Risk of Bias across studies: ☐ High ☒ Medium ☐ Low		**Lower Quality Rating if:** ☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available** ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)		**Other Considerations:** Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect	
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**

Author: Moody, K., et al. Year Published: 2013 Location: New York, USA and Petach Tikva, Israel Journal: *Journal of Pediatric Oncology Nursing*	To test the efficacy of a mindfulness-based course (MBC) on burnout, stress, and depression	**Size:** 47 pediatric oncology clinical staff members **Inclusion Criteria**: Minimum of 1 year in pediatric oncology practice and commitment to complete 8-week course	**Type:** RCT **Intervention**: Participants, mostly nurses, were randomized to either the MBC intervention or a control group. MBC participants received eight weekly sessions of mindfulness education. The primary outcome studied was burnout. Secondary outcomes studied included depression and perceived stress.	**Results:** Nearly 100% of the subjects exhibited signs of burnout at baseline and MBC did not result in any significant improvement in scores on burnout, perceived stress or depression scales. **Table 3.** Change in Raw Scores on MBI Pre- and Postintervention: MBC Versus Control Group. 		Pre	Post	Change	*t* Test
PA				
Control	15.4	13.9	−1.5	NS
Intervention	16.0	15.0	−1.1	
EE				
Control	26.2	24.2	−2.2	NS
Intervention	27.2	26.9	−0.3	
DP				
Control	18.2	18.7	0.3	NS
Intervention	19.6	19.3	−0.3		 Abbreviations: MBI, Maslach Burnout Inventory; MBC, mindfulness-based course; PA, personal accomplishment; DP, depersonalization; EE, emotional exhaustion; NS, nonsignificant.	**Study Limitations:** ☐ None *RCTs* ☒ Lack of blinding ☒ Lack of allocation concealment ☐ Unclear allocation concealment ☐ Stopped early for benefit ☐ Incorrect analysis of ITT ☐ Selective reporting of measures (e.g., no effect outcome) ☐ Large losses to F/U ☒ Difference in important prognostic factors at baseline

References:

1.   Moody, K., et al. (2013). "Helping the Helpers: Mindfulness Training for Burnout in Pediatric Oncology—A Pilot Program." Journal of Pediatric Oncology Nursing **30**(5): 275-284.

BODY OF EVIDENCE APPRAISAL TABLE FOR:
Population: Nursing Staff
Modality: Occupational Factors
Outcome: Stress
Quality (certainty) of evidence for: (outcome) ☐ High ☐ Moderate ☐ Low ☒ Very Low

| **Risk of Bias across studies:**
☐ High
☒ Medium
☐ Low | **Lower Quality Rating if:**
☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) **– Not Available**

☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*)

☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*) | **Other Considerations:**
Lower Quality Rating if:
☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*)

Increase Quality Rating if:
☐ Large effect
☐ Dose-response gradient
☐ Plausible confounders or other biases increase certainty of effect |

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Lu, D.M., et al. Year Published: 2015 Location: Harbin Medical University, Harbin, China Journal: *Arch Psychiatr Nurs*	To describe the relationship between coping strategies and occupational stress among ED nurses in China	**Size:** 113 nurses **Inclusion Criteria**: Nurses working in eligible hospitals for at least one year	**Type:** Cross-sectional study **Intervention**: This study was performed in 5 general hospitals. Questionnaires were used for data collection. All ED nurses working in these 5 hospitals were invited to participate in the study. Participation was voluntary, random and anonymous.	**Results: Locations lacking resources, with a higher number of work documents (β_3 1.253) and night shifts (β_1 -5.750) are related to higher stress levels.**	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☐ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

References:

1.   Lu, D. M., et al. (2015). "Occupational stress and coping strategies among emergency department nurses of China." <u>Arch Psychiatr Nurs</u> **29**(4): 208-212.

<u>BODY OF EVIDENCE APPRAISAL TABLE FOR:</u>

<u>Population:</u> Nurse Leadership

<u>Modality:</u> Frequent meetings

<u>Outcome:</u> Stress

<u>Quality (certainty) of evidence for: (outcome)</u>
☐High
☐ Moderate
☐ Low
☒ Very Low

Risk of Bias across studies: ☐ High ☒ Medium ☐ Low	**Lower Quality Rating if:** ☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) **– Not Available** ☐ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	**Other Considerations:** Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**

| Author: d'Ettorre, G. and M. Greco
Year Published: 2015
Location: Brindisi, Italy
Journal: Safety and health at work | To analyze the level of work stress as a result of changes in the organization of health services | Size: 114 nurses

Inclusion Criteria: Head nurses of hospital healthcare departments | Type: Retrospective Observational Study

Intervention: Frequent meetings were held to discuss problems and find solutions. Improvement plans were developed to solve critical organizational issues:
1. Working towards goals that include occupational safety and wellness
2. Adopting a safety management system
3. Adopting an ethics code for health care workers
4. Clear definition of occupational roles
5. Knowledge of hierarchical roles for occupational safety
6. Employee participation in corporate decisions
7. Improving communication with management staff
8. Improving reflective dialogue and feedback among workers

Nurses were interviewed before and after to score their work-related stress (WRS) indicators | Results: After implementing improvement organizational interventions, the means values of the WRS index were significantly reduced for nurses in hospitals [16.14 (after) vs. 24.44 (before); $p < 0.05$]. A 34% reduction in the score of indicators of work-related stress. | Study Limitations:
☐ None
Non-Randomized Studies
☐ Failure to develop and apply appropriate eligibility criteria
☐ Flawed measurement of both exposure and outcome
☒ Failure to adequately control confounding
☐ Incomplete or inadequately short follow-up |

References:

1. d'Ettorre, G. and M. Greco (2015). "Healthcare Work and Organizational Interventions to Prevent Work-related Stress in Brindisi, Italy." Safety and health at work 6(1): 35-38.

BODY OF EVIDENCE APPRAISAL TABLE FOR: Population: Nursing Staff Modality: Quality Improvement Activities Outcome: Work conditions

Quality (certainty) of evidence for: (outcome)		
☐ High ☐ Moderate ☐ Low ☒ Very Low		
Risk of Bias across studies: ☒ High ☐ Medium ☐ Low	**Lower Quality Rating if:** ☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available** ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	**Other Considerations:** Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Costa, F.M.d., et al. Year Published: 2014 Location: Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brazil. Journal: *Einstein (Sao Paulo, Brazil)*	To analyze the opinion of nursing professionals about a program of continuous quality improvement development at a University Hospital	**Size:** 72 hospital staff nurses **Inclusion Criteria**: Nurses within hospital that delivered care or performed administrative services related to nursing **Exclusion Criteria**: Nurses who did not want to take part and who did not sign the consent form	**Type:** Descriptive Study **Intervention**: Nurses were asked to fill out a self-administered questionnaire analyzing the quality program at a University Hospital. The answers were submitted to factor analysis that grouped variables into six factors: Working conditions, approval, belongingness, tranquility, interpersonal relations, and private life.	**Results:** 55.6% believed that the program influenced positively in their working conditions and in the interpersonal relationships at work, however, did not feel part of the program.	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☐ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

References:

1. Costa, F. M. d., et al. (2014). "The nursing staff opinion about the continuous quality improvement program of a university hospital." Einstein (Sao Paulo, Brazil) **12**(2): 211-216.

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: Nursing Staff

Modality: Communication skills, genuine collaboration, and leadership

Outcome: Work environment

Quality (certainty) of evidence for: (outcome)
☐ High
☐ Moderate
☐ Low
☒ Very Low

Risk of Bias across studies:	Lower Quality Rating if:	Other Considerations:
☐ High ☒ Medium ☐ Low	☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) **– Not Available** ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Nayback-Beebe, A.M., et al. Year Published: 2013 Location: Houston, Texas Journal: *Dimens Crit Care Nurs*	To showcase initiatives proposed to reestablish and create favorable work environments at an intermediate care unit.	Size: 27 nurses Inclusion Criteria: Nursing stakeholders from the hospital	Type: Descriptive study Intervention: Nursing staff and leadership from a large, level I US military trauma center developed a healthy working environment workgroup and used the 6 AACN evidence-based standards (Skilled communication, true collaboration, effective decision-making, appropriate staffing, meaningful recognition, authentic leadership) to facilitate and guide group discussion and problem solving to restore a healthier nursing work environment. Data was compared before and after implementation of staff absenteeism, safety reports	Results: Preliminary analysis at 6 months after the first team meeting and 3 months after implementation of many of the proposed leadership initiatives showed positive trends in the outcome metrics. **There was a decrease in staff absenteeism by 48.5% over the first 3-month period of implementation when compared with the 3 months prior to implementation of the leadership initiatives. With regard to patient outcomes and quality care, patient falls on the unit had decreased by 75%, and the number of patient safety reports filed by staff members decreased by 20%.**	Study Limitations: ☐ None **Non-Randomized Studies** ☒ Failure to develop and apply appropriate eligibility criteria ☐ Flawed measurement of both exposure and outcome ☐ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

			filed, performance improvement metrics	Additionally, the unit's monthly reported performance improvement metrics that had previously fallen below benchmark levels (pain management, falls risk, and Additionally, the unit's monthly reported performance improvement metrics that had previously fallen below benchmark levels (pain management, falls risk, and medication reconciliation) had all improved from baseline; falls risk had exceeded benchmark criteria.	

References:

1. Nayback-Beebe, A. M., et al. (2013). "Using evidence-based leadership initiatives to create a healthy nursing work environment." Dimens Crit Care Nurs **32**(4): 166-173.

BODY OF EVIDENCE APPRAISAL TABLE FOR:
Population: Nursing Staff
Modality: Job rotation and internal marketing
Outcome: Satisfaction and Commitment

Quality (certainty) of evidence for: (outcome)
☐ High
☐ Moderate
☐ Low
☒ Very Low

Risk of Bias across studies:	Lower Quality Rating if:	Other Considerations:
☒ High ☐ Medium ☐ Low	☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) **– Not Available** ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) ☒ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)	Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Chen, S.Y., et al. Year Published: 2015 Location: Kaosiung Medical University Hospital, Kaosiung, Taiwan Journal: *Journal of Nursing Management*	To investigate how the job satisfaction and organizational commitment of nursing professionals can be enhanced and developed by job rotation and internal marketing practices. *Internal marketing defined as treating nurses as customers and corporate partners, providing adequate management support for nurses and enabling them to grow professionally, viewed as product development*	<u>Size:</u> 266 nurses in 2 hospitals <u>Inclusion Criteria</u>: Nurses with job rotation experience	<u>Type:</u> Cross-sectional study <u>Intervention</u>: Literature review was conducted on relationships among job rotation and internal marketing. Internal marketing was defined as treating nurses as customers and corporate partners, providing adequate management support for nurses and enabling them to grow professionally, viewed as product development. Surveys were sent to nurses with six-terms on job rotation and 15-items on internal marketing.	**Results: Job rotation and internal marketing positively affect job satisfaction (t = 17.93, p < .05; t = 11.08, p < .05) and organizational commitment of nurses (t = 4.12, p < .05; t = 5.76, p < .05). Nurses' job satisfaction positively affects their organizational commitment (t = 15.53, p < .05).**	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☒ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

References:

1. Chen, S. Y., et al. (2015). "Job rotation and internal marketing for increased job satisfaction and organisational commitment in hospital nursing staff." Journal of Nursing Management **23**(3): 297-306.

BODY OF EVIDENCE APPRAISAL TABLE FOR:

Population: New Nursing Staff

Modality: Mentoring programs

Outcome: Job satisfaction and organizational commitment

Quality (certainty) of evidence for: (outcome)
☐ High
☐ Moderate
☐ Low
☒ Very Low

| Risk of Bias across studies:
☒ High
☐ Medium
☐ Low | Lower Quality Rating if:
☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available**

☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*) | Other Considerations:
Lower Quality Rating if:
☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*)

Increase Quality Rating if:
☐ Large effect
☐ Dose-response gradient
☐ Plausible confounders or other biases increase certainty of effect |

		☐ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)			
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**
Author: Weng, R.H., et al. Year Published: 2010 Location: Department of Hospital and Health Care Administration, Chia Nan University of Pharmacy and Science, Taiwan Journal: *BMC Health Services Research*	To examine the effects of mentoring functions on the job satisfaction and organizational commitment of new nurses in Taiwan's hospitals	<u>Size:</u> 306 nurses <u>Inclusion Criteria</u>: New nurses from three regional hospitals. Head nurses provided contact information for nurses who had been working in their hospital for two years or less	<u>Type:</u> Cross-sectional study <u>Intervention</u>: Questionnaires were administered to collect research data and select nurses from three regional hospitals as samples.	**Results: The career development function (ß = 0.31, *p* < .01; ß = 0.28, *p* < .01) and the role modeling function (ß = 0.30, *p* < .01; ß = 0.26, *p* < .01) were found to be significantly and positively related to job satisfaction and organizational commitment, respectively.**	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☒ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☐ Incomplete or inadequately short follow-up

References:

1. Weng, R.-H., et al. (2010). "Exploring the impact of mentoring functions on job satisfaction and organizational commitment of new staff nurses." <u>BMC Health Services Research</u> **10**: 240-240.

BODY OF EVIDENCE APPRAISAL TABLE FOR: <u>Population:</u> Nursing Staff <u>Modality:</u> Participatory Intervention <u>Outcome:</u> Work environment and mental health

Quality (certainty) of evidence for: (outcome) ☐High ☐ Moderate ☒ Low ☐ Very Low

Risk of Bias across studies:	**Lower Quality Rating if:**	**Other Considerations:**
☐ High ☒ Medium ☐ Low	☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available** ☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*)	Lower Quality Rating if: ☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*) Increase Quality Rating if: ☐ Large effect ☐ Dose-response gradient ☐ Plausible confounders or other biases increase certainty of effect

		Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*)			
Study Acronym; Author; Year Published; Location	**Aim of Study**	**Patient Population**	**Study Methods**	**Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)**	**Design Limitations**
Author: Uchiyama, A., et al. Year Published: 2013 Location: Tokyo, Japan Journal: *Journal of Occupational Health*	To investigate the effect on mental health among nurses of a participatory intervention to improve the psychosocial work environment	**Size:** 434 nurses **Inclusion Criteria**: Nurses on participating unit **Exclusion Criteria**: Nurses on sick leave or maternity leave were excluded from the randomization	**Type:** RCT **Intervention**: Nurses in 24 units were randomly allocated to 11 intervention units (n=183) and 13 control units (n=218). A participatory program was provided to the intervention units for 6 months. Depressive symptoms as mental health status and psychosocial work environment, assessed by the Job Content Questionnaire, the Effort Reward Imbalance Questionnaire, and the Quality Work Competence questionnaire, were measured before and immediately after the 6-month intervention by a self-administered questionnaire.	**Results: No significant intervention effect was observed for mental health status. However, significant intervention effects were observed in psychosocial work environment aspects, such as Coworker Support (*p* < 0.01) and goals (*p* < 0.01), and borderline significance was observed for Job Control (*p* < 0.10).**	**Study Limitations:** ☐ None *RCTs* ☒ Lack of blinding ☐ Lack of allocation concealment ☐ Unclear allocation concealment ☐ Stopped early for benefit ☐ Incorrect analysis of ITT ☐ Selective reporting of measures (e.g., no effect outcome) ☐ Large losses to F/U ☒ Difference in important prognostic factors at baseline

References:

1. Uchiyama, A., et al. (2013). "Effect on mental health of a participatory intervention to improve psychosocial work environment: a cluster randomized controlled trial among nurses." Journal of Occupational Health **55**(3): 173-183.

BODY OF EVIDENCE APPRAISAL TABLE FOR:
Population: Nursing Staff
Modality: Clinical Supervision
Outcome: Professional inefficacy and psychological distress
Quality (certainty) of evidence for: (outcome) ☐High ☐ Moderate ☐ Low ☒ Very Low

| Risk of Bias across studies:
☐ High
☒ Medium
☐ Low | Lower Quality Rating if:
☐ Studies inconsistent (*wide variation of treatment effect across studies, population, interventions, or outcomes varied*) – **Not Available**

☒ Studies are indirect (*PICO question is quite different from the available evidence in regard to population, intervention, comparison, or outcome*)

☐ Studies are imprecise (*when studies include few patients and few events, and thus have wide confidence intervals, and the results are uncertain*) | | Other Considerations:
Lower Quality Rating if:
☐ Publication Bias (*e.g. pharmaceutical company sponsors study on effectiveness of drug only small, positive studies found*)

Increase Quality Rating if:
☐ Large effect
☐ Dose-response gradient
☐ Plausible confounders or other biases increase certainty of effect | |

Study Acronym; Author; Year Published; Location	Aim of Study	Patient Population	Study Methods	Endpoint Results / Outcome (Absolute Event Rates, P values; OR or RR; & 95% CI)	Design Limitations
Author: Koivu, A., et al. Year Published: 2012 Location: Kuopio, Finland Journal: *Journal of Nursing Management*	To report results of a quasi-experimental study exploring the effects of clinical supervision (CS) on the development of medical-surgical nurses' well-being at work over a 4-year period	**Size:** 462 nurses. **Inclusion Criteria:** Nurses who were female gender and involvement in direct patient care **Exclusion Criteria:** Male nurses due to minimal participating in CS, to protect confidentiality and reduce the confounding factor of male gender	**Type:** Cohort Study **Methods:** 15 clinical supervisors implemented 19 CS groups lasting 1 – 3 years in 14 medical and surgical inpatient or outpatient units. Participants received higher evaluations of CS in group 1, lower evaluations in group 2 and no CS in group 3. Participants completed the Finnish version of the Manchester Clinical Supervision Scale, a 33-item questionnaire with a Likert-type scale, before and after CS.	**Results:** At baseline, there was no statistically significant differences in the background of the study groups. Only 318 (68.8%) out of the 462 female nurses who were working in the intervention units in 2003 were still working in these units in 2007, and 216 (67.9%) participated in the follow-up study. Improvement in job resources as well as reduction in professional inefficacy and psychological distress were found among nurses who received effective CS (n = 41), but were not present among the nurses who found their CS less effective (n = 43) or who did not attend CS (n = 82).	**Study Limitations:** ☐ None **Non-Randomized Studies** ☐ Failure to develop and apply appropriate eligibility criteria ☐ Flawed measurement of both exposure and outcome ☒ Failure to adequately control confounding ☒ Incomplete or inadequately short follow-up

References:

1. Koivu, A., et al. (2012). "Does clinical supervision promote medical-surgical nurses' well-being at work? A quasi-experimental 4-year follow-up study." Journal of Nursing Management **20**(3): 401-413.

The GRADE criteria were used to evaluate the quality of evidence presented in research articles reviewed during the development of this guideline. For more detailed information, see Appendix A.

REFERENCES:

1. Aiken, L. H., et al. (2011). "Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments." Medical Care **49**(12): 1047-1053.
2. Aiken, L. H., et al. (2013). "Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe." International Journal of Nursing Studies **50**(2): 143-153.
3. Chen, S. Y., et al. (2015). "Job rotation and internal marketing for increased job satisfaction and organisational commitment in hospital nursing staff." Journal of Nursing Management **23**(3): 297-306.
4. Costa, F. M. d., et al. (2014). "The nursing staff opinion about the continuous quality improvement program of a university hospital." Einstein (Sao Paulo, Brazil) **12**(2): 211-216.
5. Cummings, G. G., et al. (2010). "Leadership styles and outcome patterns for the nursing workforce and work environment: a systematic review." International Journal of Nursing Studies **47**(3): 363-385.
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8. Lievens, I. and P. Vlerick (2014). "Transformational leadership and safety performance among nurses: the mediating role of knowledge-related job characteristics." Journal of Advanced Nursing **70**(3): 651-661.
9. Lu, D. M., et al. (2015). "Occupational stress and coping strategies among emergency department nurses of China." Arch Psychiatr Nurs **29**(4): 208-212.
10. Moody, K., et al. (2013). "Helping the Helpers: Mindfulness Training for Burnout in Pediatric Oncology—A Pilot Program." Journal of Pediatric Oncology Nursing **30**(5): 275-284.
11. Morsiani, G., et al. (2017). "How staff nurses perceive the impact of nurse managers' leadership style in terms of job satisfaction: a mixed method study." Journal of Nursing Management **25**(2): 119-128.
12. Nayback-Beebe, A. M., et al. (2013). "Using evidence-based leadership initiatives to create a healthy nursing work environment." Dimens Crit Care Nurs **32**(4): 166-173.
13. Rochefort, C. M., et al. (2012). "Patient and nurse staffing characteristics associated with high sitter use costs." Journal of Advanced Nursing **68**(8): 1758-1767.
14. Ruotsalainen, J. H., et al. (2015). "Preventing occupational stress in healthcare workers." Cochrane Database of Systematic Reviews(4).
15. Uchiyama, A., et al. (2013). "Effect on mental health of a participatory intervention to improve psychosocial work environment: a cluster randomized controlled trial among nurses." Journal of Occupational Health **55**(3): 173-183.
16. Weng, R.-H., et al. (2010). "Exploring the impact of mentoring functions on job satisfaction and organizational commitment of new staff nurses." BMC Health Services Research **10**: 240-240.

17. Wong, C. A., et al. (2010). "Authentic leadership and nurses' voice behaviour and perceptions of care quality." <u>Journal of Nursing Management</u> **18**(8): 889-900.

Appendix A. GRADE criteria for rating a body of evidence on an intervention

Developed by the GRADE Working Group

Grades and interpretations:

High: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low: Any estimate of effect is very uncertain.

Type of evidence and starting level

Randomized trial–high
Observational study–low
Any other evidence–very low

Criteria for increasing or decreasing level

Reductions
Study quality has serious (–1) or very serious (–2) problems
Important inconsistency in evidence (–1)
Directness is somewhat (–1) or seriously (–2) uncertain
Sparse or imprecise data (–1)
Reporting bias highly probable (–1)
Increases
Evidence of association† strong (+1) or very strong (+2)
†Strong association defined as significant relative risk (factor of 2) based on consistent evidence from two or more studies with no plausible confounders Very strong association defined as significant relative risk (factor of 5) based on direct evidence with no threats to validity.

Appendix B. Trustworthy Guideline rating scale

The University of Pennsylvania's Center for Evidence-Based Practice Trustworthy Guideline rating scale is based on the Institute of Medicine's "Standards for Developing Trustworthy Clinical Practice Guidelines" (IOM), as well as a review of the AGREE Enterprise and Guidelines International Network domains.

The purpose of this scale is to focus on the weaknesses of a guideline that may reduce the trust a clinical user can have in the guideline, and distinguish weaknesses in documentation (e.g. guide-line does not have a documented updating process) from weaknesses in the guidance itself (e.g. recommendations are outdated). Current quality scales like AGREE emphasize documentation. They are important checklists for developers of new guidelines, but are less useful for grading existing guidelines. These scales also are harder for clinicians and other persons who are not methodology experts to apply, and their length discourages their use outside formal technology assessment reports. This new scale is brief, balanced, and easy and consistent to apply.

We do not attempt to convert the results of this assessment into a numeric score. Instead we present a table listing the guidelines and how they are rated on each standard. This facilitates qualitative understanding by the reader, who can see for what areas the guideline base as a whole is weak or strong as well as which guidelines are weaker or stronger.

1. Transparency

A	Guideline development methods are fully disclosed.
B	Guideline development methods are partially disclosed.
C	Guideline development methods are not disclosed.

The grader must refer to any cited methods supplements or other supporting material when evaluating the guideline. Methods should include:

Who wrote the initial draft
How the committee voted on or otherwise approved recommendations

Evidence review, external review and methods used for updating are not addressed in this standard.

2. Conflict of interest

A	Funding of the guideline project is disclosed, disclosures are made for each individual panelist, and financial or other conflicts do not apply to key authors of the guideline or to more than 1 in 10 panel members).
B	Guideline states that there were no conflicts (or fewer than 1 in 10 panel members), but does not disclose funding source.

C	Lead author, senior author, or guideline panel members (at least 1 in 10) have conflict of interest, or guideline project was funded by industry sponsor with no assurance of independence.
NR	Guideline does not report on potential conflict of interests.

For purposes of this checklist, conflicts of interest include employment by, consulting for, or holding stock in companies doing business in fields affected by the guideline, as well as related financial conflicts. This definition should not be considered exclusive. As much as anything, this is a surrogate marker for thorough reporting, since it may be assumed that guideline projects are funded by the sponsoring organization and many authors think it unnecessary to report a non-conflict.

3. Guideline development group

A	Guideline development group includes 1) methodological experts and clinicians and 2) representatives of multiple specialties.
B	Guideline development group includes one of the above, but not both.
C	Guideline developers all from one specialty or organization, and no methodologists.
NR	Affiliations of guideline developers not reported

The purpose of this standard is to ensure that supporters of competing procedures, or clinicians with no vested interest in utilization of one procedure or another, are involved in development of the guideline. Both AGREE II and IOM call for patient or public involvement: very few guideline panels have done so to date, so this is not necessary for guidelines to be rated A. Involvement of methodologists or HTA specialists in the systematic review is sufficient involvement in the guideline development group for our purposes. In the absence of any description of the guideline group, assume the named authors are the guideline group.

4. Systematic review

A	Guideline includes a systematic review of the evidence or links to a current review.
B	Guideline is based on a review which may or may not meet systematic review criteria.
C	Guideline is not based on a review of the evidence.

In order to qualify as a systematic review, the review must do all of the following:

Describe itself as systematic or report search strategies using multiple databases
Define the scope of the review (including key questions and the applicable population)
Either include quantitative or qualitative synthesis of the data or explain why it is not indicated

Note: this element does not address the quality of the systematic review: simply whether or not it exists. Concerns about quality or bias of the review will be discussed in text, where the analyst will explain whether the weaknesses of the review weaken the validity or reliability of the guideline.

Note: a guideline may be rated B on this domain even if the review on which it is based is not available to us. This potential weakness of the guideline should be discussed in text of the report.

5. Grading the supporting evidence

A	Specific supporting evidence (or lack thereof) for each recommendation is cited and graded
B	Specific supporting evidence (or lack thereof) for each recommendation is cited but the recommendation is not graded.
C	Recommendations are not supported by specific evidence.

To score a B on this domain there should be specific citations to evidence tables or individual references for each relevant recommendation in the guideline, or an indication that no evidence was available. Any standardized grading system is acceptable for purposes of this rating. If a guideline reports that there is no evidence available despite a thorough literature search, it may be scored B on this domain, or even A if evidence for other recommendations is cited and graded.

6. Recommendations

A	Considerations for each recommendation are documented (i.e. benefits and harms of a particular action, and/or strength of the evidence); and recommendations are presented in an actionable form.
B	Either one or the other of the above criteria is met.
C	Neither of the above criteria are met

In order to be actionable, the guideline should specify the specific population to which the guideline applies, the specific intervention in question, and the circumstances under which it should be carried out (or not carried out). The language used in the recommendations should also be consistent with the strength of the recommendation (e.g. directive and active language like "should" or "should not" for strong recommendations, and passive language like "consider" for weak recommendations). A figure or algorithm is considered actionable as long as it is complete enough to incorporate all the applicable patients and interventions. Please see the forthcoming NICE manual (24) for a good discussion of actionability in guidelines.

7. External review

A	Guideline was made available to external groups for review.
B	Guideline was reviewed by members of the sponsoring body only.
C	Guideline was not externally reviewed.
NR	No external review process is described.

8. Updating and currency of guideline

A	Guideline is current and an expiration date or update process is specified.
B	Guideline is current but no expiration date or update process is specified.
C	Guideline is outdated.

A guideline is considered current if it is within the developers' stated validity period, or if no period or expiration data is stated, the guideline was published in the past three years (NOTE: the specific period may be changed at the analyst's discretion, based on whether the technology is mature and whether there is a significant amount of recent evidence). A guideline must address new evidence when it is updated. A guideline which is simply re-endorsed by the panel without searching for new evidence must be considered outdated

Appendix C. Search Strategies

Search strategies for errors mortality:
Database: Ovid MEDLINE(R) <1946 to January Week 5 2019>

Search Strategy:

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1. ((engag* or strateg* or activit* or priorit* or schedul* or structur* or styl* or philosoph* or plan or plans or planned or planning or model* or mentor* or promot* or motivat* or encourag* or purpos* or mission* or build* or rebuild* or foster* or coach* or creat* or innovat* or vision* or envision* or transform* or establish* or cultur*) adj7 (nurs* adj3 (lead or leading* or leader* or supervis* or manag* or administrat* or head or chief)) adj10 (((emotion* or psych* or mental* or personal*) adj3 (stress* or suffer* or wellbeing or well being)) or burnout* or (burn* adj out) or ((job or jobs or work* or career* or employ* or position* or role*) adj5 (engag* or perform* or balance* or cope or coping or coped or copes or resilien* or adapt* or support* or loyal* or retain* or rentention or turnover or (turn* adj over) or quit* or well being or wellbeing or happy or happiness or satisfy* or satisfact* or content* or pleas* or fulfill* or stress* or suffer* or tired or exhaust* or depress* or despair* or aggravat* or grievance* or discontent* or displease* or dissatisf* or malcontent* or disappoint* or disenchant* or disillusion* or frustrat*)))).mp. (378)
2. limit 1 to english language (361)
3. Nurse Administrators/ (12824)
4. exp Nursing, Supervisory/ (8310)
5. exp Nursing Staff/ (63718)
6. exp nurses/ (83968)
7. exp nursing research/ (50726)
8. exp nurses role/ (39317)
9. exp nursing care/ (130910)
10. exp health facility administration/ (223530)
11. exp Administrative Personnel/ (39389)
12. exp Nursing Administration Research/ (2338)

13. 5 or 6 or 7 or 8 or 9 (298593)
14. 10 or 11 or 12 (257953)
15. 13 and 14 (29465)
16. 3 or 4 or 15 (35805)
17. exp leadership/ (38213)
18. exp Personnel Management/ (147582)
19. exp Psychology, Industrial/ (82212)
20. 17 or 18 or 19 (243527)
21. 16 and 20 (13255)
22. (wellbeing or well being).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (63006)
23. exp Resilience, Psychological/ (4280)
24. exp Adaptation, Psychological/ (120040)
25. ((cope* or coping) adj3 (strateg* or capacit* or skill* or abilit* or able or inabilit* or unable)).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (18837)
26. 22 or 23 or 24 or 25 (186951)
27. 21 and 26 (517)
28. exp Behavioral Symptoms/ (337810)
29. 21 and 28 (687)
30. exp "Costs and Cost Analysis"/ (221695)
31. 21 and 30 (466)
32. exp "Outcome and Process Assessment (Health Care)"/ (1007563)
33. 21 and 32 (543)
34. exp Medical Errors/ (106416)
35. 21 and 34 (167)

36. mo.fs. (531438)
37. exp vital statistics/ (865691)
38. exp Death/ (140956)
39. 36 or 37 or 38 (1320533)
40. 21 and 39 (120)
41. exp Quality Indicators, Health Care/ (19104)
42. 21 and 41 (163)
43. 27 or 29 (1053)
44. limit 43 to english language (997)
45. 44 not 2 (951)
46. 31 or 33 or 42 (1020)
47. limit 46 to english language (991)
48. 47 not (2 or 44) (926)
49. 35 or 40 (277)
50. limit 49 to english language (271)
51. 50 not (2 or 44 or 47) (153)

Search strategies for outcomes quality indicators:

Database: Ovid MEDLINE(R) <1946 to January Week 5 2019>

Search Strategy:

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1. ((engag* or strateg* or activit* or priorit* or schedul* or structur* or styl* or philosoph* or plan or plans or planned or planning or model* or mentor* or promot* or motivat* or encourag* or purpos* or mission* or build* or rebuild* or foster* or coach* or creat* or innovat* or vision* or envision* or transform* or establish* or cultur*) adj7 (nurs* adj3 (lead or leading* or leader* or supervis* or manag* or administrat* or head or chief)) adj10 (((emotion* or psych* or mental* or personal*) adj3 (stress* or suffer* or wellbeing or well being)) or burnout* or (burn* adj out) or ((job or jobs or work* or career* or employ* or position* or role*) adj5

(engag* or perform* or balance* or cope or coping or coped or copes or resilien* or adapt* or support* or loyal* or retain* or rentention or turnover or (turn* adj over) or quit* or well being or wellbeing or happy or happiness or satisfy* or satisfact* or content* or pleas* or fulfill* or stress* or suffer* or tired or exhaust* or depress* or despair* or aggravat* or grievance* or discontent* or displease* or dissatisf* or malcontent* or disappoint* or disenchant* or disillusion* or frustrat*)))).mp. (378)

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Search strategies for coping and stress:

Database: Ovid MEDLINE(R) <1946 to January Week 5 2019>

Search Strategy:

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1. ((engag* or strateg* or activit* or priorit* or schedul* or structur* or styl* or philosoph* or plan or plans or planned or planning or model* or mentor* or promot* or motivat* or encourag* or purpos* or mission* or build* or rebuild* or foster* or coach* or creat* or innovat* or vision* or envision* or transform* or establish* or cultur*) adj7 (nurs* adj3 (lead or leading* or leader* or supervis* or manag* or administrat* or head or chief)) adj10 (((emotion* or psych* or mental* or personal*) adj3 (stress* or suffer* or wellbeing or well being)) or burnout* or (burn* adj out) or ((job or jobs or work* or career* or employ* or position* or role*) adj5 (engag* or perform* or balance* or cope or coping or coped or copes or resilien* or adapt* or support* or loyal* or retain* or rentention or turnover or (turn* adj over) or quit* or well being or wellbeing or happy or happiness or satisfy* or satisfact* or content* or pleas* or fulfill* or stress* or suffer* or tired or exhaust* or depress* or despair* or aggravat* or grievance* or discontent* or displease* or dissatisf* or malcontent* or disappoint* or disenchant* or disillusion* or frustrat*)))).mp. (378)
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Search strategies for text adjacency:

Database: Ovid MEDLINE(R) <1946 to January Week 5 2019>

Search Strategy:

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1. ((engag* or strateg* or activit* or priorit* or schedul* or structur* or styl* or philosoph* or plan or plans or planned or planning or model* or mentor* or promot* or motivat* or encourag* or purpos* or mission* or build* or rebuild* or foster* or coach* or creat* or innovat* or vision* or envision* or transform* or establish* or cultur*) adj7 (nurs* adj3 (lead or leading* or leader* or supervis*

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