

Frontline Engagement in Quality Improvement

A Bibliography

Adler PS, Riley P, Kwon SW, et al. Performance improvement capability: keys to accelerating performance improvement in hospitals. *Calif Manage Rev* 2003;45:12-33.

AHRQ. Hospital survey on patient safety culture: 2007 comparative database report. Rockville, MD: Agency for Healthcare Research and Quality, 2007.

Aiken LH, Clarke SP, Sloane DM, et al. Hospital nurse staffing and patient mortality, nurse burnout and job dissatisfaction. *JAMA* 2002;288:1987-93.

American Nurses Association (ANA). The National Database of Nursing Quality Indicators. Washington DC: ANA, 2007.

Baker R, Camosso-Stefinovic J, Gillies C, et al. Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2010;(3):CD005470.

BACKGROUND: In the previous version of this review, the effectiveness of interventions tailored to barriers to change was found to be uncertain. OBJECTIVES: To assess the effectiveness of interventions tailored to address identified barriers to change on professional practice or patient outcomes. MAIN RESULTS: We included 26 studies comparing an intervention tailored to address identified barriers to change to no intervention or an intervention(s) not tailored to the barriers. The effect sizes of these studies varied both across and within studies. Twelve studies provided enough data to be included in the quantitative analysis. A meta-regression model was fitted adjusting for baseline odds by fitting it as a covariate, to obtain the pooled odds ratio of 1.54 (95% CI, 1.16 to 2.01) from Bayesian analysis and 1.52 (95% CI, 1.27 to 1.82, $P < 0.001$) from classical analysis. The heterogeneity analyses found that no study attributes investigated were significantly associated with effectiveness of the interventions. Authors' conclusions: Interventions tailored to prospectively identified barriers are more likely to improve professional practice than no intervention or dissemination of guidelines. However, the methods used to identify barriers and tailor interventions to address them need further development. Research is required to determine the effectiveness of tailored interventions in comparison with other interventions. IMPLICATIONS FOR PRACTICE: Barrier-specific interventions are more likely to promote better practice and healthcare outcomes than no interventions at all. Because there is no specific system for providing a barrier-specific intervention, no evidence is available to determine the most efficient approach to barrier-specific intervention implementation. It is advised to estimate costs and benefits of each approach before carrying out a study for evaluation. Implications for research: More study is needed to for a strategy identifying significant change barriers, as well as developing barrier-specific interventions for implementation. A method should be implemented to determine if each barrier-specific intervention implemented produces good results or not and to ascertain if barrier-specific interventions are more financially prudent than the non-barrier specific or non-customized interventions.

Batalden PB. Organization-wide quality improvement in health care. In: Al-Assaf AF, Schmele JA, editors. *The Textbook of Total Quality in Healthcare*. Boca Raton: CRC Press, 1993.

Bolton LB, Aronow HU. The business case for TCAB. *Am J Nurs*. 2009;109(Suppl): 77-80.

Chaffee MW, McNeill MM. A model of nursing as complex adaptive system. *Nurs Outlook* 2007;55:232-41.

Davey P, Brown E, Fenelon L, Finch R, et al. Interventions to improve antibiotic prescribing practices for hospital inpatients. **Cochrane Database Syst Rev**.2005;(4):CD003543.

BACKGROUND: Up to 50% of antibiotic usage in hospitals is inappropriate. In hospitals, infections caused by antibiotic-resistant bacteria are associated with higher mortality, morbidity and prolonged hospital stay compared with infections caused by antibiotic-susceptible bacteria. Clostridium difficile associated diarrhoea (CDAD) is a hospital acquired infection that is caused by antibiotic prescribing. **OBJECTIVES:** To estimate the effectiveness of professional interventions that alone, or in combination, are effective in promoting prudent antibiotic prescribing to hospital inpatients, to evaluate the impact of these interventions on reducing the incidence of antimicrobial resistant pathogens or CDAD and their impact on clinical outcome. **MAIN RESULTS:** Thirty-nine studies examined the effect of printed educational materials for physicians, audit and feedback, educational meetings, educational outreach visits, financial and healthcare system changes, physician reminders, patient-based interventions and multi-faceted interventions. These interventions addressed the overuse of antibiotics for viral infections, the choice of antibiotic for bacterial infections such as streptococcal pharyngitis and urinary tract infection, and the duration of use of antibiotics for conditions such as acute otitis media. Use of printed educational materials or audit and feedback alone resulted in no or only small changes in prescribing. The exception was a study documenting a sustained reduction in macrolide use in Finland following the publication of a warning against their use for group A streptococcal infections. Interactive educational meetings appeared to be more effective than didactic lectures. Educational outreach visits and physician reminders produced mixed results. Patient-based interventions, particularly the use of delayed prescriptions for infections for which antibiotics were not immediately indicated effectively reduced antibiotic use by patients and did not result in excess morbidity. Multi-faceted interventions combining physician, patient and public education in a variety of venues and formats were the most successful in reducing antibiotic prescribing for inappropriate indications. Only one of four studies demonstrated a sustained reduction in the incidence of antibiotic-resistant bacteria associated with the intervention. **AUTHORS' CONCLUSIONS:** The results show that interventions to improve antibiotic prescribing to hospital inpatients are successful, and can reduce antimicrobial resistance or hospital acquired infections. **IMPLICATIONS FOR PRACTICE:** Barrier-specific interventions are more likely to promote better practitioner practice and healthcare outcomes than no interventions at all or non-barrier-specific or non-customized interventions. Because there is no specific system of providing a barrier-specific intervention, there is no evidence that determines the most efficient approach to barrier-specific intervention implementation. Reviewers advise to estimate the costs and benefits of each approach before carrying out a study for evaluation. **IMPLICATIONS FOR RESEARCH:** This review has found that studies done in multiple settings produce greater validity of results. A great amount of evidence shows that multiple interventions work in bringing down the incidence of antibiotic overprescribing. Further study supporting the use of previously validated interventions used simultaneously is needed. Direct comparisons of multiple interventions are also in demand. There is a lack of information collected on cost effectiveness of design and implementation of studies in the prevention of hospital required infections, which should be addressed as quickly as possible. Drug outcome data should be represented as time series analysis rather than averages. In addition, the reviewers noted it is important for the validity of time series research for all reported interventions be planned interventions.

Edmondson AC. Learning from failure in health care: frequent opportunities, pervasive barriers. **Qual Saf Health Care**. 2004;13:3-9.

Foxcroft D, Cole N. Organisational infrastructures to promote evidence based nursing practice. **Cochrane Database Syst Rev** 2000;(3):CD002212.

BACKGROUND: The purpose of this systematic review is to determine to what extent organisational infrastructures are effective in promoting the implementation of high quality research evidence on the effectiveness of nursing interventions. **OBJECTIVES:** To identify and summarize rigorous evaluations of organisational infrastructure developments aimed at promoting evidence based nursing practice. **MAIN RESULTS:** No studies were sufficiently rigorous to be included in this systematic review. Seven case study evaluations were identified but excluded

from the review because of poor design and lack of controls. AUTHORS' CONCLUSIONS: 1. There are no clear implications for practice. 2. Several conceptual models on organisational processes to promote evidence based practice have been described in published papers, and a number of organisational infrastructural interventions have been described in published papers. None have been evaluated properly. The next step in this field should be to conduct well planned evaluations of well planned interventions. 3. Interrupted and Complex Interrupted Times Series (ITS and CITS) designs should be adopted as a useful alternative to randomized controlled trials where such trials would be impractical. The health service cost of any infrastructure developments should be assessed in any evaluation. If possible, patient outcomes should be measured directly. IMPLICATIONS FOR PRACTICE: This systematic review found no high quality evidence to recommend one type of organisational infrastructural intervention as being effective in promoting evidence based nursing practice. Results from studies that employed weaker scientific designs, mainly retrospective case reports, were inconclusive. On the whole, researchers tended to "talk up" their successes without offering any substantive evidence to support their conclusions. There are no clear implications for practice. IMPLICATIONS FOR RESEARCH: Several conceptual models for organisational processes to promote evidence-based practice and and infrastructural interventions have been described in published papers. None have been evaluated properly. The next step in this field should be to conduct well-planned evaluations and interventions. Interrupted and Complex Interrupted Times Series (ITS and CITS) designs should be adopted as a useful alternative to randomized controlled trials, where such trials would be impractical. The health service cost of any infrastructure development should be assessed. If possible, patient outcomes should be measured directly. More research will be needed to assess the effectiveness of interventions to promote SDM in health care providers. Studies should be well-constructed to eliminate bias and determine the effectiveness of the intervention. Theory-based intervention studies should be implemented in clinical practice to determine the internal validity of the behavior assessed.

Garvin DA, Edmondson AC, Gino F. Is yours a learning organization? *Harvard Bus Rev* 2008;86:109-17.

Glasgow RE, Lichtenstein E, Marcus AC. Why don't we see more translation of health promotion research to practice? Rethinking the efficacy-to-effectiveness transition. *Am J Pub Health*. 2003;93:1261-67.

Goldratt EM, Cox J. *The goal: a process of ongoing improvement*. New York: North River Press, 1986.

Hassmiller SB, Cozine M. Addressing the nursing shortage to improve the quality of patient care. *Health Aff*. 2006; 25:268-74.

Hung DY, Rundall TG, Cohen DJ, et al. Productivity and turnover in PCPs: the role of staff participation in decision-making. *Med Care* 2006;44:946-51.

Institute of Medicine (2001). *Crossing the quality chasm: a new health system for the 21st century*. Washington, D.C.: National Academies Press, 2001.

Jamtvedt G, Young JM, Kristoffersen DT, et al. Audit and feedback: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev*. 2006;(2):CD000259. BACKGROUND: Audit and feedback continues to be widely used as a strategy to improve professional practice. It appears logical that healthcare professionals would be prompted to modify their practice if given feedback that their clinical practice was inconsistent with that of their peers or accepted guidelines. Yet, audit and feedback has not consistently been found to be effective. OBJECTIVES: To assess the effects of audit and feedback on the practice of healthcare professionals and patient outcomes. MAIN RESULTS: Thirty new studies were added to this update, and a total of 118 studies are included. In the primary analysis 88 comparisons from 72 studies were included that compared any intervention in which audit and feedback is a

component compared to no intervention. For dichotomous outcomes the adjusted risk difference of compliance with desired practice varied from - 0.16 (a 16 % absolute decrease in compliance) to 0.70 (a 70% increase in compliance) (median = 0.05, inter-quartile range = 0.03 to 0.11) and the adjusted risk ratio varied from 0.71 to 18.3 (median = 1.08, inter-quartile range = 0.99 to 1.30). For continuous outcomes the adjusted percent change relative to control varied from -0.10 (a 10 % absolute decrease in compliance) to 0.68 (a 68% increase in compliance) (median = 0.16, inter-quartile range = 0.05 to 0.37). Low baseline compliance with recommended practice and higher intensity of audit and feedback were associated with larger adjusted risk ratios (greater effectiveness) across studies. **AUTHORS' CONCLUSIONS:** Audit and feedback can be effective in improving professional practice. When it is effective, the effects are generally small to moderate. The relative effectiveness of audit and feedback is likely to be greater when baseline adherence to recommended practice is low and when feedback is delivered more intensively. **IMPLICATIONS FOR PRACTICE:** Nursing practice needs more research, a big area of concern to the healthcare team. The reviewers propose that this problem area can be solved through health informatics as a knowledge base for emerging healthcare which will enable assimilation of practice through information discovery. There is a need to establish the relationship between nursing practice and documentation, as studies have shown that they are not well understood. Qualitative research needs to be undertaken to identify and focus on salient themes. For nursing records to be efficient, nurses have to identify tasks based on properties of the nursing record. Nurses need to know their tasks and what type of record format will be needed to document each task; this can not be accomplished unless the nurse understands the reason for documentation. There is a need for well-formulated and planned research used with sophisticated methods. Nursing research in this area of documentation is lacking a design with good internal validity. A study with a sound, qualitative/quantitative method that is thoughtfully carried out is needed. The reviewers recommend using longitudinal evaluation to measure practice, which means setting goals for the future and taking measurements at the right time scheduled. Introducing the control units before or after the intervals of the study and testing the implementation phase of the study through the development of the record system is also useful. This area is a problematic and complex area that requires more research. **IMPLICATIONS FOR RESEARCH:** The reviewers suggest that only a small amount of information could be gathered from the data produced by the 118 trials in review. Four suggestions arise to bring to light factors that provide information of the real usefulness of audit and feedback systems. (1) Care should be taken that the structure, execution, and report of each trial be closely monitored to ensure changes in clinical practice. (2) Baseline information on the periods of time before and after each trial stand out as a necessary measure to clarify information on processes, but should not be relied upon to evaluate audit/feedback processes alone. (3) Trial sizes must be large enough to be able to recognize small to intermediate level effects. The reviewers further suggest the need for more comparisons strictly on different audit/feedback systems, and greater numbers of evaluation processes incorporated within the trials themselves to explore the effects of different factors and variables that alter audit/feedback systems. (4) The reviewers suggest additional trials to explore the concept of audit and feedback systems that are used in conjunction with other tools, such as educational meetings.

Jimmerson C, Weber D, Sobek DK, 2nd. Reducing waste and errors: piloting lean principles in Intermountain Healthcare. *Jt Comm J Qual Patient Saf.* 2005;31:249-57.

Kohn LT, Corrigan JM, Donaldson MS, editors. To err is human: building a safer health system. Washington, D.C.: National Academies Press, 1999.

Lake ET. The nursing practice environment: measurement and evidence. *Med Care Res Rev.* 2007;64(Suppl):104S-122S.

Légaré F, Ratté S, Stacey D, et al. Interventions for improving the adoption of shared decision making by healthcare professionals. *Cochrane Database Syst Rev* 2010;(5):CD006732
BACKGROUND: Shared decision making (SDM) is a process by which a healthcare choice is made jointly by the practitioner and the patient and is said to be the crux of patient-centered care.

Policy makers perceive SDM as desirable because of its potential to a) reduce overuse of options not clearly associated with benefits for all (e.g., prostate cancer screening); b) enhance the use of options clearly associated with benefits for the vast majority (e.g., cardiovascular risk factor management); c) reduce unwarranted healthcare practice variations; d) foster the sustainability of the healthcare system; and e) promote the right of patients to be involved in decisions concerning their health. Despite this potential, SDM has not yet been widely adopted in clinical practice.

OBJECTIVES: To determine the effectiveness of interventions to improve healthcare professionals' adoption of SDM. **MAIN RESULTS:** The reviewers identified 6764 potentially relevant documents, of which we excluded 6582 by reviewing titles and abstracts. Of the remainder, we retrieved 182 full publications for more detailed screening. From these, we excluded 176 publications based on our inclusion criteria. This left in five studies, all RCTs. All five were conducted in ambulatory care: three in primary clinical care and two in specialised care. Four of the studies targeted physicians only and one targeted nurses only. In only two of the five RCTs was a statistically significant effect size associated with the intervention to have healthcare professionals adopt SDM. The first of these two studies compared a single intervention (a patient-mediated intervention: the Statin Choice decision aid) to another single intervention (also patient-mediated: a standard Mayo patient education pamphlet). In this study, the Statin Choice decision aid group performed better than the standard Mayo patient education pamphlet group (standard effect size = 1.06; 95% CI = 0.62 to 1.50). The other study compared a multifaceted intervention (distribution of educational material, educational meeting and audit and feedback) to usual care (control group) (standard effect size = 2.11; 95% CI = 1.30 to 2.90). This study was the only one to report an assessment of barriers prior to the elaboration of its multifaceted intervention.

AUTHORS' CONCLUSIONS: The results of this Cochrane review do not allow us to draw firm conclusions about the most effective types of intervention for increasing healthcare professionals' adoption of SDM. Healthcare professional training may be important, as may the implementation of patient-mediated interventions such as decision aids. Given the paucity of evidence, however, those motivated by the ethical impetus to increase SDM in clinical practice will need to weigh the costs and potential benefits of interventions. Subsequent research should involve well designed studies with adequate power and procedures to minimise bias so that they may improve estimates of the effects of interventions on healthcare professionals' adoption of SDM. From a measurement perspective, consensus on how to assess professionals' adoption of SDM is desirable to facilitate cross-study comparisons. **IMPLICATIONS FOR PRACTICE:** Patient-centered interventions and practitioner training may serve as interventions to promote SDM. Due to the scarcity of evidence, before intervention to promote SDM is implemented, the pros and cons of the intervention should be examined. In this review, there is no evidence of the most successful intervention that aids practitioner implementation of SDM. **IMPLICATIONS FOR RESEARCH:** More research will be needed to assess the effectiveness of interventions to promote SDM in health care providers. Studies should be well-constructed to eliminate bias and determine the effectiveness of the intervention. Theory-based interventions studies should be implemented in clinical practice to determine the internal validity of the behavior assessed.

McDaniel RR, Driebe DJ. Complexity science and health care management. *Adv Health Care Manage.* 2001;2:11-36.

Miller WL, McDaniel RR, Crabtree BF, et al. Practice jazz: understanding variation in family practices using complexity science. *J Fam Prac.* 2001;50:872-78.

Needleman J, Parkerton PH, Pearson MJ, et al. Overall effect of TCAB on initial participating hospitals. *Am J Nurs.* 2009;109(Suppl): 59-65.

Nembhard IM, Edmondson AC. Making it safe: the effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *J Organ Behav* 2006;27:941-66.

Nilsen ES, Myrhaug HT, Johansen M, et al. Methods of consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material. **Cochrane Database Syst Rev.** 2006;(3):CD004563.

BACKGROUND: The importance of consumer involvement in health care is widely recognised. Consumers can be involved in developing healthcare policy and research, clinical practice guidelines and patient information material, through consultations to elicit their views or through collaborative processes. Consultations can be single events, or repeated events, large or small scale. They can involve individuals or groups of consumers to allow debate; the groups may be convened especially for the consultation or be established consumer organisations. They can be organised in different forums and through different media. OBJECTIVES: To assess the effects of consumer involvement and compare different methods of involvement in developing healthcare policy and research, clinical practice guidelines, and patient information material. MAIN RESULTS: We included six randomised controlled trials with moderate or high risk of bias, involving 2123 participants. There is moderate quality evidence that involving consumers in the development of patient information material results in material that is more relevant, readable and understandable to patients, without affecting their anxiety. This 'consumer-informed' material can also improve patients' knowledge. There is low quality evidence that using consumer interviewers instead of staff interviewers in satisfaction surveys can have a small influence on the survey results. There is low quality evidence that an informed consent document developed with consumer input (potential trial participants) may have little if any impact on understanding compared to a consent document developed by trial investigators only. There is very low quality evidence that telephone discussions and face-to-face group meetings engage consumers better than mailed surveys in order to set priorities for community health goals. They also result in different priorities being set for these goals. AUTHORS' CONCLUSIONS: There is little evidence from randomised controlled trials of the effects of consumer involvement in healthcare decisions at the population level. The trials included in this review demonstrate that randomised controlled trials are feasible for providing evidence about the effects of involving consumers in these decisions. IMPLICATIONS FOR PRACTICE: Because of lack of sufficient evidence, future studies should ensure consumer involvement. Administrators in charge of making decisions may have to use opinions based on practice, experience, and "principles of successful consumer involvement in NHS research." Opinions that are undecided can be evaluated using randomized control trials. IMPLICATIONS FOR RESEARCH: The trials reviewed show that randomized control trials of consumer involvement are realistic. However, these studies were inconsistent and the reviewers were unsure of the best method to achieve consumer involvement. RCT's have to be undertaken to reduce the vagueness of the best way to achieve consumer involvement. Trials will be very essential in appraising the outcome of the varying "methods of recruiting," determining "the degree of involvement," "financial support," "forums of communication," "degree of consumer involvement and decision making." Due to the low number of controlled trials reported for this review, updates will have to have a "broad focus."

Page A, editor. Keeping patients safe: transforming the work environment of nurses. Washington, D.C.: National Academies Press, 2004.

Pearson MJ, Needleman J, Parkerton PH, et al. Participation of unit nurses. **Am J Nurs.** 2009;109(Suppl): 66-70.

Plsek, PE. Redesigning health care with insights from the science of complex adaptive systems, In *Crossing the Quality Chasm*. Washington, DC: National Academies Press, 2001.

Ransom SB, Joshi M, Nash D. The healthcare quality book: vision, strategy, and tools. Chicago, IL: Health Administration Press, 2004.

Rotter T, Kinsman L, James E, et al. Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs. **Cochrane Database Syst Rev.** 2010;(3):CD006632. BACKGROUND: Clinical pathways are structured multidisciplinary care plans used by health services to detail essential steps in the care of patients with a specific clinical problem. They aim

to link evidence to practice and optimise clinical outcomes whilst maximising clinical efficiency. OBJECTIVES: To assess the effect of clinical pathways on professional practice, patient outcomes, length of stay and hospital costs. MAIN RESULTS: Twenty-seven studies involving 11,398 participants met the eligibility and study quality criteria for inclusion. Twenty studies compared stand alone clinical pathways with usual care. These studies indicated a reduction in in-hospital complications (odds ratio (OR) 0.58; 95% confidence interval (CI) 0.36 to 0.94) and improved documentation (OR 13.65; 95%CI 5.38 to 34.64). There was no evidence of differences in readmission to hospital or in-hospital mortality. Length of stay was the most commonly employed outcome measure with most studies reporting significant reductions. A decrease in hospital costs/ charges was also observed, ranging from WMD +261 US\$ favouring usual care to WMD -4919 US\$ favouring clinical pathways (in US\$ dollar standardized to the year 2000). Considerable heterogeneity prevented meta-analysis of length of stay and hospital cost results. An assessment of whether lower hospital costs contributed to cost shifting to another health sector was not undertaken. Seven studies compared clinical pathways as part of a multifaceted intervention with usual care. No evidence of differences was found between intervention and control groups. AUTHORS' CONCLUSIONS: Clinical pathways are associated with reduced in-hospital complications and improved documentation without negatively impacting on length of stay and hospital costs. IMPLICATIONS FOR PRACTICE: Reviewer evidence suggests that a decrease in hospital-stay problems and an increase in written record can be attributed to CPW without compromising the expense of the hospital-stay or length of stay. IMPLICATIONS FOR RESEARCH: Caliber of CPW research: The use of EPOC standards will increase the caliber of research when investigating the effect of CPW in various healthcare environments. The methods for the utilization of CPW should be investigated. Analysis of data concerning length of stay, grouped by pathway, and hospital cost renders data comparison that is not possible due to incongruity. Further investigation concentrating on analysis within CPW may be beneficial. There is limited information available on the process of CPW; therefore, increasing knowledge of the essential features of CPWs and their result would be valuable. Additionally, research that investigates the effect of versatile CPW actions in comparison to exclusive CPW actions would be worthy.

Rutherford P, Lee B, Greiner A. Transforming care at the bedside. IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2004.

Rutherford P, Moen R, Taylor J. TCAB: the 'how' and the 'what.' *Am J Nurs.* 2009;109(Suppl): 5-17.

Stange KC, Flocke SA, Goodwin MA, et al. Direct observation of rates of preventive service delivery in community family practice. *Prev Med* 2000;2:167-76.

Stange KC, Goodwin MA, Zyzanski SJ, et al. Sustainability of a practice individualized preventive service delivery intervention. *Am J Prev Med.* 2003;25:296-300.

Steinbrook R. Nursing in the crossfire. *N Engl J Med* 2002;346:1757-66.

Stroebel CK, McDaniel RR, Crabtree BF, et al. How complexity science can inform a reflective process for improvement in primary care practices. *J Qual Patient Saf* 2005;31:438-46.

Thomas EJ, Studdert DM, Burstin HR, et al. Incidence and types of adverse events and negligent care in Utah and Colorado. *Med Care.* 2000; 38:261-71.

Tucker, A. L. An empirical study of system improvement by frontline employees in hospital units. *Manufac Serv Oper Manage.* 2007;9(4): 492-505.

Tucker, A. L. The impact of operational failures on hospital nurses and their patients. *J Oper Manage.* 2004;22(2):151-69.

Tucker AL and Edmondson AC. Why hospitals don't learn from failures: organizational and psychological dynamics that inhibit system change. *Calif Manage Rev.* 2003;45(2):1-18.

Tucker A L, Singer S J, Hayes J E et al. Front-line staff perspectives on opportunities for improving the safety and efficiency of hospital work systems. *Health Serv Res.* 2008 Jun 3;43(5 Pt 2):1807-29.

OBJECTIVE: To contrast the safety-related concerns raised by front-line staff about hospital work systems (operational failures) with national patient safety initiatives. DATA SOURCES: Primary data included 1,732 staff-identified operational failures at 20 U.S. hospitals from 2004 to 2006. STUDY DESIGN: Senior managers observed front-line staff and facilitated open discussion meetings with employees about their patient safety concerns. DATA COLLECTION: Hospitals submitted data on the operational failures identified through managers' interactions with front-line workers. Data were analyzed for type of failure and frequency of occurrence. Recommendations from staff were compared with recommendations from national initiatives. PRINCIPAL FINDINGS: The two most frequent categories of operational failures, equipment/supplies and facility issues, posed safety risks and diminished staff efficiency, but have not been priorities in national initiatives. CONCLUSIONS: Our study suggests an underutilized strategy for improving patient safety and staff efficiency: leveraging front-line staff experiences with work systems to identify and address operational failures. In contrast to the perceived tradeoff between safety and efficiency, fixing operational failures can yield benefits for both. Thus, prioritizing improvement of work systems in general, rather than focusing more narrowly on specific clinical conditions, can increase safety and efficiency of hospitals. PMID: 18522667 [PubMed - indexed for MEDLINE]

Urquhart C, Currell R, Grant MJ, et al. Nursing record systems: effects on nursing practice and healthcare outcomes. *Cochrane Database Syst Rev.* 2009;(1): CD002099.

BACKGROUND: A nursing record system is the record of care that was planned or given to individual patients and clients by qualified nurses or other caregivers under the direction of a qualified nurse. Nursing record systems may be an effective way of influencing nurse practice. OBJECTIVES: To assess the effects of nursing record systems on nursing practice and patient outcomes. MAIN RESULTS: We included nine trials (eight RCTs, one controlled before and after study) involving 1846 people. The studies that evaluated nursing record systems focusing on relatively discrete and focused problems, for example effective pain management in children, empowering pregnant women and parents, reducing loss of notes, reducing time spent on data entry of test results, reducing transcription errors, and reducing the number of pieces of paper in a record, all demonstrated some degree of success in achieving the desired results. Studies of nursing care planning systems and total nurse records demonstrated uncertain or equivocal results. AUTHORS' CONCLUSIONS: We found some limited evidence of effects on practice attributable to changes in record systems. It is clear from the literature that it is possible to set up the randomised trials or other quasi-experimental designs needed to produce evidence for practice. Qualitative nursing research to explore the relationship between practice and information use could be used as a precursor to the design and testing of nursing information systems. IMPLICATIONS FOR PRACTICE: Published works on electronic documentation support systems have shown insufficient evidence for nursing practice. Failure of the electronic record system can be attributed to the lack of nurses involved in the development of the electronic record system. Also, the electronic record system does not seem to fit the models of nursing, which could be a "problem solving approach," or "caring art/science" approach for patient care. There has been no electronic record system that supports the different approaches/models of nursing. It is advised that electronic record systems be an important aspect of the nursing profession and encouraging the different approaches to nursing care. IMPLICATIONS FOR RESEARCH: This area of nursing practice needs more research, as it is an area of concern to the healthcare team. The reviewers propose that this problem can be solved by health informatics as a knowledge base for emerging healthcare to enable better assimilation through then discovery of information. There is a dire need to establish the relationship between nursing practice and documentation, as studies have shown that the nursing record/documentation are not well understood. Qualitative research has to be undertaken to identify and focus on salient

themes. For nursing records to be efficient, nurses have to identify nursing tasks based on properties of the nursing record. For example, what task requires free text or a free structured record. Nurses have to know the type of record format needed to document each task; this cannot be accomplished unless the nurse understands the reason for documentation. This area is in dire need of well-formulated and planned research with use of sophisticated methods. Nursing research for this area of documentation is lacking design with good internal validity. A study with a sound, qualitative or quantitative method carried out thoughtfully is needed. The reviewers recommend using longitudinal evaluation to measure practice, setting goals for the future and taking measurements at the right time scheduled. Control units should be introduced before or after the intervals of the study and continue testing through the implementation phase of the study. This is a problematic and complex area which requires more research.

U.S. Department of Health and Human Services, Health Resources and Services Administration. The registered nurse population: initial findings from the 2008 National Sample Survey of Registered Nurses. 2010. For electronic copy of the report and further information: <http://bhpr.hrsa.gov/healthworkforce/rnsurvey>.

van Wyk BE, Pillay-Van Wyk V. Preventive staff-support interventions for health workers. **Cochrane Database Syst Rev.** 2010;(3):CD003541.

BACKGROUND: Healthcare workers need to be supported to maintain sufficient levels of motivation and productivity, and to prevent the debilitating effects of stress on mental and physical well-being. **OBJECTIVES:** To assess the effects of preventive staff-support interventions to healthcare workers. **MAIN RESULTS:** Ten studies involving 716 participants met the criteria for inclusion. None assessed the effects of support groups for health workers. Eight studies assessed the effects of training interventions in various stress management techniques on measures of stress and/or job satisfaction, and two studies assessed the effects of management interventions on stress, job satisfaction and absenteeism. Three studies demonstrated a beneficial effect of stress management training intervention on job stress. Only one of these showed that this effect is sustainable over the medium-term. One study demonstrated the beneficial effect of a high intensity, stress management training intervention on burnout. Low and moderate intensity stress management training interventions failed to demonstrate benefit on burnout or staff satisfaction. Management interventions demonstrated increases in job satisfaction, but failed to show effect on absenteeism. Most studies had several methodological shortcomings leaving them vulnerable to potential biases. **AUTHORS' CONCLUSIONS:** There is insufficient evidence for the effectiveness of stress management training interventions to reduce job stress and prevent burnout among healthcare workers beyond the intervention period. Low quality evidence suggests that longer-term interventions with refresher or booster sessions may have more sustained positive effect, but this needs to be rigorously evaluated in further trials. Low quality evidence exists to show that management interventions may improve some measures of job satisfaction. However, further trials are needed to assess whether this finding is replicable in other settings. There was insufficient evidence of the benefit of management interventions on staff absenteeism. Rigorous trials are needed to assess the effects of longer-term stress management training and management interventions in primary care and developing country settings. **IMPLICATIONS FOR PRACTICE:** Little evidence is available for effectiveness of interventions to reduce stress and burnout through management training among health care workers beyond the intervention period. Evidence shows that longer-term interventions with refresher sessions may have a more lasting, positive effect. But with just two studies conducted, there is not enough data to validate that management interventions can improve staff morale and job satisfaction. Further studies in other settings are needed to assess if these results are replicable. **IMPLICATIONS FOR RESEARCH:** More trials are needed to assess the effects of longer-term management of stress training. Research is needed to assess the effect of staff support groups on work-related stress, work performance, and other staff outcomes for health care workers. The target of these further research studies should be primary care settings and developing countries. Studies on preventive staff support should include outcome measurements such as absenteeism and turnover, to name a few.

Weick KE, Sutcliffe KM. Organizing and the process of sensemaking. *Organ Sci* 2005;16:409-21.

Yin RK. The abridged version of case study research: design and method. In: Bickman L, Rog DJ, editors. *Handbook of Applied Social Science Research Methods*. Newbury Park, CA: Sage Publications, 1998.

Yin RK. *Case study research: design and methods*. 3rd ed. Thousand Oaks, CA: Sage Publication, 2002.

Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Syst Rev*. 2009; (3): CD000072.

BACKGROUND: Poor interprofessional collaboration (IPC) can negatively affect the delivery of health services and patient care. Interventions that address IPC problems have the potential to improve professional practice and healthcare outcomes. **OBJECTIVES:** To assess the impact of practice-based interventions designed to change IPC, compared to no intervention or to an alternate intervention, on one or more of the following primary outcomes: patient satisfaction and/or the effectiveness and efficiency of the health care provided. Secondary outcomes include the degree of IPC achieved. **MAIN RESULTS:** Five studies met the inclusion criteria; two studies examined interprofessional rounds, two studies examined interprofessional meetings, and one study examined externally facilitated interprofessional audit. One study on daily interdisciplinary rounds in inpatient medical wards at an acute care hospital showed a positive impact on length of stay and total charges, but another study on daily interdisciplinary rounds in a community hospital telemetry ward found no impact on length of stay. Monthly multidisciplinary team meetings improved prescribing of psychotropic drugs in nursing homes. Videoconferencing compared to audio-conferencing multidisciplinary case conferences showed mixed results; there was a decreased number of case conferences per patient and shorter length of treatment, but no differences in occasions of service or the length of the conference. There was also no difference between the groups in the number of communications between health professionals recorded in the notes. Multidisciplinary meetings with an external facilitator, who used strategies to encourage collaborative working, was associated with increased audit activity and reported improvements to care. **AUTHORS' CONCLUSIONS:** In this updated review, we found five studies (four new studies) that met the inclusion criteria. The review suggests that practice-based IPC interventions can improve healthcare processes and outcomes, but due to the limitations in terms of the small number of studies, sample sizes, problems with conceptualising and measuring collaboration, and heterogeneity of interventions and settings, it is difficult to draw generalisable inferences about the key elements of IPC and its effectiveness. More rigorous, cluster randomised studies with an explicit focus on IPC and its measurement, are needed to provide better evidence of the impact of practice-based IPC interventions on professional practice and healthcare outcomes. These studies should include qualitative methods to provide insight into how the interventions affect collaboration and how improved collaboration contributes to changes in outcomes. **IMPLICATIONS FOR PRACTICE:** Interventions aimed at improving interpersonal collaboration make a positive impact on clinical practice outcomes and patient care. The problem lies in the fact that small studies do not produce enough consistent/comparable data to prove these interventions are reliable. Reviewers find that the same interventions were not used in enough studies separately to compare and contrast effectiveness against the other. Another finding is that differences in settings played a part in inconsistency of data collected. The reviewers suggest that more adequately powered studies be conducted on IPC's until these types of interventions are implemented on a large scale. **IMPLICATIONS FOR RESEARCH:** A field requiring more cultivation is interprofessional collaboration evidence that makes an impact on healthcare outcomes. Multiple, well-designed studies incorporating various methodologies are needed to help shed light on encouraging evidence that IPC interventions do make a positive impact. Several authors are cited that give the following recommendations for future research: defining, measuring, and providing concept models of collaboration; standardizing the meaning of terms such as "IPE, IC and CM"; using both quantitative and qualitative means to clarify how

interventions work in single studies ; factors that influence IPC and how they affect healthcare outcomes.