Please find below the results of your literature search request.

If you would like the full text of any of the abstracts included, or would like a further search completed on this topic, please let us know.

We’d appreciate feedback on your satisfaction with this literature search. Please visit [http://www.hello.nhs.uk/literature_search_feedback.asp](http://www.hello.nhs.uk/literature_search_feedback.asp) and complete the form.

Thank you

**Literature search results**

<table>
<thead>
<tr>
<th>Search completed for:</th>
<th>16 September 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search request date:</td>
<td>16 September 2010</td>
</tr>
<tr>
<td>Search completion date:</td>
<td>24 September 2010</td>
</tr>
<tr>
<td>Search completed by:</td>
<td>Richard Bridgen</td>
</tr>
</tbody>
</table>

**Search details**

Proactive methodologies for risk management and patient safety

**Resources searched**

NHS Evidence; National Library for Health; TRIP Database; Cochrane Library; CINAHL; EMBASE; MEDLINE; Google Scholar; Google Advanced Search

**Database search terms**

"patient safety"; exp PATIENT SAFETY; patient; safety; risk; manage*; "risk management"; assess*; proactive; pro-active; prospective; FMEA; HFMEA; "hierarchical task analysis"; “task analysis”; hierarch*; “predictive error”; “predictive human error”; failure mode and effects analysis; probabilistic risk model*; error prevention; resilience; “safety case”; MEDICAL ERRORS/pc [Prevention & Control]

**Google search string**

("patient safety" OR "risk management") (proactive OR prospective) ("failure mode and effects analysis" OR FMEA OR HFMEA OR "safety case" OR "predictive error" OR "hierarchical task analysis") (healthcare OR NHS) -book -agenda -minutes -site:books.google.com

**Summary**

There is a great deal of research into proactive and prospective approaches to patient safety and risk management. FMEA seems to be the most applied and the most researched. I have included research about the methodologies themselves and also their application to health care. Other non-FMEA methodologies in which you may be interested, include: event tree analysis, simulation, probabilistic risk modelling, man-machine occupational risk modeling (MORM), safety cases, root cause analysis (RCA), which can be used prospectively, FMECA.

**Evidence (NHS Evidence; TRIP Database; NLH; Cochrane Library)**

BMC Health Services Research

Does the process map influence the outcome of quality improvement work? A comparison of a sequential flow diagram and a hierarchical task analysis diagram 2010
The results indicated that the layout of a process map does influence perceptions of quality and safety problems in a process. In quality improvement work it is important to carefully consider the type of process map to be used and to consider using more than one map to ensure that different aspects of the process are captured.

Health Foundation

Safety and risk management in hospitals 2009

Despite a large number of papers devoted to this subject, research addressing the effectiveness and efficiency of safety analysis is scarce (see also Vincent 2004). There are indications that analysis techniques are effective in identifying potential risks or root causes, and in monitoring changes. One study by Robinson et al (2006), which had a weak design, shows that applying an FMEA has positive results, although information about which method works best in which circumstances – in terms of effectiveness, efficiency, accuracy and reliability – was not provided.

National electronic Library for Medicines

FMEA: a new approach to manage high risk medicines 2010

A prospective risk analysis tool, failure modes effects analysis (FMEA), has been used by a pharmacy team at Northumbria Healthcare NHS Foundation Trust to improve the safety of rituximab use. This article describes the benefits and challenges of using the FMEA method.

Use of a prospective risk analysis method to improve the safety of the cancer chemotherapy process 2006

Concludes that centralisation to the pharmacy was associated with a strong improvement but additional developments involving information technologies also contributed to a major risk reduction. A cost analysis confirmed the pertinence of all developments.

Director's forum. Developing a medication patient safety program, Part 2: Process and implementation 2007

This article focuses on the process of targeting opportunities for error prevention and reviewing the implementation strategies employed in a successful programme in an American hospital.

The Safer Patients Initiative: using new methods to tackle old problems 2007

Pharmacists and technicians at four acute hospital trusts in different parts of the UK have been developing methods to improve patient safety through their participation in the first wave of the Safer Patients Initiative. Through the initiative, the teams have focused on three areas of medicines management: medicines reconciliation; high-risk medicines, such as anticoagulants; and medication systems, such as prescribing, ordering, dispensing and administering.

Building a safer NHS for patients: improving medication safety 2004

Errors occur in the prescribing, dispensing and administration of medicines. They can have serious consequences and they are invariably preventable. This report explores the causes and frequency of medication errors, highlights drugs and clinical settings that carry particular risks, and identifies models of good practice to reduce risk.

Safe medication initiatives - sustaining good practice 2006

Article describes examples of good practice in medication safety and how these initiatives can be sustained.

NIHR Health Technology Assessment programme
The investigation and analysis of critical incidents and adverse events in healthcare

The objectives of the review were: to carry out a review of published and unpublished work on the analysis of methods of accident investigation in high-risk industries and to provide a sound conceptual and practical foundation for the review of healthcare methods; to carry out a review of published and unpublished work on the analysis of critical incidents in healthcare and to develop guidelines for the analysis of critical incidents in healthcare for the hospital sector, mental health and primary care

Published research

1. A practical guide to failure mode and effects analysis in health care: making the most of the team and its meetings.
   Author(s): Ashley L, Armitage G, Neary M, Hollingsworth G
   Citation: Joint Commission Journal on Quality & Patient Safety, 01 August 2010, vol./is. 36/8(351-358), 15537250
   Publication Date: 01 August 2010
   Abstract: Background: Failure Mode and Effects Analysis (FMEA) is a proactive risk assessment tool used to identify potential vulnerabilities in complex, high-risk processes and to generate remedial actions before the processes result in adverse events. FMEA is increasingly used to proactively assess and improve the safety of complex health care processes such as drug administration and blood transfusion. A central feature of FMEA is that it is undertaken by a multidisciplinary team, and because it entails numerous analytical steps, it takes a series of several meetings. Composing a team of busy health care professionals with the appropriate knowledge, skill mix, and logistical availability for regular meetings is, however, a serious challenge. Despite this, information and advice on FMEA team assembly and meetings scheduling are scarce and diffuse and often presented without the accompanying rationale.
   Source: CINAHL

2. Three kinds of proactive risk analyses for health care.
   Author(s): Coles G, Fuller B, Nordquist K, Weissenberger S, Anderson L, DuBois B
   Citation: Joint Commission Journal on Quality & Patient Safety, 01 August 2010, vol./is. 36/8(365-375), 15537250
   Publication Date: 01 August 2010
   Abstract: Background: In health care, proactive risk assessment usually takes the form of Failure Mode and Effects Analysis (FMEA). An applied research firm, four community hospitals, and a community health care alliance in south-central Washington State--as members of the Tri-Cities Patient Safety Coalition (TCPSC)--used proactive risk assessment methods such as event tree analysis (ETA) and hazard identification to assess the risk of adverse events associated with a process or system.
   Source: CINAHL

3. Patient safety. Fall scene investigation: a proactive approach to fall prevention.
   Author(s): Boothe DL, Harris SA
   Citation: Nursing, 01 August 2010, vol./is. 40/8(67-67), 03604039
   Publication Date: 01 August 2010
   Source: CINAHL

4. Is failure to rescue really failure to communicate? Champion the move from reactive process to proactive model.
   Author(s): Classen JL

**Author(s):** Scott LD, Hofmeister N, Rogness N, Rogers AE

**Citation:** Nursing Research, 01 July 2010, vol./is. 59/4(250-258), 00296562

**Publication Date:** 01 July 2010

**Abstract:** BACKGROUND: Studies indicate that extended shifts worked by hospital staff nurses are associated with higher risk of errors. Long work hours coupled with insufficient sleep and fatigue are even riskier. Although other industries have developed programs to reduce fatigue-related errors and injury, fatigue countermeasures program for nurses (FCMPN) are lacking. OBJECTIVES: The objective of this study was to evaluate the feasibility of an FCMPN for improving sleep duration and quality while reducing daytime sleepiness and patient care errors. Selected sleep variables, errors and drowsy driving, were evaluated among hospital staff nurses (n = 47) before and after FCMPN implementation. METHOD: A one-group pretest-posttest repeated-measures approach was used. Participants provided data 2 weeks before the FCMPN, 4 weeks after receiving the intervention, and again at 3 months after intervention. RESULTS: Most of the nurses experienced poor sleep quality, severe daytime sleepiness, and decreased alertness at work and while operating a motor vehicle. After the FCMPN, significant improvements were noted in sleep duration, sleep quality, alertness, and error prevention. Although significant improvements were not found in daytime sleepiness scores, severity of daytime sleepiness appeared to decrease. Despite improvements in fatigue management, nurses reported feelings of guilt when engaging in FCMPN activities, especially strategic naps and relieved breaks. CONCLUSIONS: Initial findings support the feasibility of using an FCMPN for mitigating fatigue, improving sleep, and reducing errors among hospital staff nurses. In future investigations, the acceptability, efficacy, and effectiveness of FCMPNs can be examined.

**Source:** CINAHL

**Full Text:** Available in fulltext at Ovid

6. Using in situ simulation to identify and resolve latent environmental threats to patient safety: case study involving operational changes in a labor and delivery ward.

**Author(s):** Hamman WR, Beaudin-Seiler BM, Beaubien JM, Gullickson AM, Orizondo-Korotko K, Gross AC, Fuqua W, Lammers R

**Citation:** Quality Management in Health Care, 01 July 2010, vol./is. 19/3(226-230), 10638628

**Publication Date:** 01 July 2010

**Abstract:** Since the publication of "To Err Is Human" in 1999, health care professionals have looked to high-reliability industries such as aviation for guidance on improving system safety. One of the most widely adopted aviation-derived approaches is simulation-based team training, also known as crew resource management training. In the health care domain, crew resource management training often takes place in custom-built simulation laboratories that are designed to replicate operating rooms or labor and delivery rooms. Unlike these traditional crew resource management training programs, "in situ simulation" occurs on actual patient care units, involves actual health care team members, and uses actual organization processes to train and assess team performance. During the past 24 months, our research team has conducted nearly 40 in situ simulations. In this article, we present the results from 1 such simulation: a patient who experienced a difficult labor that
resulted in an emergency caesarian section and hysterectomy. During the simulation, a number of latent environmental threats to safety were identified. This article presents the latent threats and the steps that the hospital has taken to remedy them.

Source: CINAHL

7. **Quality matters. Risk management: it’s not just FMEA... failure made and effects analysis.**

Author(s): Krench T

Citation: Biomedical Instrumentation & Technology, 01 May 2010, vol./is. 44/3(242-244), 08998205

Publication Date: 01 May 2010

Source: CINAHL

8. **Medication errors in chemotherapy: incidence, types and involvement of patients in prevention. A review of the literature.**

Author(s): Schwappach DLB, Wernli M

Citation: European Journal of Cancer Care, 01 May 2010, vol./is. 19/3(285-292), 09615423

Publication Date: 01 May 2010

Abstract: Medication errors in chemotherapy occur frequently and have a high potential to cause considerable harm. The objective of this article is to review the literature of medication errors in chemotherapy, their incidences and characteristics, and to report on the growing evidence on involvement of patients in error prevention. Among all medication errors and adverse drug events, administration errors are common. Current developments in oncology, namely, increased outpatient treatment at ambulatory infusion units and the diffusion of oral chemotherapy to the outpatient setting, are likely to increase hazards since the process of preparing and administering the drug is often delegated to patients or their caregivers. While professional activities to error incidence reduction are effective and important, it has been increasingly acknowledged that patients often observe errors in the administration of drugs and can thus be a valuable resource in error prevention. However, patients need appropriate information, motivation and encouragement to act as ‘vigilant partners’. Examples of simple strategies to involve patients in their safety are presented. Evidence indicates that high self-efficacy and perceived effectiveness of the specific preventive actions increase likelihood of participation in error prevention. Clinicians play a crucial role in supporting and enabling the chemotherapy patient in approaching errors.

Source: CINAHL

9. **Prospective risk analysis prior to retrospective incident reporting and analysis as a means to enhance incident reporting behaviour: a quasi-experimental field study.**

Author(s): Kessels-Habraken M, De Jonge J, Van der Schaaf T, Rutte C

Citation: Social Science & Medicine, 01 May 2010, vol./is. 70/9(1309-1316), 02779536

Publication Date: 01 May 2010

Abstract: Hospitals can apply prospective and retrospective methods to reduce the large number of medical errors. Retrospective methods are used to identify errors after they occur and to facilitate learning. Prospective methods aim to determine, assess and minimise risks before incidents happen. This paper questions whether the order of implementation of those two methods influences the resultant impact on incident reporting behaviour. From November 2007 until June 2008, twelve wards of two Dutch general hospitals participated in a quasi-experimental reversed-treatment non-equivalent control group design. The six units of Hospital 1 first conducted a prospective analysis, after which a sophisticated incident reporting and analysis system was implemented. On the six units of Hospital 2 the two methods were implemented in reverse order. Data from the incident reporting and analysis system and from a questionnaire were used to assess between-hospital differences regarding the number of reported incidents, the spectrum of reported
incident types, and the profession of reporters. The results show that carrying out a prospective analysis first can improve incident reporting behaviour in terms of a wider spectrum of reported incident types and a larger proportion of incidents reported by doctors. However, the proposed order does not necessarily yield a larger number of reported incidents. This study fills an important gap in safety management research regarding the order of the implementation of prospective and retrospective methods, and contributes to literature on incident reporting. This research also builds on the network theory of social contagion. The results might indicate that health care employees can disseminate their risk perceptions through communication with their direct colleagues.

Source: CINAHL

10. Risk management: it's not just FMEA.

Author(s): Krenc T

Citation: Biomedical Instrumentation & Technology, May 2010, vol./is. 44/3(242-4), 0899-8205;0899-8205 (2010 May-Jun)

Publication Date: May 2010

Source: MEDLINE

11. Use of modeling to identify vulnerabilities to human error in laparoscopy.

Author(s): Funk KH 2nd, Bauer JD, Doolen TL, Telasha D, Nicolalde RJ, Reeber M, Yodpijit N, Long M

Citation: Journal of Minimally Invasive Gynecology, May 2010, vol./is. 17/3(311-20), 1553-4650;1553-4650 (2010 May-Jun)

Publication Date: May 2010

Abstract: This article describes an exercise to investigate the utility of modeling and human factors analysis in understanding surgical processes and their vulnerabilities to medical error. A formal method to identify error vulnerabilities was developed and applied to a test case of Veress needle insertion during closed laparoscopy. A team of 2 surgeons, a medical assistant, and 3 engineers used hierarchical task analysis and Integrated DEFinition language 0 (IDEFO) modeling to create rich models of the processes used in initial port creation. Using terminology from a standardized human performance database, detailed task descriptions were written for 4 tasks executed in the process of inserting the Veress needle. Key terms from the descriptions were used to extract from the database generic errors that could occur. Task descriptions with potential errors were translated back into surgical terminology. Referring to the process models and task descriptions, the team used a modified failure modes and effects analysis (FMEA) to consider each potential error for its probability of occurrence, its consequences if it should occur and be undetected, and its probability of detection. The resulting likely and consequential errors were prioritized for intervention. A literature-based validation study confirmed the significance of the top error vulnerabilities identified using the method. Ongoing work includes design and evaluation of procedures to correct the identified vulnerabilities and improvements to the modeling and vulnerability identification methods. Copyright 2010 AAGL. Published by Elsevier Inc. All rights reserved.

Source: MEDLINE

12. Risk management systems for health care and safety development on transplantation: a review and a proposal.

Author(s): Pretagostini R, Gabbrielli F, Fiaschetti P, Oliveti A, Cenci S, Peritore D, Stabile D

Citation: Transplantation Proceedings, May 2010, vol./is. 42/4(1014-6), 0041-1345;1873-2623 (2010 May)

Publication Date: May 2010

Abstract: Starting from the report on medical errors published in 1999 by the US Institute of Medicine, a number of different approaches to risk management have been developed for maximum risk reduction in health care activities. The health care authorities in many
countries have focused attention on patient safety, employing action research programs that are based on quite different principles. MATERIALS AND METHODS: We performed a systematic Medline research of the literature since 1999. The following key words were used, also combining boolean operators and medical subheading terms: "adverse event," "risk management," "error," and "governance." Studies published in the last 5 years were particularly classified in various groups: risk management in health care systems; safety in specific hospital activities; and health care institutions' official documents. Methods of action researches have been analysed and their characteristics compared. Their suitability for safety development in donation, retrieval, and transplantation processes were discussed in the reality of the Italian transplant network. DISCUSSION: Some action researches and studies were dedicated to entire national healthcare systems, whereas others focused on specific risks. Many research programs have undergone critical review in the literature. Retrospective analysis has centered on so-called sentinel events to particularly analyze only a minor portion of the organizational phenomena, which can be the origin of an adverse event, an incident, or an error. Sentinel events give useful information if they are studied in highly engineered and standardized organizations like laboratories or tissue establishments, but they show several limits in the analysis of organ donation, retrieval, and transplantation processes, which are characterized by prevailing human factors, with high intrinsic risk and variability. Thus, they are poorly effective to deliver sure elements to base safety management improvement programs, especially regarding multidisciplinary systems with high complexity. CONCLUSION: In organ transplantation, the possibility to increase safety seems greater using proactive research, mainly centred on organizational processes together with retrospective analyses but not limited to sentinel event reports. Copyright (c) 2010. Published by Elsevier Inc.

Source: MEDLINE


Author(s): Schwappach DL

Citation: Medical Care Research & Review, 01 April 2010, vol./is. 67/2(119-148), 10775587

Publication Date: 01 April 2010

Abstract: Several initiatives promote patient involvement in error prevention, but little is known about its feasibility and effectiveness. A systematic review was conducted on the evidence of patients' attitudes toward engagement in error prevention and the effectiveness of efforts to increase patient participation. Database searches yielded 3,840 candidate articles, of which 21 studies fulfilled the inclusion criteria. Patients share a positive attitude about engaging in their safety at a general level, but their intentions and actual behaviors vary considerably. Studies applied theories of planned behavior and indicate that self-efficacy, preventability of incidents, and effectiveness of actions seem to be central to patients' intention to engage in error prevention. Rigorous evaluations of major educational campaigns are lacking. Interventions embedded within clinical settings have been effective to some extent. Evidence suggests that involvement in safety may be successful if interventions promote complex behavioral change and are sensitively implemented in health care settings.

Source: CINAHL

14. Snapshots of nurses on board -- error prevention and management.

Author(s): Hetman D, Lewis M, McElwee J

Citation: Texas Board of Nursing Bulletin, 01 April 2010, vol./is. 41/2(4-5),

Publication Date: 01 April 2010

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

15. Human factors in clinical shift handover communication: review of reliability and resilience principles applied to change of shift report.
Abstract: It is rare that the skill of clinical handover (change of shift report, CoSR) is formally taught or evaluated in any of the health professions, much less evaluated (in situ) in multidisciplinary care settings. Clinical handover is complex, cognitively taxing and clinical risks are linked to lack of clarity. The research is clear that there is room to improve and that it is a risky time for patients. What is unclear is what varied anticipatory techniques healthcare practitioners already use to develop their intuition and foresight so that they can prospectively manage and cope with ambiguity and uncertainty, and how they use their discretionary space in practice. Both reliability and resilience principles are important to develop effective CoSR. Handoff strategies from higher reliability (HR) industries indicate that the three most important features of effective handovers are:

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

16. Random safety auditing, root cause analysis, failure mode and effects analysis.

Author(s): Ursprung R, Gray J

Abstract: Improving quality and safety in health care is a major concern for health care providers, the general public, and policy makers. Errors and quality issues are leading causes of morbidity and mortality across the health care industry. There is evidence that patients in the neonatal intensive care unit (NICU) are at high risk for serious medical errors. To facilitate compliance with safe practices, many institutions have established quality-assurance monitoring procedures. Three techniques that have been found useful in the health care setting are failure mode and effects analysis, root cause analysis, and random safety auditing. When used together, these techniques are effective tools for system analysis and redesign focused on providing safe delivery of care in the complex NICU system.

Source: CINAHL

17. Improving the organ procurement and transplantation process: using FMEA to prevent communication failures.

Abstract: A well-defined incident review committee may prevent losses, identify areas for corrective action, and promote overall safety in an organization. A multidisciplinary committee will involve employees in the safety process and heighten safety awareness. Reviewing injuries, incidents, occupational illnesses, and workers’ compensation claims assists in root cause analysis and enables an organization to be proactive in preventing further employee incidents and injuries.

Source: CINAHL

18. Establishing an incident review committee.

Abstract: It is rare that the skill of clinical handover (change of shift report, CoSR) is formally taught or evaluated in any of the health professions, much less evaluated (in situ) in multidisciplinary care settings. Clinical handover is complex, cognitively taxing and clinical risks are linked to lack of clarity. The research is clear that there is room to improve and that it is a risky time for patients. What is unclear is what varied anticipatory techniques healthcare practitioners already use to develop their intuition and foresight so that they can prospectively manage and cope with ambiguity and uncertainty, and how they use their discretionary space in practice. Both reliability and resilience principles are important to develop effective CoSR. Handoff strategies from higher reliability (HR) industries indicate that the three most important features of effective handovers are:


**Citation:** Radiotherapy & Oncology, March 2010, vol./is. 94/3(367-74), 0167-8140;1879-0887 (2010 Mar)

**Publication Date:** March 2010

**Abstract:** INTRODUCTION: The radiation oncology process along with its unique therapeutic properties is also potentially dangerous for the patient, and thus it should be delivered under a systematic risk control. To this aim incident reporting and analysis are not sufficient for assuring patient safety and proactive risk assessment should also be implemented. The paper accounts for some methodological solutions, lessons learned and opportunities for improvement, starting from the systematic application of the failure mode effects and criticality analysis (FMECA) technique to the radiotherapy process of an Italian hospital. MATERIALS AND METHODS: The analysis, performed by a working group made of experts of the radiotherapy unit, was organised into the following steps: (1) complete and detailed analysis of the process (integration definition for function modelling); (2) identification of possible failure modes (FM) of the process, representing sources of adverse events for the patient; (3) qualitative risk assessment of FMs, aimed at identifying priorities of intervention; (4) identification and planning of corrective actions. RESULTS: Organisational and procedural corrective measures were implemented; a set of safety indexes for the process was integrated within the traditional quality assurance indicators measured by the unit. A strong commitment of all the professionals involved was observed and the study revealed to be a powerful "tool" for dissemination of patient safety culture. CONCLUSION: The feasibility of FMECA in fostering radiotherapy safety was proven; nevertheless, some lessons learned as well as weaknesses of current practices in risk management open to future research for the integration of retrospective methods (e.g. incident reporting or root cause analysis) and risk assessment. (c) 2010 Elsevier Ireland Ltd. All rights reserved.

20. Use of rapid-cycle Failure Mode and Effects Analysis (FMEA) and simulation to safely transition Hematopoietic Stem Cell (HSC) processing services

**Author(s):** Halverson T., Barnard C., Collins J., Duerst R.

**Citation:** Biology of Blood and Marrow Transplantation, February 2010, vol./is. 16/2 SUPPL 2(S320-S321), 1083-8791 (February 2010)

**Publication Date:** February 2010

**Abstract:** When Children's Memorial Hospital (CMH) closed their he-matopoietic stem cell (HSC) processing laboratory and contracted with the affiliated Northwestern Memorial Hospital for processing services, it required substantial practice changes and introduced potential safety risks. The 3-month transition timeline required the transplant program to make optimal use of time and resources. Rapid-cycle FMEA followed by simulation was used to evaluate, refine and test the process changes required for this transition. Failure mode and effects analysis (FMEA) is a systems-oriented, prospective approach to process improvement and risk reduction. FMEA identifies potential process fall-points, assesses their level of risk, and helps prioritize response with the goal of reducing error occurrence and/or mitigating harm. Traditional FMEA is effective but time-intensive. The rapid-cycle adaptation focuses on efficient use of FMEA meeting time and reduces clinician stakeholder's involvement to two meetings (see table 1). To keep the scope manageable, two rapid-cycle FMEAs were conducted. An inter-facility FMEA focused on information and cell hand-off, and included representation from the hospital, processing facility, and courier company. A second, intra-facility FMEA focused on process changes occurring within the clinical program. The joint FMEA sessions identified 51 potential failure modes. Failure
modes were scored for severity, frequency and detectability; those identified as high or moderate severity were corrected. The two items identified as highest risk were (1) incomplete or inaccurate chain of custody documentation and (2) incomplete information hand-off between the two institutions. These fail-points were part of a new process step that required hand-off of cells from CMH to the outside processing facility via courier. The process was revised using recommendations developed during the FMEAs, then tested before the move using simulation. Sequential use of rapid-cycle FMEA followed by simulation allowed the stem cell transplant program to 'design out' potential failures while still adhering to the transition timeline. Clinician assessment of the FMEA process using a 5-point Likert scale found that participants felt the 'rapid-cycle' model was effective and efficient. Post-transition assessment of patient engraftment, graft failure, and safety event reports provide initial confirmation that product and patient safety were maintained during this transition (Table presented).

Source: EMBASE

21. If only....: Failed, missed and absent error recovery opportunities in medication errors.

Author(s): Habraken MMP, van der Schaaf TW

Citation: Quality & Safety in Health Care, 01 February 2010, vol./is. 19/1(37-41), 14753898

Publication Date: 01 February 2010

Abstract: Background Systematic analysis of error recovery can provide hospitals with important information to help them improve their ability to detect and correct errors. Because errors will always crop up and 100% safety can never be achieved, hospitals should be able to prevent patient harm by timely and effective error recovery. Methods In this study, failed, missed and absent recovery opportunities were identified in 52 medication errors which all resulted in severe patient harm or patient death. For all identified recovery opportunities, the underlying failure factors were identified and classified according to the Eindhoven classification model. Those failure factors represent negative influences on error recovery. Results The number of recovery opportunities per error ranged from 0 to 11; on average, 2.4 recovery opportunities were identified. Of 127 identified recovery opportunities, 94 (74%) were planned and 33 (26%) were unplanned or ad hoc. Most failure factors underlying the planned recovery opportunities were organisational failure factors; most failure factors underlying the unplanned recovery opportunities were human failure factors. Conclusions From this study, it can be concluded that actual accidents can be used as an alternative data source to near misses for the analysis and understanding of error recovery. By using both sources, hospitals can enhance their resilience by reinforcing the positive influences on error recovery as well as reducing the negative ones. Together with traditional error reduction methodologies, which only concentrate on eliminating failure factors, hospitals thus have numerous opportunities to improve patient safety.

Source: CINAHL

Full Text: Available in fulltext at Highwire Press

22. Clinical risk analysis with failure mode and effect analysis (FMEA) model in a dialysis unit.


Citation: Journal of Nephrology, January 2010, vol./is. 23/1(111-8), 1121-8428;1121-8428 (2010 Jan-Feb)

Publication Date: January 2010

Abstract: BACKGROUND: The aim of clinical risk management is to improve the quality of care provided by health care organizations and to assure patients' safety. Failure mode and effect analysis (FMEA) is a tool employed for clinical risk reduction. We applied FMEA to chronic hemodialysis outpatients. METHODS: FMEA steps: (i) process study: we recorded phases and activities. (ii) Hazard analysis: we listed activity-related failure modes and their effects; described control measures; assigned severity, occurrence and detection scores
for each failure mode and calculated the risk priority numbers (RPNs) by multiplying the 3 scores. Total RPN is calculated by adding single failure mode RPN. (iii) Planning: we performed a RPNs prioritization on a priority matrix taking into account the 3 scores, and we analyzed failure modes causes, made recommendations and planned new control measures. (iv) Monitoring: after failure mode elimination or reduction, we compared the resulting RPN with the previous one. RESULTS: Our failure modes with the highest RPN came from communication and organization problems. Two tools have been created to ameliorate information flow: “dialysis agenda” software and nursing datasheets. We scheduled nephrological examinations, and we changed both medical and nursing organization. Total RPN value decreased from 892 to 815 (8.6%) after reorganization. CONCLUSIONS: Employing FMEA, we worked on a few critical activities, and we reduced patients’ clinical risk. A priority matrix also takes into account the weight of the control measures: we believe this evaluation is quick, because of simple priority selection, and that it decreases action times.

Source: MEDLINE

23. Integration of prospective and retrospective methods for risk analysis in hospitals.

Author(s): Kessels-Habraken M, Van der Schaaf T, De Jonge J, Rutte C, Kerkvliet K

Citation: International Journal for Quality in Health Care, December 2009, vol./is. 21/6(427-32), 1353-4505;1464-3677 (2009 Dec)

Publication Date: December 2009

Abstract: OBJECTIVE: To explore how hospital management could gain a better picture of risks to support them in setting priorities for patient safety. METHODS: and SETTING: This study deals with the combined application of prospective and retrospective methods for risk analysis on two units of a Dutch general hospital. In the prospective analyses, employees identified and assessed possible risks in selected processes. In the retrospective analyses, incidents were reported by employees and subsequently investigated. The methods were integrated by using information from retrospective incident reports for prospective risk identification and assessment, and by matching their categorization schemes. Two evaluation forms provided insight into the perceived usefulness of the methods and their integration. RESULTS: and CONCLUSIONS: For both units, the prospective and retrospective analyses resulted in divergent overviews of risks in terms of nature and magnitude, which suggests that one or both methods were subject to biases. Findings from the evaluation forms showed that both methods were perceived as useful and that triangulation provided additional insight into risks. Due to the convergent evidence, triangulation of prospective and retrospective methods can provide hospital management and frontline staff with a more complete and less biased picture of risks. An integrative approach might be advantageous in terms of efficiency of analysis, setting priorities for patient safety and improving the methods themselves.

Source: MEDLINE

24. Risk analysis by FMEA as an element of analytical validation.

Author(s): van Leeuwen JF, Nauta MJ, de Kaste D, Odekerken-Rombouts YM, Oldenhof MT, Vredenbregt MJ, Barends DM

Citation: Journal of Pharmaceutical & Biomedical Analysis, December 2009, vol./is. 50/5(1085-7), 0731-7085;1873-264X (2009 Dec 5)

Publication Date: December 2009

Abstract: We subjected a Near-Infrared (NIR) analytical procedure used for screening drugs on authenticity to a Failure Mode and Effects Analysis (FMEA), including technical risks as well as risks related to human failure. An FMEA team broke down the NIR analytical method into process steps and identified possible failure modes for each step. Each failure mode was ranked on estimated frequency of occurrence (O), probability that the failure would remain undetected later in the process (D) and severity (S), each on a scale of 1-10. Human errors turned out to be the most common cause of failure modes. Failure risks were calculated by Risk Priority Numbers (RPNs)=O x D x S. Failure modes with the highest RPN scores were subjected to corrective actions and the FMEA was repeated, showing reductions in RPN scores and resulting in improvement indices up to
5.0. We recommend risk analysis as an addition to the usual analytical validation, as the FMEA enabled us to detect previously unidentified risks.

Source: MEDLINE

25. **On the complex definition of risk: A systems-based approach**

**Author(s):** Haimes Y.Y.

**Citation:** Risk Analysis, December 2009, vol./is. 29/12(1647-1654), 0272-4332;1539-6924 (December 2009)

**Publication Date:** December 2009

**Abstract:** The premise of this article is that risk to a system, as well as its vulnerability and resilience, can be understood, defined, and quantified most effectively through a systems-based philosophical and methodological approach, and by recognizing the central role of the system states in this process. A universally agreed-upon definition of risk has been difficult to develop; one reason is that the concept is multidimensional and nuanced. It requires an understanding that risk to a system is inherently and fundamentally a function of the initiating event, the states of the system and of its environment, and the time frame. In defining risk, this article posits that: (a) the performance capabilities of a system are a function of its state vector; (b) a system's vulnerability and resilience vectors are each a function of the input (e.g., initiating event), its time of occurrence, and the states of the system; (c) the consequences are a function of the specificity and time of the event, the vector of the states, the vulnerability, and the resilience of the system; (d) the states of a system are time-dependent and commonly fraught with variability uncertainties and knowledge uncertainties; and (e) risk is a measure of the probability and severity of consequences. The above implies that modeling must evaluate consequences for each risk scenario as functions of the threat (initiating event), the vulnerability and resilience of the system, and the time of the event. This fundamentally complex modeling and analysis process cannot be performed correctly and effectively without relying on the states of the system being studied. 2009 Society for Risk Analysis.

Source: EMBASE

26. **Prospective evaluation of a continuous monitoring and quality-improvement system for reducing adverse neonatal outcomes**

**Author(s):** Sibanda T., Sibanda N., Siassakos D., Sivananthan S., Robinson Z., Winter C., Draycott T.J.

**Citation:** American Journal of Obstetrics and Gynecology, November 2009, vol./is. 201/5(480.e1-480.e6), 0002-9378 (November 2009)

**Publication Date:** November 2009

**Abstract:** Objective: Our objective was to evaluate a prospective monitoring and quality improvement system for studying trends in the rates of an adverse neonatal outcome, the low Apgar scores (Apgar score <7). Study Design: A cumulative sum (CUSUM) chart-based system was used to monitor the rate of low Apgar scores over 2 years. Root cause analysis (RCA) was used to investigate for causes of periods of increased low Apgar score rates. Results: A period of deteriorated outcome (increased rates of low Apgar) occurred in August 2006. RCA identified deficiencies in cardiotocograph education, which were addressed by targeted training and mentoring. Prompt resolution followed, with the rates returning to baseline and staying within acceptable limits through to the end of evaluation in December 2007. Conclusion: Prospective and continuous monitoring of clinical outcomes using the CUSUM chart method is feasible and may be beneficial. Early detection of an adverse trend allows for timely corrective action, and may lead to overall improvements in performance. 2009 Mosby, Inc. All rights reserved.

Source: EMBASE

27. **Evaluating team member perceptions can help guide future failure mode and effects analysis activities.**

**Citation:** AHRQ Research Activities, 01 November 2009, vol./is./351(7-7), 15370224
28. Clinical rounds. Error prevention: are your facility’s leaders committed to safety?

Citation: Nursing, 01 November 2009, vol./is. 39/11(21-21), 03604039

Abstract: Absent an infinitesimal percentage, most Americans seek health care services due to a legitimate health issue. Fundamental within this relationship is the understanding that health care professionals will do everything within their power and expertise to alleviate the suffering of each patient they treat. Unfortunately, preventable medical errors do occur, and the innocent patient is left to suffer. In 1999, the Institute of Medicine released To ERR Is Human: Building A Safer Health System, the first mainstream publication calling for a change in the culture of health care and the eradication of preventable medical errors. In the 10 years since its publication, federal and state governments and agencies have been proactive in attempting to meet the recommendations originally proposed in To ERR Is Human. This article will review what has been accomplished in this time frame.

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

29. Clearing the err.

Author(s): Plawecki LH, Amrhein DW

Citation: Journal of Gerontological Nursing, 01 November 2009, vol./is. 35/11(26-29), 00989134

Abstract: Absent an infinitesimal percentage, most Americans seek health care services due to a legitimate health issue. Fundamental within this relationship is the understanding that health care professionals will do everything within their power and expertise to alleviate the suffering of each patient they treat. Unfortunately, preventable medical errors do occur, and the innocent patient is left to suffer. In 1999, the Institute of Medicine released To ERR Is Human: Building A Safer Health System, the first mainstream publication calling for a change in the culture of health care and the eradication of preventable medical errors. In the 10 years since its publication, federal and state governments and agencies have been proactive in attempting to meet the recommendations originally proposed in To ERR Is Human. This article will review what has been accomplished in this time frame.

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

30. Patient safety action group promotes proactive safety culture.

Author(s): Williams JS

Citation: Biomedical Instrumentation & Technology, 01 September 2009, vol./is. 43/5(380-382), 08998205


Author(s): Crossman M

Citation: Journal of Emergency Primary Health Care, 01 September 2009, vol./is. 7/3(1-8), 14474999

Abstract: Medication error has been highlighted as a significant issue within the health care industry and paramedic practice is not immune to this concerning problem. The patient, their family, the paramedic and the health care system are all affected by the outcomes of medication error. As the scope of paramedic practice increases so too does the possibility of medication error, and for this reason a proactive approach must be developed. Central to this approach should be a reporting system for medication errors that is without fear of reprisal, within which environmental and system errors are highlighted and dealt with. Additionally, paramedics must continually develop and be aware of their own
32. Enhancing patient safety in the trauma/surgical intensive care unit.

**Author(s):** Stahl K, Palileo A, Schulman CI, Wilson K, Augenstein J, Kiffin C, McKenney M

**Citation:** Journal of Trauma-Injury Infection & Critical Care, September 2009, vol./is. 67/3(430-3; discussion 433-5), 0022-5282;1529-8809 (2009 Sep)

**Publication Date:** September 2009

**Abstract:** BACKGROUND: Preventable deaths due to errors in trauma patients with otherwise survivable injuries account for up to 10% of fatalities in Level I trauma centers, 50% of these errors occur in the intensive care unit (ICU). The root cause of 67% of the Joint Commission sentinel events is communication errors. The objective is (1) to study how critical information degrades and how it is lost over 24 hours and (2) to determine whether a structured checklist for ICU handoffs prevents information loss. METHODS: Prospective cohort study of trauma and surgical ICU teams observed with and without use of the checklist. An observational period (control group) was followed by a didactic session on the science and use of a checklist (study group), which was used for patient management and handoffs. Information was tracked for a 24-hour period and all handoffs. Comparisons use chi or Fisher's exact test and a p value <0.05 was defined as significant. RESULTS: Three hundred and thirty-two patient ICU days were observed (119 control, 213 study) and 689 patient care items (303 control, 386 study) were followed. Seventy-five (10.9%) items were lost over 24 hours; 61 of 303 (20.1%) without checklist and 14 of 386 (3.6%) with checklist (p < 0.0001). Critical laboratory values and test results were the most frequent lost items (36.1% control vs. 4.5% study p < 0.0001). Six of 75 (8.1%) items were correctly ordered but not carried out by ICU nursing staff—all caught and corrected with checklist use. CONCLUSION: Critical information is degraded over 24 hours in the ICU. A structured checklist significantly reduces patient errors due to lost information and communication lapses between trauma ICU team members at handoffs of care.

**Source:** MEDLINE

Full Text: Available in fulltext at Ovid

33. Identifying vulnerabilities in communication in the emergency department.

**Author(s):** Redfern E, Brown R, Vincent CA

**Citation:** Emergency Medicine Journal, September 2009, vol./is. 26/9(653-7), 1472-0205;1472-0213 (2009 Sep)

**Publication Date:** September 2009

**Abstract:** BACKGROUND: Communication in the emergency department (ED) is a complex process where failure can lead to poor patient care, loss of information, delays and inefficiency. AIM: To describe the investigation of the communication processes within the ED, identify points of vulnerability and guide improvement strategies. METHODS: The Failure Mode Effects Analysis (FMEA) technique was used to examine the process of communication between healthcare professionals involved in the care of individual patients during the time they spent in the ED. RESULTS: A minimum of 19 communication events occurred per patient; all of these events were found to have failure modes which could compromise patient safety. CONCLUSION: The communication process is unduly complex and the potential for breakdowns in communication is significant. There are multiple opportunities for error which may impact on patient care. Use of the FMEA allows members of the multidisciplinary team to uncover the problems within the system and to design countermeasures to improve safety and efficiency.

**Source:** MEDLINE

Full Text: Available in fulltext at Highwire Press
34. **Radiology failure mode and effect analysis: what is it?**

**Author(s):** Abujudeh HH, Kaewlai R

**Citation:** Radiology, August 2009, vol./is. 252/2(544-50), 0033-8419;1527-1315 (2009 Aug)

**Publication Date:** August 2009

**Abstract:** Proactive prevention of medical errors is critical in medical practice. Root cause analysis (RCA) is a conventional method used to deal with errors that result in an adverse event. However, RCA has several limitations. An analytic method for health care risk management, health care failure mode and effect analysis (FMEA), has been introduced relatively recently. Health care FMEA combines several existing analytic approaches into one simple tool with which to analyze a particular health care process, determine the risks associated with it, and develop corrective actions and outcome measures. The authors provide a brief history of health care FMEA, describe its validation process, and relate their experience with its use in a radiology department.

**Source:** MEDLINE

**Full Text:**
Available in fulltext at [Highwire Press](#)

35. **Resilience in healthcare and clinical handover.**

**Author(s):** Jeffcott SA, Ibrahim JE, Cameron PA

**Citation:** Quality & Safety in Health Care, 01 August 2009, vol./is. 18/4(256-260), 14753898

**Publication Date:** 01 August 2009

**Abstract:** BACKGROUND: Understanding and applying human factors in healthcare provides significant opportunities for improving patient safety. A key human factors concept is "resilience," which investigates how individuals, teams and organisations monitor, adapt to and act on failures in high-risk situations. Although it is a new concept to healthcare, it is well accepted in other high-risk industries. Resilience moves the focus away from "What went wrong?" to "Why does it go right?", that is, it moves from simplistic reactions to error making toward valuing a proactive focus on error recovery. Resilience is a better match for healthcare settings than the principles for high reliability because it more effectively addresses the unique complexities of healthcare. OBJECTIVE: This article introduces the concept of resilience and how it applies to healthcare using clinical handover as an exemplar. Clinical handover and the risks it presents to patient safety are used to illustrate the key principles of resilience to healthcare professionals. The overall aim of this paper is to motivate research which focuses on understanding how frontline staff "fix" mistakes. Researching resilience in healthcare needs to focus on developing measurement, improvement and prediction tools. CONCLUSION: Resilience can benefit patient safety efforts because it represents a change in emphasis from a traditional, reactive focus on errors to seeing humans as a defence against failure. Translating this concept into practice requires identifying and testing mechanisms for measuring and building resilience within complex healthcare processes.

**Source:** CINAHL

**Full Text:**
Available in fulltext at [Highwire Press](#)

36. **Failure mode and effect analysis: application in chemotherapy [Chinese].**

**Author(s):** Chuang C, Chuang S

**Citation:** Journal of Nursing, 01 August 2009, vol./is. 56/4(62-70), 0047262X

**Publication Date:** 01 August 2009

**Abstract:** Medical institutions are increasingly concerned about ensuring the safety of patients under their care. Failure mode and effect analysis (FMEA) is a qualitative
approach based on a proactive process. Strongly promoted by the Joint Commission Accredited of Health Organization (JCAHO) since 2002, FMEA has since been adopted and widely practiced in healthcare organizations to assess and analyze clinical error events. FMEA has proven to be an effective method of minimizing errors in both manufacturing and healthcare industries. It predicts failure points in systems and allows an organization to address proactively the causes of problems and prioritize improvement strategies. The application of FMEA in chemotherapy at our department identified three main failure points: (1) inappropriate chemotherapy standard operating procedures (SOPs), (2) communication barriers, and (3) insufficient training of nurses. The application of FMEA in chemotherapy is expected to enhance the sensitivity and proactive abilities of healthcare practitioners during potentially risky situations as well as to improve levels of patient care safety.

Source: CINAHL

Full Text:

Available in fulltext at EBSCO Host

37. Prospective risk analysis of health care processes: a systematic evaluation of the use of HFMEA in Dutch health care.

Author(s): Habraken MMP, Van der Schaaf TW, Leistikow IP, Reijnders-Thijssen PMJ

Citation: Ergonomics, 01 July 2009, vol./is. 52/7(809-819), 00140139

Publication Date: 01 July 2009

Abstract: The aim of this study was to evaluate the use of Healthcare Failure Mode and Effect Analysis (HFMEA) in Dutch health care by means of user feedback. Thirteen HFMEA analyses of various health care processes were successfully concluded and on average took 69 person-hours (excluding reporting). These results show that HFMEA can successfully be applied in Dutch health care. However, the user feedback also uncovered several perceived drawbacks, such as the fact that HFMEA is very time-consuming and that, particularly, the risk assessment part of HFMEA is difficult to carry out. Moreover, a lack of guidance with regard to the identification of failure mode causes and effective actions might influence the quality of the outcomes of an HFMEA analysis. Several suggestions are put forward to improve the perceived utility and acceptance of HFMEA. Nevertheless, future research is necessary to evaluate the actual effects of these recommendations. Error modelling and risk analysis, and their contribution to explaining human performance in socio-technical systems, traditionally belong to the field of ergonomics. The user feedback on HFMEA and the suggestions that are put forward may also be useful for (H)FMEA and hazard analysis and critical control point applications in sectors other than health care.

Source: CINAHL

38. A review on the impact of systematic safety processes for the control of error in medicine.

Author(s): Damiani G, Pinnarelli L, Scopelliti L, Sommella L, Ricciardi W

Citation: Medical Science Monitor, July 2009, vol./is. 15/7(RA157-66), 1234-1010;1643-3750 (2009 Jul)

Publication Date: July 2009

Abstract: Among risk management initiatives, systematic safety processes (SSPs), implemented within health care organizations, could be useful in managing patient safety. The purpose of this article is to conduct a systematic literature review assessing the impact of SSPs on different error categories. Articles that investigated the relation between SSPs, clinical and organizational outcomes were selected from scientific literature. The proportion and impact of proactive and reactive SSPs were calculated among five error categories. Proactive interventions impacted more positively than reactive ones in reducing medication errors, technical errors and errors due to personnel. PSSPs and RSSPs had similar effects in reducing errors related to a wrong procedure. A single reactive study influenced non-positively communication errors. A relevant prevalence of the impact of proactive processes on reactive ones is reported. This article can help decision makers in identifying
which SSP can be the most appropriate against specific error categories.

Source: MEDLINE

39. Is failure mode and effect analysis reliable?

Author(s): Shebl NA, Franklin BD, Barber N

Citation: Journal of patient safety, June 2009, vol./is. 5/2(86-94), 1549-8417;1549-8425 (2009 Jun)

Publication Date: June 2009

Abstract: OBJECTIVE: To test the reliability of failure mode and effect analysis (FMEA) within a hospital setting in the United Kingdom. METHODS: Two multidisciplinary groups were recruited, within 2 hospitals from the same National Health Services (NHS) Trust, to conduct separate FMEAs in parallel on the same topic. Each group conducted an FMEA for the use of vancomycin and gentamicin. The groups followed the basic FMEA steps, which included mapping the process of care; identifying potential failures within the process; determining the severity, probability, and detectability scores for these failures; and finally making recommendations to decrease these failures. RESULTS: Both groups described the process with 5 major steps: starting vancomycin or gentamicin, prescribing the antibiotics, monitoring the antibiotics, and finally stopping or continuing the treatment. Although each group identified 50 failures, only 17 (17%) of them were common to both. Furthermore, the severity, detectability, and risk priority number scores for both groups differed markedly resulting in their failures being prioritized differently. CONCLUSIONS: Failure mode and effect analysis is a useful tool to aid multidisciplinary groups in understanding a process of care and identifying errors that may occur. However, the results of this study call into question the reliability of the FMEA process that was tested. The 2 groups identified similar steps in the process of care but different potential failures with very different risk priority numbers. Such discrepancies make it impossible to identify reliably those failures that should be prioritized and thus where money, time, and effort should be allocated to avoid these failures. Health care organizations should not solely depend on FMEA findings to improve patient safety.

Source: MEDLINE

40. FMEA: a model for reducing medical errors.

Author(s): Chiozza ML, Ponzetti C

Citation: Clinica Chimica Acta, June 2009, vol./is. 404/1(75-8), 0009-8981;1873-3492 (2009 Jun)

Publication Date: June 2009

Abstract: Patient safety is a management issue, in view of the fact that clinical risk management has become an important part of hospital management. Failure Mode and Effect Analysis (FMEA) is a proactive technique for error detection and reduction, firstly introduced within the aerospace industry in the 1960s. Early applications in the health care industry dating back to the 1990s included critical systems in the development and manufacture of drugs and in the prevention of medication errors in hospitals. In 2008, the Technical Committee of the International Organization for Standardization (ISO), licensed a technical specification for medical laboratories suggesting FMEA as a method for prospective risk analysis of high-risk processes. Here we describe the main steps of the FMEA process and review data available on the application of this technique to laboratory medicine. A significant reduction of the risk priority number (RPN) was obtained when applying FMEA to blood cross-matching, to clinical chemistry analytes, as well as to point-of-care testing (POCT).

Source: MEDLINE

41. Safety Walkround as a risk assessment tool: the first Italian experience.

Author(s): Levati A, Amato S, Adrario E, De Flaviis C, Delia C, Milesi S, Petrini F, Bevilacqua L
Abstract: In 2007 the Study Group "Clinical Risk Management" of the Italian Society of Anaesthesia and Intensive Care Unit (SIAARTI) performed a multicentric study in Intensive Care Unit (ICU) to assess the feasibility and efficacy of the Safety WalkRound (SWR) as a tool for the risk assessment. As the environment and organization of ICU are more complex than anaesthesia ones, mainly due to the severity of patients, high number of involved healthcare givers and different kinds of procedures, the Study Group decided that a check list is not fit for ICU and, after a careful review of the literature, chose to test the Safety WalkRound in four Italian General ICUs. The SWR was born in 2003 when Frankel plans a structured interview of 15 questions (about 50% open) to collect operators' opinion about rate and type of errors, near misses, communication, problems regarding the report of adverse events and suggestions to increase patient safety. Consequently SWR is a tool of risk assessment alternative to the Incident Reporting which is marked by a diffuse underreporting of operators. Although the SWR is a new tool not validated in Italian language neither published in Italy on PubMed journals, the Study Group has decided that it might be fit for the organization of Italian Healthcare System. A back translation of the validated model of Joint Commission was provided and the translated version has been lightly changed to be employed in hospitals with and without Incident Reporting. The questions have been changed or introduced on the basis of the organization vulnerabilities detected with observational techniques or Focus Group. The interview performed in Italy contains 16 questions classified into five groups: a) error, b) error prevention, c) communication, teamwork and leadership, d) error discussion and e) relationship with patients and their families. The answers collected have been analyzed to detect the vulnerabilities in the organizations and specify the improvements to implement in every ICU. A statistical analysis was performed to verify the correlation between the answers collected and the results of the other techniques of risk assessment previously used (observations and Focus Group). The value of k Pearson found (mean value 0.976) has demonstrated this correlation and the efficacy of SWR in detecting system vulnerabilities already found with the other assessment techniques. The value of a Cronbach (mean value 0.798) has demonstrated an internal consistency reliability. The results of this study have demonstrated that the Italian translation is fit for the model by Frankel and makes available a lot of information useful to improve patient safety. The study has demonstrated the sensibility, efficacy and efficiency of this tool in detecting the vulnerabilities in every ICU of the four ones. SWR is marked by feasibility, high compliance of operators and low costs; besides increases safety culture in the staff and demonstrating.

Source: MEDLINE

42. Human error theory: relevance to nurse management.

Author(s): Armitage G

Citation: Journal of Nursing Management, 01 March 2009, vol./is. 17/2(193-202), 09660429

Publication Date: 01 March 2009

Abstract: Aim Describe, discuss and critically appraise human error theory and consider its relevance for nurse managers. Background Healthcare errors are a persistent threat to patient safety. Effective risk management and clinical governance depends on understanding the nature of error. Evaluation This paper draws upon a wide literature from published works, largely from the field of cognitive psychology and human factors. Although the content of this paper is pertinent to any healthcare professional, it is written primarily for nurse managers. Key issues Error is inevitable. Causation is often attributed to individuals, yet causation in complex environments such as healthcare is predominantly multi-factorial. Individual performance is affected by the tendency to develop prepacked solutions and attention deficits, which can in turn be related to local conditions and systems or latent failures. Blame is often inappropriate. Defences should be constructed in the light of these considerations and to promote error wisdom and organizational resilience. Conclusion and implications Managing and learning from error is seen as a priority in the British National Health Service (NHS), this can be better achieved with an understanding of the roots, nature and consequences of error. Such an understanding can provide a helpful framework
for a range of risk management activities.

**Source:** CINAHL

**Full Text:**
Available in fulltext at EBSCO Host

43. **Using foresight in safe nursing care.**

**Author(s):** Boakes E

**Citation:** Journal of Nursing Management, 01 March 2009, vol./is. 17/2(212-217), 09660429

**Publication Date:** 01 March 2009

**Abstract:** Aim This paper describes the importance of prospective risk analysis in healthcare, the development of the foresight training package and its underlying theory. Background Many high-reliability industries formally train staff in prospective risk analysis. Although there are tools to retrospectively analyse incidents in healthcare and although many staff are error aware there is no training to formalize this learning. Key issues Staff already use error awareness and often intervene to prevent patient harm resulting in many 'no harm' incidents. The National Patient Safety Agency has developed the foresight training package to broaden healthcare professionals' understanding of the many factors that can combine to contribute to an incident occurring, and to encourage shared learning. For management teams, this broader understanding will assist them in prospective risk assessment of the staff they manage enabling them to be proactive in minimizing risk. The training tool is based on Reason's 'three bucket' model. Evaluation Throughout every stage in the development of the foresight training package the concept and materials were tested with front-line staff. Formal evaluation of the published package is due to be completed by May 2009.

**Source:** CINAHL

**Full Text:**
Available in fulltext at EBSCO Host

44. **A practical framework for patient care teams to prospectively identify and mitigate clinical hazards.**

**Author(s):** Herzer KR, Rodriguez-Paz MJ, Doyle PA, Flint PW, Feller-Kopman DJ, Herman J, Bristow RE, Cover R, Pronovost PJ, Mark LJ

**Citation:** Joint Commission Journal on Quality & Patient Safety, 01 February 2009, vol./is. 35/2(72-81), 15537250

**Publication Date:** 01 February 2009

**Abstract:** Background: One of the greatest challenges facing both practitioners and risk managers is the identification of previously unknown clinical hazards and defects. With the rapid proliferation of new health care services, unknown hazards may propagate as new therapies are integrated into the existing health care system. The main goal of risk analysis is to make these hazards visible by proactively searching and probing the system. Yet, a comprehensive approach by which to safely integrate new therapies into the existing clinical environment has yet to be clearly articulated. Patient care teams can use the proposed framework when introducing new therapies.

**Source:** CINAHL

45. **FMEA-FMECA: A risk management's strument for critical processes**

**Author(s):** Locont R.

**Citation:** Rivista Italiana della Medicina di Laboratorio, 2009, vol./is. 5/SUPPL.(112), 1825-859X (2009)

**Publication Date:** 2009

**Source:** EMBASE
46. An outpatient parenteral antibiotic therapy (OPAT) map to identify risks associated with an OPAT service.

**Author(s):** Gilchrist M, Franklin BD, Patel JP

**Citation:** Journal of Antimicrobial Chemotherapy, July 2008, vol./is. 62/1(177-83), 0305-7453;1460-2091 (2008 Jul)

**Publication Date:** July 2008

**Abstract:** OBJECTIVES: Administering parenteral antibiotics outside the confines of a ward setting is becoming an attractive way of treating infections in the UK. However, as well as having many advantages, an outpatient parenteral antibiotic therapy (OPAT) service potentially introduces new risks to staff and patients involved. In the United States, healthcare organizations are now prospectively analysing processes to try and prevent errors occurring using the Healthcare Failure Mode Effect Analysis (HFMEA) tool. The objectives of this study were to map out and agree the OPAT process and sub-processes and to identify potential OPAT system failures using steps 1-3 of the HFMEA tool, so that the resulting OPAT map can be used to design an OPAT service where risk is minimized.

**METHODS:** The study was undertaken using a consensus development panel to which the HFMEA process was applied. Key stakeholders in the local OPAT process were invited to join the HFMEA team with the aim of describing and agreeing (defined as 100% participant agreement) an OPAT map, its sub-processes and potential OPAT system failures.

**RESULTS:** The HFMEA team identified 6 processes, 67 sub-processes and 217 possible failures over the course of four meetings. Key areas identified in the OPAT map concerned identifying and checking patient suitability for an OPAT service, involvement of a multidisciplinary team and robust communication channels.

**CONCLUSIONS:** An OPAT map was developed, which may serve as a practical model for other organizations setting up a similar service.

**Source:** MEDLINE

**Full Text:**
Available in fulltext at Highwire Press

Available in fulltext at Pilgrim Hospital Staff Library; Note: Username: ulhtlibraries/Password: library

47. From blaming to proactively changing the future: the leader’s safety challenge.

**Author(s):** Kerfoot KM

**Citation:** Nursing Economics, 01 July 2008, vol./is. 26/4(280-281), 07461739

**Publication Date:** 01 July 2008

**Abstract:** Simplifying to the point of blaming limits learning and the ability to prevent similar occurrences in the future. Often, the characteristics of the blame culture are very subtle and what appears to be valuable work is actually a subtle sign of the blame game. Leaders must change the language to a proactive, future preventative state rather than focusing on the past and looking for single causes of events. Many nurses have left their positions because they have chosen not to work in a culture of blame. Eliminating all forms of blame is essential for excellence in patient care outcomes and loyalty of staff.

**Source:** CINAHL

**Full Text:**
Available in fulltext at EBSCO Host

48. Failure mode and effect analysis: a proactive approach to preventing chemotherapy errors.

**Author(s):** Brock M, Waters C

**Citation:** Oncology Nursing Forum, 01 May 2008, vol./is. 35/3(513-513), 0190535X
49. Role of registered nurses in error prevention, discovery and correction.

Author(s): Rogers AE, Dean GE, Hwang W, Scott LD

Citation: Quality & Safety in Health Care, 01 April 2008, vol./is. 17/2(117-121), 14753898

Publication Date: 01 April 2008

Abstract: BACKGROUND: Registered nurses have a vital role in discovering and correcting medical error. OBJECTIVE: To describe the type and frequency of errors detected by American critical care nurses, and to ascertain who made the errors discovered by study participants. METHODS: Daily logbooks were used to collect information about errors discovered by a random sample of 502 critical care nurses during a 28-day period. RESULTS: Although the majority of errors discovered and corrected by critical care nurses involved medications (163/367), procedural errors were common (n = 115). Charting and transcription errors were less frequently discovered. The errors discovered by participants were attributed to a wide variety of staff members including nurses, doctors, pharmacists, technicians and unit secretaries. CONCLUSIONS: Given the importance of nurses in maintaining patient safety, future studies should identify factors that enhance their effectiveness to prevent, intercept and correct healthcare errors.

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

50. Improving process while changing practice: FMEA and medication administration... failure mode and effects analysis.

Author(s): Riehle MA, Bergeron D, Hyrkäs K

Citation: Nursing Management, 01 February 2008, vol./is. 39/2(28-34), 07446314

Publication Date: 01 February 2008

Abstract: Learn one facility’s experiences using failure mode and effects analysis (FMEA) and the impact of changing medication administration.

Source: CINAHL

Full Text:
Available in fulltext at Highwire Press
Available in print at Pilgrim Hospital Staff Library

51. Utility of patient safety case finding methods and associations among organizational safety climate, nurse injuries, and errors.

Author(s): Taylor JA

Citation: , 01 January 2008, vol./is. /(0-177),

Publication Date: 01 January 2008

Abstract: Background. Medical errors claim 44,000-98,000 lives annually. Understanding the role of organizational safety climate and nurse staffing are integral to successful patient safety interventions and may also pertain to nurse injury.

Source: CINAHL

52. Tools for developing a quality management program: proactive tools (process mapping, value stream mapping, fault tree analysis, and failure mode and effects analysis).
This article examines the concepts of quality management (QM) and quality assurance (QA), as well as the current state of QM and QA practices in radiotherapy. A systematic approach incorporating a series of industrial engineering-based tools is proposed, which can be applied in health care organizations proactively to improve process outcomes, reduce risk and/or improve patient safety, improve through-put, and reduce cost. This tool set includes process mapping and process flowcharting, failure modes and effects analysis (FMEA), value stream mapping, and fault tree analysis (FTA). Many health care organizations do not have experience in applying these tools and therefore do not understand how and when to use them. As a result there are many misconceptions about how to use these tools, and they are often incorrectly applied. This article describes these industrial engineering-based tools and also how to use them, when they should be used (and not used), and the intended purposes for their use. In addition the strengths and weaknesses of each of these tools are described, and examples are given to demonstrate the application of these tools in health care settings.

**Source:** MEDLINE

**Full Text:**

Available in print at Lincoln County Hospital Professional Library

---

53. **Measure for measure? The challenge of new thinking about patient safety**

**Author(s):** Sheps S.B.

**Citation:** HealthcarePapers, 2008, vol./is. 8/4(62-67; discussion 69-6775), 1488-917X (2008)

**Publication Date:** 2008

**Abstract:** Penfold and colleagues, in this issue of Healthcare Papers, provide a comprehensive and substantive critique of the hospital standardized mortality ratio (HSMR) as a measure of patient safety, and suggest a useful alternative. However, although measurement is not trivial, new thinking about patient safety presents a much greater challenge than just issues related to measurement. The measurement issue highlights the need for a re-conceptualization of what it takes, from a systems perspective, to achieve safety. This commentary first reviews Penfold et al.’s arguments (agreeing with their conclusions regarding the HSMR). It then presents some key elements of the new thinking about patient safety, particularly the emerging concepts of resilience and resonance, and notes how and why these are beginning to be applied in healthcare. Finally, it considers a number of reasons why a more comprehensive adoption of these new perspectives may be prolonged and notes that, while difficult, the journey is worth taking.

**Source:** EMBASE

---

54. **Using ISMP Canada’s framework for failure mode and effects analysis: a tale of two FMEAs**

**Author(s):** Nickerson T., Jenkins M., Greenall J.

**Citation:** Healthcare quarterly (Toronto, Ont.), 2008, vol./is. 11/3 Spec No.(40-46), 1710-2774 (2008)

**Publication Date:** 2008

**Abstract:** Patient safety concerns in healthcare are not new or unexpected, and one goal of all healthcare organizations is to provide the safest possible care for patients and their families. With that goal in mind, Annapolis Valley Health, a rural district health authority in Nova Scotia, identified the need to develop expertise in the use of failure mode and effects analysis (FMEA) as a tool to promote quality processes within the organization. Staff members were aware of the value of this type of analysis but also recognized that real learning would best be achieved through completing an FMEA of an existing process or situation, rather than through a simulation or staff training. Annapolis Valley Health
identified two high-risk situations requiring attention: transcription of medication orders for in-patients and overcrowding in the emergency department. The Institute for Safe Medication Practices Canada provided training and support to two staff teams and visited the organization eight months later for an update on progress. This article chronicles the journey of Annapolis Valley Health to improve patient safety through the application of FMEA to two high-risk processes for one of its hospital sites.

Source: EMBASE

55. PDA survey of quality risk management practices in the pharmaceutical, devices, & biotechnology industries


Citation: PDA Journal of Pharmaceutical Science and Technology, January 2008, vol./is. 62/1(1-21), 1079-7440 (January/February 2008)

Publication Date: January 2008

Abstract: In July 2006 the Parenteral Drug Association's Risk Management Task Force for Aseptic Processes, conducted an electronic survey of PDA members to determine current industry practices regarding implementation of Quality Risk Management in their organizations. This electronic survey was open and publicly available via the PDA website and targeted professionals in our industry who are involved in initiating, implementing, or reviewing risk management programs or decisions in their organizations. One hundred twenty-nine members participated and their demographics are presented in the sidebar "Correspondents Profile". Among the major findings are * The "Aseptic Processing/Filling" operation is the functional area identified as having the greatest need for risk assessment and quality risk management. * The most widely used methodology in industry to identify risk is Failure Mode and Effects Analysis (FMEA). This tool was most widely applied in assessing change control and for adverse event, complaint, or failure investigations. * Despite the fact that personnel training was identified as the strategy most used for controlling/minimizing risk, the largest contributors to sterility failure in operations are still "Personnel". * Most companies still rely on "Manufacturing Controls" to mitigate risk and deemed the utilization of Process Analytical Technology (PAT) least important in this aspect. * A majority of correspondents verified that they did not periodically assess their risk management programs. * A majority of the correspondents desired to see case studies or examples of risk analysis implementation (as applicable to aseptic processing) in future PDA technical reports on risk management.

Source: EMBASE

56. Where do FMEA and RCA opportunities fit in the budget?

Author(s): Latino RJ

Citation: Briefings on Patient Safety, 01 December 2007, vol./is. 8/12(8-10), 15287637

Publication Date: 01 December 2007

Source: CINAHL

57. Hospitals still lag in developing safe practices: proactive processes are needed.

Citation: Healthcare Benchmarks & Quality Improvement, 01 November 2007, vol./is. 14/11(130-132), 15411052

Publication Date: 01 November 2007

Abstract: Size of hospital not that significant in terms of successful compliance with NQF standards.

Source: CINAHL

Full Text:

Available in fulltext at EBSCO Host
58. Utilization of failure mode effects analysis in trauma patient registration.

**Author(s):** Day S, Dalto J, Fox J, Allen A, Ilstrup S

**Citation:** Quality Management in Health Care, 01 October 2007, vol./is. 16/4(342-348), 10638628

**Publication Date:** 01 October 2007

**Abstract:** AIM: Our goal was to identify strategies that would reduce risks and improve patient safety during registration of trauma patients and subsequent electronic data linkage. Recently, the health care industry and the Joint Commission on Accreditation of Healthcare Organizations have supported failure mode effects analysis (FMEA) as a tool for proactively reducing risk to patients. METHODS: We utilized FMEA for a comprehensive evaluation of our trauma patient registration process for system weaknesses. RESULTS: We found several areas of our processes that placed patients at risk. On the basis of our findings, we implemented changes that included education of staff, role clarification, task reallocation, and established a list of personnel authorized to request the electronic data linkage process. Further recommendations were made for information system changes, which are under review. CONCLUSIONS: FMEA helped us to systematically identify and prioritize risks to patient safety. Our findings directed changes, which, in turn, reduced potential errors. We recommend this method of evaluation to other health care personnel interested in improving patient safety.

**Source:** CINAHL

59. French national survey of inpatient adverse events prospectively assessed with ward staff.

**Author(s):** Michel P, Quenon JL, Djihoud A, Tricaud-Vialle S, de Sarasqueta AM

**Citation:** Quality & Safety in Health Care, 01 October 2007, vol./is. 16/5(369-377), 14753898

**Publication Date:** 01 October 2007

**Abstract:** OBJECTIVES: To estimate the incidence of adverse events in medical and surgical activity in public and private hospitals, and to assess the clinical situation of patients and the active errors. DESIGN: Prospective assessment of adverse events by external senior nursing and doctor investigators with ward staff. SETTING: Random three-stage stratified cluster sampling of stays or fractions of stay in a 7-day observation period for each ward. PARTICIPANTS: 8754 patients observed in 292 wards in 71 hospitals, over 35,234 hospitalisation days. MAIN OUTCOME MEASURES: Number of adverse events in relation to number of days of hospitalisation. RESULTS: The incidence density of adverse events was 6.6 per 1000 days of hospitalisation (95% CI 5.7 to 7.5), of which 35% were preventable. Invasive procedures were the source of half the adverse events, of which 20% were preventable. Adverse events related to the psychological sphere and pain were mostly considered as preventable. Ward staff found it difficult to assess the role of care management in the occurrence of adverse events: 41% of adverse events were expected because of the disease itself, and could have occurred in the absence of the related medical management. CONCLUSION: At the national level in France, every year 120,000-190,000 adverse events during hospitalisation can be considered as preventable. Areas such as perioperative period and geriatric units should receive closer attention. As adverse events occurred more commonly in vulnerable patients, who are not specifically targeted by clinical guidance, practising evidence-based medicine is not likely to prevent all cases. Therefore clinical risk management should prioritize empowerment of local staff, provision of favourable conditions within the organisation, and staff training based on simple tools appropriate for ward-level identification and analysis of adverse events.

**Source:** CINAHL

**Full Text:**

Available in fulltext at Highwire Press

60. Proactive study standard trips up 27% of agencies: use FMEA process to meet standard... second of a two-part series; failure mode evaluation analysis.
61. Failure mode and effects analysis: a useful tool for risk identification and injury prevention.

Author(s): Paparella S

Publication Date: 01 August 2007

Source: CINAHL

62. Prospective risk assessment and intervention to reduce blood transfusion errors.

Author(s): Stanton JE, Korus G, Israeliite CL, Fogt F

Publication Date: 01 August 2007

Abstract: Objective: To describe a failure modes and effects analysis (FMEA) and subsequent process changes to reduce risk of clerical errors of blood transfusion and to reduce same-day surgery delays due to absence of adequate data or lack of product.

Source: CINAHL

63. FMECA methodology applied to two pathways in an orthopaedic hospital in Milan.

Author(s): Morelli P, Vinci A, Galetto L, Magon G, Maniaci V, Banfi G

Publication Date: June 2007

Abstract: INTRODUCTION: Adverse events pose a challenge to medical management: they can produce mild or transient disabilities or lead to permanent disabilities or even death; preventable adverse events result from error or equipment failure. METHODS: IRCCS Istituto Ortopedico Galeazzi implemented a clinical risk management program in order to study the epidemiology of adverse events and to improve new pathways for preventing clinical errors: a risk management FMECA-FMEA pro-active analysis was applied either to an existing clinical support pathway or to a new process before its implementation. RESULTS: The application of FMEA-FMECA allowed the clinical risk unit of our hospital to undertake corrective actions in order to reduce the adverse events and errors on high-risk procedure used inside the hospitals.

Source: MEDLINE

64. Decreasing the risk of chemotherapy errors through a failure modes and effects analysis (FMEA) and a focus PDCA (plan, do, check, act) quality improvement model... Oncology Nursing Society 32nd Annual Congress, April 24-27, 2007, Las Vegas, NV.

Author(s): Roesser K

Publication Date: 01 March 2007
65. Failure mode and effects analysis (FMEA): intravenous chemotherapy administration... Oncology Nursing Society 32nd Annual Congress, April 24-27, 2007, Las Vegas, NV.

Author(s): Vannice S, Wimmer P

Citation: Oncology Nursing Forum, 01 March 2007, vol./is. 34/2(511-511), 0190535X

Publication Date: 01 March 2007

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

66. Assessing system failures in operating rooms and intensive care units.

Author(s): van Beuzekom M, Akerboom SP, Boer F

Citation: Quality & Safety in Health Care, 01 February 2007, vol./is. 16/1(45-50), 14753898

Publication Date: 01 February 2007

Abstract: BACKGROUND: The current awareness of the potential safety risks in healthcare environments has led to the development of largely reactive methods of systems analysis. Proactive methods are able to objectively detect structural shortcomings before mishaps and have been widely used in other high-risk industries. METHODS: The Leiden Operating Theatre and Intensive Care Safety (LOTICS) scale was developed and evaluated with respect to factor structure and reliability of the scales. The survey was administered to the staff of operating rooms at two university hospitals, and intensive care units (ICUs) of one university hospital and one teaching hospital. The response rate varied between 40-47%. Data of 330 questionnaires were analysed. Safety aspects between the different groups were compared. RESULTS: Factor analyses and tests for reliability resulted in nine subscales. To these scales another two were added making a total of 11. The reliability of the scales varied from 0.75 to 0.88. The results clearly showed differences between units (OR1, OR2, ICU1, ICU2) and staff. CONCLUSION: The results seem to justify the conclusion that the LOTICS scale can be used in both the operating room and ICU to gain insight into the system failures, in a relatively quick and reliable manner. Furthermore the LOTICS scale can be used to compare organisations to each other, monitor changes in patient safety, as well as monitor the effectiveness of the changes made to improve the level of patient safety.

Source: CINAHL

Full Text:
Available in fulltext at Highwire Press
Available in fulltext at National Library of Medicine

67. CT healthcare failure mode effect analysis (HFMEA): the misadministration of IV contrast in outpatients.

Author(s): Ouellette-Piazzo K, Asfaw B, Cowen J

Citation: Radiology Management, January 2007, vol./is. 29/1(36-44; quiz 45-7), 0198-7097;0198-7097 (2007 Jan-Feb)

Publication Date: January 2007

Abstract: This article aims to inform and educate healthcare organizations about one of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) patient safety goals. The goal allows healthcare institutions to be proactive in identifying risks to patient safety and reduce medical errors at the same time. In this article, you will learn what a Healthcare Failure Mode and Effect Analysis (HFMEA) is, how to pick an appropriate topic,
and the steps to follow to be able to implement your own HFMEA. The goal of the HFMEA performed at Massachusetts General Hospital (MGH) was to prevent the misadministration of IV contrast in outpatients in the CT department.

**Source:** MEDLINE

**68. Quality and safety by design.**

**Author(s):** Battles JB

**Citation:** Quality & Safety in Health Care, 02 December 2006, vol./is. 15/(0-2), 14753898

**Publication Date:** 02 December 2006

**Abstract:** Rather than continuing to try to measure the width and depths of the quality chasm, a legitimate question is how does one actually begin to close the quality chasm? One way to think about the problem is as a design challenge rather than as a quality improvement challenge. It is time to move from reactive measurement to a more proactive use of proven design methods, and to involve a number of professions outside health care so that we can design out system failure and design in quality of care. Is it possible to actually design in quality and design out failure? A three level conceptual framework design would use the six quality aims laid out in Crossing the quality chasm. The first or core level of the framework would be designing for patient centered care, with safety as the second level. The third design attributes would be efficiency, effectiveness, timeliness, and equity. Design methods and approaches are available that can be used for the design of healthcare organizations and facilities, learning systems to train and maintain competency of health professionals, clinical systems, clinical work, and information technology systems. In order to bring about major improvements in quality and safety, these design methods can and should be used to redesign healthcare delivery systems.

**Source:** CINAHL

**Full Text:**

Available in fulltext at Highwire Press

Available in fulltext at National Library of Medicine

Available in print at Grantham Hospital Staff Library

**69. Reliability science and patient safety.**

**Author(s):** Luria JW, Muething SE, Schoettker PJ, Kotagal UR

**Citation:** Pediatric Clinics of North America, 01 December 2006, vol./is. 53/6(1121-1133), 00313955

**Publication Date:** 01 December 2006

**Abstract:** Reliability is failure-free operation over time—the measurable capability of a process, procedure, or service to perform its intended function. Reliability science has the potential to help health care organizations reduce defects in care, increase the consistency with which care is delivered, and improve patient outcomes. Based on its principles, the Institute for Healthcare Improvement has developed a three-step model to prevent failures, mitigate the failures that occur, and redesign systems to reduce failures. Lessons may also be learned from complex organizations that have already adopted the principles of reliability science and operate with high rates of reliability. They share a preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience, and underspecification of structures. Copyright © 2006 by Elsevier Inc.

**Source:** CINAHL

**Full Text:**

Available in print at Lincoln County Hospital Professional Library

**70. Multidisciplinary team leads reconciliation efforts: proactive approach addresses challenges.**

**Citation:** Hospital Case Management, 01 November 2006, vol./is. 14/11(164-165), 10870652
71. Medication errors - Results of the ADKA-reporting system [German]
Medikationsfehler - Ergebnisse des ADKA-berichtsystems

Author(s): Schnurrer J.U.

Citation: Krankenhauspharmazie, November 2006, vol./is. 27/11(477-484), 0173-7597 (Nov 2006)

Abstract: Medication errors are a threat to patient safety. Thus hospital pharmacy has defined the prevention of medication errors as an important aim. In order to develop specific prevention strategies an ADKA-medication error reporting system was established by the working group "medication error". Since January 2005 the system is on air. Since then 211 medication error reports have been registered and the analysis of the reports shows an error pattern that differs distinctly from the one observed in international medication error studies. The observed error pattern must be the guideline for the development of national error prevention strategies, since German hospital pharmacists operate in general from the hospital pharmacy instead of working on the hospital wards like their Anglo-American colleagues. In addition to the development of prevention strategies the error pattern gives useful ideas on how German hospital pharmacists can be even more effective in error prevention since several errors types were observed and prevented mainly by hospital pharmacies with a unit dose drug distribution or an established ward service.

Source: EMBASE

72. [Risk management project: reactive or proactive approach?]. [Italian]
Progetto Risk Management: metodologia reattiva o proattiva?

Author(s): Vastola P, Saracino DM

Citation: Igiene e Sanita Pubblica, September 2006, vol./is. 62/5(493-508), 0019-1639:0019-1639 (2006 Sep-Oct)

Abstract: Risk management in healthcare refers to the process of developing strategies aimed at preventing and controlling the risk of occurrence of errors and harmful events. The final objective is primarily that of increasing patient safety and secondarily, that of reducing the financial burden of adverse events. The implementation of a risk management system is therefore of vital strategic importance. Nevertheless, a fundamental question that needs to be answered in the operational phase is: should a proactive or reactive approach to risk management be taken? In our view, proactive risk management has many advantages over a reactive approach and is therefore preferable. The reactive approach should be taken exclusively to obtain information regarding risk and errors, in the preliminary, as well as monitoring and follow-up phases of the project.

Source: MEDLINE

73. Preventing medication errors in hospitals through a systems approach and technological innovation: a prescription for 2010.

Author(s): Crane J, Crane FG

Citation: Hospital Topics, 01 September 2006, vol./is. 84/4(3-8), 00185868

Abstract: Medication errors in hospital settings are considered both widespread and costly to the American healthcare system; yet, it is tractable to available solutions. This article offers a novel prescription for the problem that could be implemented by 2010. It consists of a systems approach--failure mode effects analysis (FMEA)--in combination with emerging technologies, such as a decision support system (DDS) with integrated real-time medical informatics, electronic medical records (EMR), computer physician order entry (CPOE), bar coding, automated dispensing machines (ADM), and robotics. Cost and benefit analysis
reveals that this proposed integrated solution will radically reduce medication errors in hospitals and save the lives of thousands of Americans who frequent such facilities on an annual basis, as well as reduce healthcare costs. Copyright © 2006 Heldref Publications

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

74. Using failure mode and effects analysis to plan implementation of smart i.v. pump technology.

Author(s): Wetterneck TB, Skibinski KA, Roberts TL, Kleppin SM, Schroeder ME, Enloe M, Rough SS, Hundt AS, Carayon P

Citation: American Journal of Health-System Pharmacy, 15 August 2006, vol./is. 63/16(1528-1538), 10792082

Publication Date: 15 August 2006

Abstract: PURPOSE: Failure mode and effects analysis (FMEA) was used to evaluate a smart i.v. pump as it was implemented into a redesigned medication-use process.
SUMMARY: A multidisciplinary team conducted a FMEA to guide the implementation of a smart i.v. pump that was designed to prevent pump programming errors. The smart i.v. pump was equipped with a dose-error reduction system that included a pre-defined drug library in which dosage limits were set for each medication. Monitoring for potential failures and errors occurred for three months postimplementation of FMEA. Specific measures were used to determine the success of the actions that were implemented as a result of the FMEA. The FMEA process at the hospital identified key failure modes in the medication process with the use of the old and new pumps, and actions were taken to avoid errors and adverse events. I.V. pump software and hardware design changes were also recommended. Thirteen of the 18 failure modes reported in practice after pump implementation had been identified by the team. A beneficial outcome of FMEA was the development of a multidisciplinary team that provided the infrastructure for safe technology implementation and effective event investigation after implementation. With the continual updating of i.v. pump software and hardware after implementation, FMEA can be an important starting place for safe technology choice and implementation and can produce site experts to follow technology and process changes over time. CONCLUSION: FMEA was useful in identifying potential problems in the medication-use process with the implementation of new smart i.v. pumps. Monitoring for system failures and errors after implementation remains necessary.

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

75. Failure mode and effects analysis as a performance improvement tool in trauma.

Author(s): Day S, Dalto J, Fox J, Turpin M

Citation: Journal of Trauma Nursing, 01 July 2006, vol./is. 13/3(111-117), 10787496

Publication Date: 01 July 2006

Abstract: INTRODUCTION: Performance improvement (PI) in the multiple systems injured patient frequently highlights areas for improvement in overall hospital care processes. Failure mode effects analysis (FMEA) is an effective tool to assess and prioritize areas of risk in clinical practice. Failure mode effects analysis is often initiated by a “near-miss” or concern for risk as opposed to a root cause analysis that is initiated solely after a sentinel event. In contrast to a root cause analysis, the FMEA looks more broadly at processes involved in the delivery of care. The purpose of this abstract was to demonstrate the usefulness of FMEA as a PI tool by describing an event and following the event through the healthcare delivery PI processes involved. DESCRIPTION: During routine chart abstraction, a trauma registrar found that an elderly trauma patient admitted with a subdural
hematoma inadvertently received heparin during the course of a dialysis treatment. Although heparin use was contraindicated in this patient, there were no sequelae as a result of the error. This case was reviewed by the trauma service PI committee and the quality improvement team, which initiated FMEA. EVALUATION: An FMEA of inpatient dialysis process was conducted following this incident. The process included physician, nursing, and allied health representatives involved in dialysis. As part of the process, observations of dialysis treatments and staff interviews were conducted. Observation revealed that nurses generally left the patient's room and did not involve themselves in the dialysis process. A formal patient "pass-off" report was not done. Nurses did not review dialysis orders or reevaluate the treatment plan before treatment. We found that several areas of our current practice placed our patients at risk. 1. The nephrology consult/dialysis communication process was inconsistent. 2. Scheduling of treatments for chronic dialysis patients could occur without a formal consult or order. 3. RNs were not consistently involved in dialysis scheduling, setup, or treatment. 4. Dialysis technicians may exceed scope of practice (taking telephone orders) when scheduling of treatment occurred before consult and written orders. OUTCOMES: Near-miss events may be overlooked as opportunities for improvement in cases where no harm has come to the patient. As a result of our FMEA investigation, the following recommendations were made to improve hospital care delivery in those trauma patients who require inpatient dialysis: 1. Education of RNs about the dialysis process. 2. Implementation of a formal reporting process between the RN and the dialysis technician before the procedure is initiated. 3. RN supervision of dialysis treatments. 4. Use of a preprinted inpatient dialysis form. 5. Education of dialysis technicians regarding their scope of practice. 6. Improve notification process for scheduling dialysis procedures between units and dialysis coordinator (similar to x-ray scheduling). Our performance improvement focus has broadened to include all reported "near-miss" events in order to improve our healthcare delivery process before an event with sequelae occurs. We have found that using FMEA has greatly increased our ability to facilitate change across all services and departments within the hospital.

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

76. Failure mode and effects analysis. Using HFMEA to assess potential for patient harm from tubing misconnections. Health Failure Mode and Effects Analysis.
Author(s): Kimchi-Woods J, Shultz JP
Citation: Joint Commission Journal on Quality & Patient Safety, 01 July 2006, vol./is. 32/7(373-381), 15537250
Publication Date: 01 July 2006
Abstract: Background: Reported cases of tubing misconnections and other tubing errors prompted Columbus Children's Hospital to study their potential for harm in its patient population. A Health Failure Mode and Effects Analysis (HFMEA) was conducted in October 2004 to determine the risks inherent in the use and labeling of various enteral, parenteral, and other tubing types in patient care and the potential for patient harm.
Source: CINAHL

77. Dementia dashboard: a proactive risk reduction management guideline.
Author(s): Dalsania P
Citation: Topics in Geriatric Rehabilitation, 01 July 2006, vol./is. 22/3(228-240), 08827524
Publication Date: 01 July 2006
Abstract: Caring for persons with dementia is demanding for caregivers and perplexing to their physicians. Presently, there is a disproportionate amount of literature focused on screening, diagnosis, differentiating etiology, pathology, and medication. Major research has predominately focused on pharmacological intervention, which has lead to a tremendous volume of journal articles and books on this particular subject. There are many scales and assessment tools that guide healthcare providers to screen and diagnose persons with dementia. Unfortunately, there are no guidelines that offer a synthesis
emphasizing the existing evidence regarding risk reduction management. Our emphasis will be on what needs to be done once the person has been diagnosed with dementia. The Dementia Dashboard is a guideline, that is, a dashboard that will guide the care and management of persons with dementia. It is in essence a guide to care for the individual over a continuum, from diagnosis to death. The Dementia Dashboard should help to decrease the gap between research-based evidence and current practice by providing caregivers, physicians, and health systems with a framework of guiding principles for the care of a person with dementia. The structural framework is based on identifying and anticipating the potential risks of adverse outcomes in a person with dementia. The goal of the Dementia Dashboard is to empower healthcare providers by providing a management guideline with interventional strategies for improving outcomes in the care of persons with dementia. This dashboard should not only guide but also educate audience members on current evidence-based standards for successfully managing the continuum of care in persons with dementia.

Source: CINAHL

78. Using HFMEA to assess potential for patient harm from tubing misconnections.

Author(s): Kimehi-Woods J, Shultz JP

Citation: Joint Commission Journal on Quality & Patient Safety, July 2006, vol./is. 32/7(373-81), 1553-7250 (2006 Jul)

Publication Date: July 2006

Abstract: BACKGROUND: Reported cases of tubing misconnections and other tubing errors prompted Columbus Children's Hospital to study their potential for harm in its patient population. A Health Failure Mode and Effects Analysis (HFMEA) was conducted in October 2004 to determine the risks inherent in the use and labeling of various enteral, parenteral, and other tubing types in patient care and the potential for patient harm. METHODS: An assessment of the practice culture revealed considerable variability among nurses and respiratory therapists within and between units. Work on an HFMEA culminated in recommendations of risk reduction strategies. These included standardizing the process of labeling of tubing throughout the organization, developing an online pictorial catalog to list available tubing supplies with all aliases used by staff, and conducting an inventory of all supplies to identify products that need to be purchased or discontinued. Three groups are working on implementing each of the recommendations. RESULTS: Most of the results already realized occurred in labeling of tubing. The pediatric intensive care unit labels all tubing with infused medications 85% of the time; tubings inserted during surgery or in interventional radiology are labeled 53% and 93% of the time. Pocket-size cards with printed labels were tested in three units. DISCUSSION: This proactive risk assessment project has identified failure modes and possible causes and solutions; several recommendations have been implemented. No tubing mismatches have been reported.

Source: MEDLINE

79. A quantitative approach to clinical risk assessment: The CREA method

Author(s): Trucco P., Cavallin M.

Citation: Safety Science, July 2006, vol./is. 44/6(491-513), 0925-7535 (Jul 2006)

Publication Date: July 2006

Abstract: Similarly to the industry sector in the late '80s, nowadays leading organisations in the healthcare sector acknowledge the fact that human errors and system failures can never be totally eliminated; accordingly, hospitals are moving into the challenge of designing “fault tolerant” systems within care management processes. This new perspective leads analysis in a new direction: from a merely retrospective approach to a joint prospective-retrospective one, based on a complete Clinical Risk Management (CRM) process. Current Clinical Risk Assessment (CRA) methods show their inadequacy when healthcare organisations try to set safety targets or to assess safety performance improvements on a quantitative basis. It is here that the call for further methodological developments clearly emerges. This paper deals with the description of a new CRA method, called CREA (Clinical Risk and Error Analysis), showing improved features with respect to the state of the art. CREA implements not only a quantitative risk analysis of
error modes, but also a quantitative assessment of critical organisational factors affecting patient safety, based on Vincent's framework [Vincent, C., Taylor-Adams, S., Stanhope, N., 1998. Framework for analysing risk and safety in clinical medicine. British Medical Journal 316, 1154-1157]. Providing a consistent method for the integration of data analysis and expert judgement, CREA presents a higher level of accuracy and reliability with respect to FMEA/FMECA or HFMEA methods. The method has been tested in a vascular surgery department, where over 2500 surgical operations (5% of which take place in the Emergency Unit) and 15,000 outpatient services are performed in a year. The experimental study concerns risk analysis in drug administration, one of the most common and frequent clinical processes during a general hospitalisation. 2006.

Source: EMBASE

80. FMEA grows up: trends in failure mode and effects analysis.

Author(s): anonymous

Citation: Healthcare Hazard Management Monitor, June 2006, vol./is. 19/10(1-6), 1532-3633;1532-3633 (2006 Jun)

Publication Date: June 2006

Source: MEDLINE

81. Failure mode and effect analysis: a technique to prevent chemotherapy errors.

Author(s): Sheridan-Leos N, Schulmeister L, Hartranft S

Citation: Clinical Journal of Oncology Nursing, 01 June 2006, vol./is. 10/3(393-401), 10921095

Publication Date: 01 June 2006

Abstract: Promoting a culture of safety involves a philosophical shift from error measurement to proactive assessment of potential harm. Failure Mode and Effect Analysis (FMEA) is a prospective risk analysis technique that can be used to examine the chemotherapy administration process. FMEA is a systematic, multidisciplinary team-based approach to error prevention. This article reviews the process of conducting FMEA and provides suggestions on how FMEA can be applied to the chemotherapy administration process. Nurses who are knowledgeable about risk analysis techniques and the process for applying them in clinical practice have the potential to promote a culture of safety for patients receiving chemotherapy.

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

82. Failure modes and effects analysis: minimizing harm to our bariatric patients.

Author(s): Cheung DS, Maygers J, Khouri-Stevens Z, De Grouchy L, Magnuson T

Citation: Bariatric Nursing & Surgical Patient Care, 01 June 2006, vol./is. 1/2(107-114), 15571459

Publication Date: 01 June 2006

Abstract: The care of the bariatric patient presents nursing challenges including but not limited to transportation difficulties, skin care, sensitivity training, and patient education. Traditional organizational learning occurs in a trial-and-error fashion that is both costly and inefficient. Failure mode and effects analysis (FMEA) has proven to be an effective method of minimizing errors in both the manufacturing and health care communities. It predicts failure points in the system and allows the organization to proactively address the underlying causes of the problems and prioritize strategies for improvement. Our analysis in our institution identified two main failure points: inappropriate equipment use and inadequate medical management of the bariatric patient. Solutions included unfettered access to specialized bariatric equipment, more effective training on the use of the
equipment and management of the obese patient, and a readily available onsite reference manual.

Source: CINAHL


Author(s): Coffin CM
Citation: Archives of Pathology & Laboratory Medicine, 01 May 2006, vol./is. 130/5(610-612), 00039985
Publication Date: 01 May 2006
Source: CINAHL
Full Text: Available in fulltext at EBSCO Host

84. Preventing chemotherapy errors.

Author(s): Schulmeister L
Citation: Oncologist, 01 May 2006, vol./is. 11/5(463-468), 10837159
Publication Date: 01 May 2006
Abstract: A large amount of information on chemotherapy error prevention is available to the practicing oncologist. However, few oncologists have the time and resources to obtain the information and evaluate the evidence. Further, much of the information is generic and does not provide specific direction on how the information can be applied in clinical practice. This manuscript reviews principles of safe chemotherapy administration, identifies key actions to prevent chemotherapy errors, and provides suggestions on how the information can be incorporated into daily practice.
Source: CINAHL
Full Text: Available in fulltext at Highwire Press

85. Overcoming barriers to patient safety

Author(s): Kalisch B.J., Aebersold M.
Citation: Nursing Economics, May 2006, vol./is. 24/3(143-148+155), 0746-1739 (May/June 2006)
Publication Date: May 2006
Abstract: The IOM Report Keeping Patients Safe outlined five trouble spots leading to patient safety concerns on nursing units: unclear unit values, the fear of punishment for errors, the lack of systematic analysis of mistakes, the complexity of the work, and inadequate teamwork. When observing high reliability organizations (HROs), like air traffic control centers or nuclear power plants, a “culture of safety” transcends the culture and operations to manage unexpected events in a manner that minimizes fatal errors. These organizational characteristics and actions mirror the trouble spots outlined by the IOM: clarify values, encourage and reward reporting of mistakes, consistently analyze mistakes and near misses, look for the unexpected, simplify work, minimize interruptions, commit to resilience, encourage deference to expertise, and promote teamwork. Staff can begin the practice of error reporting by asking every team member to list one error or near miss during the past month during a staff meeting. Variations from critical pathways and assessment scales can be used as a tool to look for unexpected deviations. Devices that enable efficiency, like pagers and cell phones, may actually increase interruptions and lead to higher error rates.
Source: EMBASE
Full Text: Available in fulltext at EBSCO Host
86. Anticipating risk for human subjects participating in clinical research: application of Failure Mode and Effects Analysis.

**Author(s):** Cody RJ

**Citation:** Cancer Investigation, March 2006, vol./is. 24/2(209-14), 0735-7907;0735-7907 (2006 Mar)

**Publication Date:** March 2006

**Abstract:** Failure Mode and Effects Analysis (FMEA) is a method applied in various industries to anticipate and mitigate risk. This methodology can be more systematically applied to the protection of human subjects in research. The purpose of FMEA is simple: prevent problems before they occur. By applying FMEA process analysis to the elements of a specific research protocol, the failure severity, occurrence, and detection rates can be estimated for calculation of a "risk priority number" (RPN). Methods can then be identified to reduce the RPN to levels where the risk/benefit ratio favors human subject benefit, to a greater magnitude than existed in the pre-analysis risk profile. At the very least, the approach provides a checklist of issues that can be individualized for specific research protocols or human subject populations.

**Source:** MEDLINE

87. Using failure mode and effects analysis for safe administration of chemotherapy to hospitalized children with cancer.

**Author(s):** Robinson DL, Heigham M, Clark J

**Citation:** Joint Commission Journal on Quality & Patient Safety, 01 March 2006, vol./is. 32/3(161-166), 15537250

**Publication Date:** 01 March 2006

**Abstract:** Background: The administration of chemotherapy to hospitalized children with cancer is a complex and high-risk process. A team divided the process into three areas—prescribing, dispensing, and administration—and used Failure Mode and Effects Analysis (FMEA) to identify the elements of risk and implement appropriate strategies. For each area, potential failures within sub-processes were assigned risk priority numbers (RPNs), reflecting their frequency, severity, and detectability.

**Source:** CINAHL

88. Using failure mode effect analysis (FMEA) to improve medication safety... Oncology Nursing Society 31st Annual Congress podium and poster abstracts.

**Author(s):** Zupa E, Abbotoy J, Koester D

**Citation:** Oncology Nursing Forum, 01 March 2006, vol./is. 33/2(417-417), 0190535X

**Publication Date:** 01 March 2006

**Source:** CINAHL

**Full Text:**

Available in fulltext at EBSCO Host

89. Health Care Failure Mode and Effect Analysis: a useful proactive risk analysis in a pediatric oncology ward.

**Author(s):** van Tilburg CM, Leistikow IP, Rademaker CMA, Bierings MB, van Dijk ATH

**Citation:** Quality & Safety in Health Care, 01 February 2006, vol./is. 15/1(58-64), 14753898

**Publication Date:** 01 February 2006

**Abstract:** BACKGROUND: Pediatric inpatient settings are known for their high medication error rate. The aim of this study was to investigate whether the Health Care Failure Mode and Effect Analysis (HFMEA) is a valid proactive method to evaluate circumscribed health care processes like prescription up to and including administration of chemotherapy.
vincristine) in the pediatric oncology inpatient setting. METHODS: A multidisciplinary team consisting of a team leader, pharmacy, nursing and medical staff and a patient's parent was assembled in a pediatric oncology ward with a computerized physician order entry system. A flow diagram of the process was made and potential failure modes were identified and evaluated using a hazard scoring matrix. Using a decision tree, it was determined for which failure mode recommendations had to be made. RESULTS: The process was divided into three main parts: prescription, processing by the pharmacy, and administration. Fourteen out of 61 failure modes were classified as high risk, 10 of which were sufficiently covered by current protocols. For the other four failure modes, five recommendations were made. Four additional recommendations were made concerning non-high risk failure modes. Most of them were implemented by the hospital management. The whole process took seven meetings and a total of 140 man-hours. CONCLUSIONS: The systematic approach of HFMEA by a multidisciplinary team is a useful method for detecting failure modes. A patient or a parent of a patient contributes to the multidisciplinarity of the team.

Source: CINAHL

Full Text:
Available in fulltext at Highwire Press
Available in fulltext at National Library of Medicine
Available in print at Grantham Hospital Staff Library

90. Medical errors and clinical risk management: state of the art.
Author(s): La Pietra L, Calligaris L, Molendini L, Quattrin R, Brusaferro S
Citation: Acta Otorhinolaryngologica Italica, December 2005, vol./is. 25/6(339-46), 0392-100X:0392-100X (2005 Dec)
Publication Date: December 2005
Abstract: Medical errors represent a serious public health problem and pose a threat to patient safety. All patients are potentially vulnerable, therefore medical errors are costly from a human, economic, and social viewpoint. The present report aims not only to provide an overview of the problem on the basis of the published literature, but also to stress the importance of adopting standard terminology and classifications, fundamental tools for researchers to obtain valid and reliable methods for error identification and reporting. In fact, agreement on standard definitions allows comparison of data in different contexts. Errors can be classified according to their outcome, the setting where they take place (inpatient, outpatient), the kind of procedure involved (medication, surgery, etc.) or the probability of occurring (high, low). Error categories are analysed taking into consideration their prevalence, avoidance and associated factors as well as the different strategies for detecting medical errors. Incident reporting and documentation of near-misses are described as useful sources of information, and Healthcare Failure Mode Effect Analysis (HFMEA) and Root Cause Analysis (RCA) are seen as powerful methods for process analysis. Furthermore, means to increase patient safety are considered in the broader context of clinical risk management. New approaches in the field of medical errors are aimed at minimizing the recurrence of avoidable patterns associated with higher error rate. A system approach and a blame-free environment, aimed at better organizational performances, lead to much better results than focusing on individuals. Furthermore, use of technology, information accessibility, communication, patient collaboration and multi-professional team-work are successful strategies to reach the goal of patient safety within healthcare organizations.

Source: MEDLINE

Full Text:
Available in fulltext at National Library of Medicine

91. Medical error prevention in ED triage for ACS: use of cardiac care decision support and quality improvement feedback.
Author(s): Daudelin DH, Selker HP
Citation: Cardiology Clinics, November 2005, vol./is. 23/4(601-14, ix), 0733-8651;0733-
Abstract: Medical errors in the care of patients who present with acute coronary syndrome (ACS) include errors in emergency department (ED) triage, such as the decision to send home a patient who presents with ACS or to hospitalize a patient who does not have ACS to the cardiac care unit (CCU), and errors in treatment, such as the failure to promptly use reperfusion therapy for patients who present with ST-elevation acute myocardial infarction (AMI). ECG-based acute cardiac ischemia time-insensitive predictive instrument (ACI-TIPI) and thrombolytic predictive instruments (TPIs), with a linked TIPI information system (TIPI-IS), provide real-time, concurrent, and retrospective decision support tools and feedback for the prevention of medical errors in the care of patients who present with ACS. In real-time, ACI-TIPI probabilities printed on the ECG header for the ED physician, provide an additional piece of information for triage decision making, and the ACI-TIPI Risk Management form reduces liability risk by prompting consideration and documentation of key clinical factors in the diagnosis of ACI. Also in real-time, the TPI increases overall coronary reperfusion therapy use. Concurrent flagging by TIPI-IS uses electronically acquired ECG and hospital data to provide concurrent alerts about potential misdiagnosis or mis-triage of patients with ACS. Retrospectively TIPI-IS-based feedback reports allow performance improvement. These examples of information technology tools integrated into ECG equipment already used in hospitals to deliver patient care demonstrate the potential to adapt other existing equipment or other patient care activities to enhance patient safety and error reduction.

Source: MEDLINE

92. Case study: Identifying potential problems at the human/technical interface in complex clinical systems.

Author(s): Caudill-Slosberg M, Weeks WB

Citation: American Journal of Medical Quality, 01 November 2005, vol./is. 20/6(353-357), 10628606

Abstract: Many who would like to improve patient safety in health care have advocated for the widespread adoption of computerized physician order entry and electronic medical records. However, unforeseen consequences of this new technology may put patients at greater risk of harm, not less. The authors present a clinical scenario that demonstrates system vulnerabilities in the interface between humans and such technology. Furthermore, the authors suggest that managers could anticipate these vulnerabilities by using techniques such as cause-and-effect analysis or failure mode and effect analysis, both before the installation of electronic medical records and as ongoing surveillance mechanisms. The case study demonstrates that adoption of technology is not a quick fix to the patient safety issue; proactive and ongoing efforts to address the human factors issues raised by the introduction of new technology will be required to prevent patient harm.

Source: CINAHL

93. Critical laboratory value notification: a failure mode effects and criticality analysis.

Author(s): Saxena S, Kempf R, Wilcox S, Shulman IA, Wong L, Cunningham G, Vega E, Hall S

Citation: Joint Commission Journal on Quality & Patient Safety, 01 September 2005, vol./is. 31/9(495-506), 15537250

Abstract: BACKGROUND: The Failure Mode Effects and Criticality Analysis (FMECA) was applied to improve the timeliness of reporting and the timeliness of receipt by the responsible licensed caregiver of critical laboratory values (CLVs) for outpatients and non-critical care inpatients. METHODS: Through a risk prioritization process, the most important areas for improvement, including contacting the provider, assisting the provider in contacting the patient, and educating the provider in follow-up options available during off hours, were identified. ACTIONS TAKEN: A variety of systemic improvements were made;
for example, the CLV notification process was centralized in the customer service center, with databases to help providers select options and make arrangements for follow-up care and an electronic abstract form to document the CLV notification process. Review of documentation and appropriateness of CLV follow-up care was integrated into the quality monitoring process to detect any variations or problems. RESULTS: The average CLV notification time for the month steadily declined during an eight-month period. Compliance was 100% for the "read-back" requirement and documentation in patient's health record. DISCUSSION: This proactive risk assessment project successfully modified the CLV notification program from a high- to a low-risk process, identified activities to further improve the process, and helped ensure compliance with a variety of requirements.

Source: CINAHL

94. Safe chemotherapy administration: using failure mode and effects analysis in computerized prescriber order entry.

Author(s): Kozakiewicz JM, Benis LJ, Fisher SM, Marseglia JB

Citation: American Journal of Health-System Pharmacy, 01 September 2005, vol./is. 62/17(1813-1816), 10792082

Publication Date: 01 September 2005

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

95. Use of failure mode and effects analysis in improving the safety of I.V. drug administration.

Author(s): Adachi W, Lodolce AE

Citation: American Journal of Health-System Pharmacy, 01 May 2005, vol./is. 62/9(917-920), 10792082

Publication Date: 01 May 2005

Abstract: Purpose. Failure mode and effects analysis (FMEA) was used to identify dosing and administration errors associated with i.v. medications and evaluate the effectiveness of subsequent system improvements. Summary. A multidisciplinary medication safety team conducted an FMEA to identify and reduce common medication errors and selected wrong-dose errors for process improvement. In 2002, wrong-dose errors comprised 17% of all medication errors at the hospital (59 of 347 errors). The most common reason for administering the wrong dose was error in programming the i.v. infusion pump (41%). Potential errors (i.e., failures) identified were misinterpretation of the order, removing the wrong medication or wrong concentration of the correct medication, using the wrong diluent or drug to prepare the drip, and entering the wrong concentration or infusion rate on the pump. Errors in programming the i.v. infusion pump was the step in the medication-use process associated with the highest criticality index. Based on the results of the FMEA, two main interventions were performed. First, standard order sets were revised after streamlining the formulary and eliminating the use of unapproved abbreviations. Second, an i.v. pump with enhanced safety features was implemented. One-year follow-up data revealed that the number of medication errors related to dosing (wrong dose or incorrect infusion rate) had decreased slightly (from 59 in 2002 to 46 in 2003); however, a dramatic reduction was noted in the percentage of pump-related errors. In 2003, pump-related errors accounted for 22% of dosing errors, compared with 41% in 2002. Conclusion. Medication errors related to i.v. infusion pumps were reduced by conducting an FMEA and implementing the process changes needed.

Source: CINAHL

Full Text:
Available in fulltext at EBSCO Host

96. Systems analysis. Prioritizing processes for FMEA... failure mode and effects analysis.

Author(s): Mycek S

Citation: Materials Management in Health Care, May 2005, vol./is. 14/5(38-41), 1059-4531;1059-4531 (2005 May)

Publication Date: May 2005

Source: MEDLINE

Abstract: Safety experts currently recommend using technology to prevent medication errors. Computerized prescriber order entry, automated medication-dispensing machines, and bar coding are a few of the technologies being advocated to promote safety. Simple, easily implemented safety strategies to prevent chemotherapy errors should not be overlooked and include consistent use of a reliable method to verify patient identity, metric measurement, and workplace illumination and organization. Other strategies are elimination of abbreviations and acronyms, provision of up-to-date information at the point of care, and partnering with patients for safety. These strategies can be customized for use in a variety of practice settings. Oncology nurses are at the forefront of chemotherapy error-prevention initiatives and play a key role in implementing safety measures.

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

98. Eight steps to safer care: hospital performs FMEA on patient identification.

Citation: Briefings on Patient Safety, 01 April 2005, vol./is. 6/4(1-3), 15287637

Publication Date: 01 April 2005

Source: CINAHL

99. Ten simple strategies to prevent chemotherapy errors.

Author(s): Schulmeister L

Citation: Clinical Journal of Oncology Nursing, 01 April 2005, vol./is. 9/2(201-208), 10921095

Publication Date: 01 April 2005

Abstract: Safety experts currently recommend using technology to prevent medication errors. Computerized prescriber order entry, automated medication-dispensing machines, and bar coding are a few of the technologies being advocated to promote safety. Simple, easily implemented safety strategies to prevent chemotherapy errors should not be overlooked and include consistent use of a reliable method to verify patient identity, metric measurement, and workplace illumination and organization. Other strategies are elimination of abbreviations and acronyms, provision of up-to-date information at the point of care, and partnering with patients for safety. These strategies can be customized for use in a variety of practice settings. Oncology nurses are at the forefront of chemotherapy error-prevention initiatives and play a key role in implementing safety measures.

Source: CINAHL

Full Text: Available in fulltext at EBSCO Host

100. Patient safety focus. Taking a proactive role in adverse event investigations.

Author(s): Patail BM

Citation: Biomedical Instrumentation & Technology, 01 March 2005, vol./is. 39/2(147-150), 08998205

Publication Date: 01 March 2005

Abstract: A theme that has been apparent in a number of articles in this series is clinical engineers (CEs) and biomedical equipment technicians (BMETs) can be and indeed are aware of problems that make using the devices difficult. Those using such devices to care for patients develop ingenious ways of making the devices do what they should or invent work arounds to compensate for the problem. BMETs and CEs might upon repeatedly having to repair a particular device for the same problem, find solutions to reduce the
likelihood of the problem recurring. The articles suggest that they report problems to industry—as well they should; however, that isn't the full extent of how their knowledge and abilities can contribute to patient safety. The following article points out that the skills by which CEs and BMETs identify and diagnose medical device problems and their ability to identify factors that contribute to those problems can be valuable to incident investigation teams in determining how and why an adverse event occurred. It is past time that CEs and BMETs bring their resources to the attention of the patient safety community.

Source: CINAHL

101. Creating an organizational culture for medication safety

Author(s): Dennison R.D.

Citation: Nursing Clinics of North America, March 2005, vol./is. 40/1(1-23), 0029-6465 (March 2005)

Publication Date: March 2005

Abstract: Medication errors are costly from human, economic, and societal perspectives. All patients are vulnerable to the detrimental effects of these errors. Recommendations regarding the problem of medication errors include: * Prevention of error by learning from the nonpunitive reporting of errors and near misses * Evaluation of the system for potential causes of error through failure mode and effects analysis and encouragement of a questioning attitude * Elimination of system problems that increase the risk of error * Recognition that humans are fallible and that error will occur even in a perfect system * Minimization of the consequences of errors when they do occur. An important goal for healthcare organizations should be to create a culture that accepts the imperfection of human performance and solicits the assistance of team members in the development of safeguards for error prevention. Proposed interventions to prevent medication errors can be described by the PATIENT SAFE taxonomy, which includes: * Patient participation * Adherence to established policy and procedures * Technology use * Information accessibility * Education regarding medication safety * Nonpunitive approach to reporting of errors and near misses * Teamwork, communication, and collaboration * Staffing: adequate number and staffing mix * Administration support for the clinical goal of patient safety * Failure mode and effects analysis with team member involvement * Environment and equipment to support patient safety.

Source: EMBASE

102. Taking a proactive role in adverse event investigations.

Author(s): Patal BM

Citation: Biomedical Instrumentation & Technology, March 2005, vol./is. 39/2(147-50), 0899-8205;0899-8205 (2005 Mar-Apr)

Publication Date: March 2005

Source: MEDLINE

103. Engineering for safety: Use of failure mode and effects analysis in the laboratory - A well-known engineering tool now being used to assure patient safety

Author(s): Woodhouse S.

Citation: Laboratory Medicine, January 2005, vol./is. 36/1(16-18), 0007-5027 (Jan 2005)

Publication Date: January 2005

Source: EMBASE

104. Using Healthcare Failure Mode and Effect Analysis tool to review the process of ordering and administrating potassium chloride and potassium phosphate.

Author(s): Esmail R, Cummings C, Dersch D, Duchscherer G, Glowa J, Liggett G, Hulme T, Patient Safety and Adverse Events Team

Citation: Healthcare Quarterly, 2005, vol./is. 8 Spec No/(73-80), 1710-2774 (2005)
Abstract: During the spring of 2004, in the Calgary Health Region (CHR) two critical incidents occurred involving patients receiving continuous renal replacement therapy (CRRT) in the intensive care unit (ICU). The outcome of these events resulted in the sudden death of both patients. The Department of Critical Care Medicine's Patient Safety and Adverse Events Team (PSAT), utilized the Healthcare Failure Mode and Effect Analysis (HFMEA) tool to review the process and conditions surrounding the ordering and administration of potassium chloride (KCl) and potassium phosphate (KPO4) in our ICUs. The HFMEA tool and the multidisciplinary team structure provided a solid framework for systematic analysis and prioritization of areas for improvement regarding the use of intravenous, high-concentration KCL and KPO4 in the ICU.

Source: MEDLINE

105. Quality toolbox. The Kaiser Permanente FMEA Model -- simplified for healthcare personnel... Failure Modes and Effects Analysis.

Author(s): Brown DS, Bonacum D, Vonderheide-Liem D

Citation: Journal for Healthcare Quality: Promoting Excellence in Healthcare, 01 January 2005, vol./is. 27/1(48-55), 10622551

Abstract: This article shares a simplified approach for healthcare personnel for conducting failure modes and effects analysis projects as part of organizational performance improvement programs. A checklist and worksheets to document and monitor project progress are provided as helpful tools for project teams.

Source: CINAHL

106. Engineering for safety: use of failure mode and effects analysis in the laboratory.

Author(s): Woodhouse S

Citation: Laboratory Medicine, 01 January 2005, vol./is. 36/1(16-18), 00075027

Abstract: A well-known engineering tool now being used to assure patient safety.

Source: CINAHL

107. A failure mode effect analysis on extracorporeal circuits for cardiopulmonary bypass.

Author(s): Wehrli-Veit M, Riley JB, Austin JW

Citation: Journal of Extra-Corporeal Technology, 01 December 2004, vol./is. 36/4(351-357), 00221058

Abstract: Although many refinements in perfusion methodology and devices have been made, extracorporeal circulation remains a contributor to neurological complications, bleeding coagulopathies, use of blood products, as well as systemic inflammatory response. With the exposure of these adverse effects of cardiopulmonary bypass, the necessity to re-examine the safety of extracorporeal circuits is vital. A failure mode effect analysis (FMEA) is a proven proactive technique developed to evaluate system effect or equipment failure. FMEA was used to evaluate the six different types of extracorporeal circuits based on feedback from five clinical experts. Cardiovascular device manufacturers, the Veteran's Administration National Center for Patient Safety, and the Joint Commission on Accreditation of Healthcare Organizations recommend the use of FMEA to assess and manage risks in current and developing technologies and therapies. This analysis investigates the safety of six types of extracorporeal circuits used in coronary revascularization, including the newer miniaturized extracorporeal circuits. The FMEA lists and ranks the hazards associated with the use of each cardiopulmonary bypass extracorporeal circuit type. To increase the safety of extracorporeal circuits and minimize
the effects associated with cardiopulmonary bypass, perfusionists must incorporate FMEA into their clinical practice.

Source: CINAHL


Author(s): Vernez D, Buchs DR, Pierrehumbert GE, Besrour A

Citation: Risk Analysis, December 2004, vol./is. 24/6(1719-35), 0272-4332;0272-4332 (2004 Dec)

Publication Date: December 2004

Abstract: Because of the increase in workplace automation and the diversification of industrial processes, workplaces have become more and more complex. The classical approaches used to address workplace hazard concerns, such as checklists or sequence models, are, therefore, of limited use in such complex systems. Moreover, because of the multifaceted nature of workplaces, the use of single-oriented methods, such as AEA (man oriented), FMEA (system oriented), or HAZOP (process oriented), is not satisfactory. The use of a dynamic modeling approach in order to allow multiple-oriented analyses may constitute an alternative to overcome this limitation. The qualitative modeling aspects of the MORM (man-machine occupational risk modeling) model are discussed in this article. The model, realized on an object-oriented Petri net tool (CO-OPN), has been developed to simulate and analyze industrial processes in an OH&S perspective. The industrial process is modeled as a set of interconnected subnets (state spaces), which describe its constitutive machines. Process-related factors are introduced, in an explicit way, through machine interconnections and flow properties. While man-machine interactions are modeled as triggering events for the state spaces of the machines, the CREAM cognitive behavior model is used in order to establish the relevant triggering events. In the CO-OPN formalism, the model is expressed as a set of interconnected CO-OPN objects defined over data types expressing the measure attached to the flow of entities transiting through the machines. Constraints on the measures assigned to these entities are used to determine the state changes in each machine. Interconnecting machines implies the composition of such flow and consequently the interconnection of the measure constraints. This is reflected by the construction of constraint enrichment hierarchies, which can be used for simulation and analysis optimization in a clear mathematical framework. The use of Petri nets to perform multiple-oriented analysis opens perspectives in the field of industrial risk management. It may significantly reduce the duration of the assessment process. But, most of all, it opens perspectives in the field of risk comparisons and integrated risk management. Moreover, because of the generic nature of the model and tool used, the same concepts and patterns may be used to model a wide range of systems and application fields.

Source: MEDLINE

Full Text:
Available in fulltext at EBSCO Host

109. FMEA and RCA: The mantras * of modern risk management

Author(s): Senders J.W.

Citation: Quality and Safety in Health Care, August 2004, vol./is. 13/4(249-250), 1475-3898 (Aug 2004)

Publication Date: August 2004

Source: EMBASE

Full Text:
Available in fulltext at Highwire Press
Available in fulltext at Highwire Press
Available in fulltext at National Library of Medicine
Available in print at Grantham Hospital Staff Library
110. FMEA and RCA: the mantras of modern risk management.

Author(s): Senders JW

Citation: Quality & Safety in Health Care, 01 August 2004, vol./is. 13/4(249-250), 14753898

Publication Date: 01 August 2004

Abstract: FMEA and RCA really do work to improve patient safety.

Source: CINAHL

Full Text:
Available in fulltext at Highwire Press

Available in fulltext at Highwire Press

Available in fulltext at National Library of Medicine

Available in print at Grantham Hospital Staff Library

111. Design of a safer approach to intravenous drug infusions: failure mode effects analysis.

Author(s): Apkon M, Leonard J, Probst L, DeLizio L, Vitale R

Citation: Quality & Safety in Health Care, 01 August 2004, vol./is. 13/4(265-271), 14753898

Publication Date: 01 August 2004

Abstract: OBJECTIVES: A set of standard processes was developed for delivering continuous drug infusions in order to improve (1) patient safety; (2) efficiency in staff workflow; (3) hemodynamic stability during infusion changes, and (4) efficient use of resources. Failure modes effects analysis (FMEA) was used to examine the impact of process changes on the reliability of delivering drug infusions. SETTING: An 11 bed multidisciplinary pediatric ICU in the children's hospital of an academic medical center staffed by board certified pediatric intensivists. The hospital uses computerized physician order entry for all medication orders. METHODS: A multidisciplinary team characterized key elements of the drug infusion process. The process was enhanced to increase overall reliability and the original and revised processes were compared using FMEA. Resource consumption was estimated by reviewing purchasing and pharmacy records for the calendar year after full implementation of the revised process. Staff satisfaction was evaluated using an anonymous questionnaire administered to staff nurses in the ICU and pediatric residents who had rotated through the ICU. RESULTS: The original process was characterized by six elements: selecting the drug; selecting a dose; selecting an infusion rate; calculating and ordering the infusion; preparing the infusion; programming the infusion pump and delivering the infusion. The following practice changes were introduced: standardizing formulations for all infusions; developing database driven calculators; extending infusion hang times from 24 to 72 hours; changing from bedside preparation by nurses to pharmacy prepared or premanufactured solutions. FMEA showed that the last three elements of the original process had high risk priority numbers (RPNs) of >225 whereas the revised process had no elements with RPNs >100. The combined effect of prolonging infusion hang times, preparation in the pharmacy, and purchasing premanufactured solutions resulted in 1500 fewer infusions prepared by nurses per year. Nursing staff expressed a significant preference and pediatric residents unanimously expressed a strong preference for the revised process. CONCLUSIONS: Standardization of infusion delivery reduced the frequency for completing the most unreliable elements of the process and reduced the riskiness of the individual elements. Both contribute to a safer system.

Source: CINAHL

Full Text:
Available in fulltext at Highwire Press

Available in fulltext at Highwire Press
112. Patient safety special. Proactive management breaks the fall cycle.

Author(s): Jackson L, Gleason J

Citation: Nursing Management, 01 June 2004, vol./is. 35/6(37-38), 07446314

Publication Date: 01 June 2004

Abstract: Meet the challenge of keeping fall-prone and wandering patients safe.

Source: CINAHL

Full Text:
Available in fulltext at Ovid
Available in print at Grantham Hospital Staff Library
Available in fulltext at EBSCO Host

113. Failure mode and effects analysis: a search for ways of preventing patients from falling.

Author(s): Weeks SK, Bijkersma F, Hubbartt E, Murphy B, Anderson MA

Citation: American Journal of Nursing, 01 April 2004, vol./is. 104/4(0-), 0002936X

Publication Date: 01 April 2004

Source: CINAHL

Full Text:
Available in fulltext at Ovid

114. Medication station: conducting FMEA for medication management.

Citation: Joint Commission Perspectives on Patient Safety, 01 March 2004, vol./is. 4/3(7-8), 15345181

Publication Date: 01 March 2004

Source: CINAHL

115. A review of the literature examining linkages between organizational factors, medical errors, and patient safety.

Author(s): Hoff T, Jameson L, Hannan E, Flink E

Citation: Medical Care Research & Review, 01 March 2004, vol./is. 61/1(3-37), 10775587

Publication Date: 01 March 2004

Abstract: The potential role of organizational factors in enhanced patient safety and medical error prevention is highlighted in the systems approach advocated for by the Institute of Medicine and others. However, little is known about the extent to which these factors have been shown empirically to be associated with these favorable outcomes. The present study conducted an intensive review of the clinical and health services literatures in order to explore this issue. The results of this review support the general conclusion that there is little evidence for asserting the importance of any individual, group, or structural variable in error prevention or enhanced patient safety at the present time. Two major issues bearing on the development of future research in this area involve strengthening the theoretical foundations of organizational research on patient safety and overcoming definitional and observability problems associated with error-focused dependent variables.

Source: CINAHL

116. To err is human: improving patient safety through failure mode and effect
Patient care errors occur in the laboratory. Traditionally, most errors have been thought to occur because of individual human failure. The assumption is that with adequate training, education, and orientation, technologists will perform flawlessly. Laboratory processes are designed on the premise that nothing will go wrong. Health-care professionals are looking at new methods of error prevention including Failure Mode and Effect Analysis (FMEA). Based on long experience in the engineering field, FMEA assumes everything will fail, humans err frequently, and the cause of an error often is beyond the individual's control. FMEA is a proactive, systematic, multidisciplinary team-based approach to error prevention. Patient safety is now a high priority with the Joint Commission on Accreditation of Healthcare Organizations, and this article introduces FMEA, a new method for improving our processes to enhance patient safety.

Source: CINAHL


Author(s): Clancy TR

Citation: JONA's Healthcare Law, Ethics, & Regulation, January 2004, vol./is. 6/1(3-12; quiz 13-4), 1520-9229;1520-9229 (2004 Jan-Mar)

Published Date: January 2004

Abstract: This article provides a literature review of studies reporting on the incidence and factors that contribute to medication errors. It retraces the steps taken by the Institute of Medicine (IOM) to focus government agency strategy on medication error reduction policy and ranks successful solutions for reducing medication errors. In addition, it summarizes the effectiveness of historic and potential public policy and private payer initiatives.

Source: MEDLINE

118. Assessing patient safety risk before the injury occurs: an introduction to sociotechnical probabilistic risk modelling in health care.

Author(s): Marx DA, Slonim AD

Citation: Quality & Safety in Health Care, 03 December 2003, vol./is. 12/(0-), 14753898

Published Date: 03 December 2003

Abstract: Since 1 July 2001 the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has required each accredited hospital to conduct at least one proactive risk assessment annually. Failure modes and effects analysis (FMEA) was recommended as one tool for conducting this task. This paper examines the limitations of FMEA and introduces a second tool used by the aviation and nuclear industries to examine low frequency, high impact events in complex systems. The adapted tool, known as sociotechnical probabilistic risk assessment (ST-PRA), provides an alternative for proactively identifying, prioritizing, and mitigating patient safety risk. The uniqueness of ST-PRA is its ability to model combinations of equipment failures, human error, at risk behavioral norms, and recovery opportunities through the use of fault trees. While ST-PRA is a complex, high end risk modelling tool, it provides an opportunity to visualize system risk in a manner that is not possible through FMEA.

Source: CINAHL

Full Text:
Available in fulltext at [Highwire Press](#)
Available in fulltext at [Highwire Press](#)
Available in fulltext at [National Library of Medicine](#)
119. Error prevention and error management in medicine--adopting strategies from other professions.

Author(s): Thomeczek C

Citation: Onkologie, December 2003, vol./is. 26/6(545-50), 0378-584X;0378-584X (2003 Dec)

Publication Date: December 2003

Abstract: The report of the Institute of Medicine (IOM) 'To Err Is Human' received public interest. The simple term 'medical error' as it has been used in public so far does not describe the complex setting in medicine. The development of error management in industry (e.g. aviation) with an emphasis on human factors, communication, and systematic error is demonstrated in order to design similar approaches for medicine. Recommendations are based on the principles for designing safety systems in health care organisations published in the IOM report. Copyright 2003 S. Karger GmbH, Freiburg

Source: MEDLINE

120. Patient safety in surgery: error detection and prevention.

Author(s): Etchells E, O'Neill C, Bernstein M

Citation: World Journal of Surgery, August 2003, vol./is. 27/8(936-41; discussion 941-2), 0364-2313;0364-2313 (2003 Aug)

Publication Date: August 2003

Abstract: Error in medicine is becoming a well recognized phenomenon. The U.S. Institute of Medicine's publication in 1999 included estimations that medical error is the eighth leading cause of death in the United States and results in up to 100,000 deaths annually. Retrospective studies and a few prospective studies are shedding more light on this challenging problem. Strategies to reduce error and increase patient safety have not been widely developed or embraced by surgeons for a variety of reasons. We provide a review on patient safety aimed at surgeons that includes definitions, incidence of errors including those in the surgical literature, causes of error, methods of error detection, and strategies to minimize errors and maximize patient safety.

Source: MEDLINE

121. Use FMEA to find and fix problems before they happen: Joint Commission adds failure mode and analysis requirement for ambulatory programs.

Citation: Same-Day Surgery, 02 July 2003, vol./is. /(1-3), 01905066

Publication Date: 02 July 2003

Source: CINAHL

122. Using failure mode and effects analysis to improve patient safety.

Author(s): Spath PL

Citation: AORN Journal, July 2003, vol./is. 78/1(16-37; quiz 41-4), 0001-2092;0001-2092 (2003 Jul)

Publication Date: July 2003

Abstract: Failure mode and effects analysis (FMEA) (ie, prospective risk analysis) involves close examination of high-risk processes to identify needed improvements that will reduce the chance of unintended adverse events. This risk assessment process is used in other industries (ie, manufacturing, aviation) to evaluate system safety. Health care organizations now are using it to evaluate and improve the safety of patient care activities. The FMEA process promotes systematic thinking about the safety of patient care processes (ie, what could go wrong, what needs to be done to prevent failures.) The steps of the FMEA
process are described and applied to a high-risk perioperative process.  

Source: MEDLINE  
Full Text: Available in print at Pilgrim Hospital Staff Library

123. FMEA: an idea whose time has come.  
Author(s): Kusler-Jensen J, Weinfurter A  
Citation: SSM, 01 June 2003, vol./is. 9/3(30-36), 10798269  
Publication Date: 01 June 2003  
Source: CINAHL

124. Analyzing planned maintenance (PM) inspection data by failure mode and effect analysis methodology.  
Author(s): Ridgway M  
Citation: Biomedical Instrumentation & Technology, 01 May 2003, vol./is. 37/3(167-179), 08998205  
Publication Date: 01 May 2003  
Abstract: There is no question that medical devices are becoming more reliable. However, we have had some difficulty finding a satisfactory method for providing persuasive documentary evidence that this improved reliability will allow us to relax our traditional planned maintenance (PM) practices without compromising patient safety. The acceptance and increasing use of Failure Mode and Effect Analysis (FMEA) by several of the oversight agencies, including the Joint Commission on Accreditation of Healthcare Organizations, provides us with an important opportunity to take another shot at this vexing problem. Using this proven FMEA methodology and some relatively simple rules to quantify the results of the routine PM inspections that all healthcare providers are still performing in considerable abundance, we have developed a method that allows us to reduce the test results to a simple, single measure (the Risk Score) that can be used to characterize the effectiveness and levels of safety of our current PM regimens. When tested on theoretical data and a sample of real PM inspection results, the method provides answers that seem reasonable. Although it will probably require some modification as we begin the standardized data gathering and gain working experience, it is our hope that this new approach will become generally accepted within the industry. This kind of positive response should enable us to persuade the various accrediting and licensing agencies to similarly accept the concept.  
Source: CINAHL

125. How to make the most of failure mode and effect analysis.  
Author(s): Stalhandske E, DeRosier J, Patail B, Gosbee J  
Citation: Biomedical Instrumentation & Technology, 01 March 2003, vol./is. 37/2(96-102), 08998205  
Publication Date: 01 March 2003  
Abstract: Current accreditation standards issued by the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO) require hospitals to carry out a proactive risk assessment on at least 1 high-risk activity each year for each accredited program. Because hospital risk managers and patient safety managers generally do not have the knowledge or level of comfort for conducting a proactive risk assessment, they will appreciate the expertise offered by biomedical equipment technicians (BMETs), occupational safety and health professionals, and others. The skills that have been developed by BMETs and others while conducting job safety analyses or failure mode effect analysis can now be applied to a health care proactive analysis. This article touches on the Health Care Failure Mode and Effect Analysis (HFMEA) model that the Department of Veterans Affairs (VA) National Center for Patient Safety developed for proactive risk assessment within the health care community. The goal of this article is to enlighten BMETs and others on the growth of proactive risk assessment within health care and also
on the support documents and materials produced by the VA. For additional information on HFMEA, visit the VA website at www.patientsafety.gov/HFMEA.html.

Source: CINAHL

126. **Up-front about errors: EMS system introduces proactive error reporting system.**

Author(s): Gwinn R

Citation: JEMS: Journal of Emergency Medical Services, 01 March 2003, vol./is. 28/3(84-89), 01972510

Publication Date: 01 March 2003

Source: CINAHL

127. **Case study: use FMEA to prevent falls in a behavioral health unit.**

Citation: Briefings on Patient Safety, 01 January 2003, vol./is. 4/1(1-3), 15287637

Publication Date: 01 January 2003

Source: CINAHL

128. **Case study. FMEA targets error potential to redesign process of patient controlled analgesia (PCA).**

Citation: Joint Commission Benchmark, 01 January 2003, vol./is. 5/1(5-6), 15238806

Publication Date: 01 January 2003

Abstract: Classic PM tools show what to measure in each critical mode

Source: CINAHL

129. **Approaches for improving patient safety through a safety clearinghouse.**

Author(s): Cranfill LW

Citation: Journal for Healthcare Quality, January 2003, vol./is. 25/1(43-7), 1062-2551;1062-2551 (2003 Jan-Feb)

Publication Date: January 2003

Abstract: Creating this type of a program is a challenge and takes the time and commitment of key players. Most healthcare facilities have had systems and processes in place for years to "ensure quality." Inherent in those systems has been some ability to detect errors and to identify opportunities for improving quality of care. The next evolution of ensuring quality requires healthcare organizations to become far more proactive with error detection and correction systems. How? Becoming more openly and honestly communicative internally is an important first step. That means creating a nonpunitive environment that encourages staff members to report known or suspected problems. To do this most successfully requires not only involving members of the hospital staff who become aware of concerns, but also engaging patients and families as partners in the process. Healthcare organizations can learn much from patients and families about things that actually or almost go wrong. In turn, healthcare organizations owe patients and their families honesty when they know something has gone wrong that could or should have been prevented. Many healthcare organizations throughout the country are struggling with these new expectations from accreditors and consumers about disclosing medical errors to patients (and/or their families). Some may still even be questioning the need and/or the value of doing so. The Lexington VA Medical Center has been disclosing errors for approximately 10 years. The center has also been piloting proactive approaches to identifying and eliminating threats to patient safety (i.e., error-prone systems and processes). VAMC's experiences have demonstrated that both are clearly worth the effort.

Source: MEDLINE

130. **Proactive error prevention in the intensive care unit.**
Abstract: Care provided in the ICU accounts for nearly 30% of acute care hospital costs and, with the aging of Americans, there is an increased demand for critical care services [1]. Critical illness reduces an individual's physical resilience. Minute-to-minute care decisions and interventions mean life or death during this acute disease phase. Critically ill patients have limited ability to defend themselves from the consequences of health care error. This patient population has the least ability to communicate symptoms to health care providers. The risk of adverse events caused by medications or equipment malfunction is higher because patients in the ICU receive twice as many medications as patients in general care units [2] and often require mechanical support of normal body functions, such as breathing, eating, and eliminating body waste. Consequently, the patient in the ICU has a higher exposure to medical error than patients in other areas of the hospital. Copyright © 2002 by Elsevier Science (USA).

Source: CINAHL

131. Failure mode and effects analysis in health care.

Author(s): anonymous

Citation: Joint Commission Perspectives, November 2002, vol./is. 22/11(6), 1044-4017;1044-4017 (2002 Nov)

Publication Date: November 2002

Source: MEDLINE

132. Does critical incident reporting contribute to medication error prevention?


Citation: European Journal of Pediatrics, November 2002, vol./is. 161/11(594-9), 0340-6199;0340-6199 (2002 Nov)

Publication Date: November 2002

Abstract: Medication-related critical incidents (CIs) comprise harmful and potentially harmful events. The aim of CI monitoring is quality improvement through system changes. In a prospective survey, we analysed our drug-related CIs of the year 2001 with an emphasis on how they contributed to system changes. A voluntary, anonymous, non-punitive CI reporting was used. The study was performed in a multidisciplinary, 23-bed, neonatal-paediatric intensive care unit (ICU). CI severity was graded: minor (no interventions required), moderate (requiring routine therapy, available outside the ICU), major (need for therapeutic interventions specific to the ICU). There were 284 drug-related CIs, 76% (95% confidence interval 71%-81%) of minor, 19% of moderate and 5% of major severity. A total of 24 CIs were potentially life threatening (if not detected). Some 27% of CIs were intercepted, 17% before preparation and 10% before administration of the drug to the patient. There was a negative correlation between median delay (from CI to detection) and mean severity of the different drug classes involved (P = 0.027). As to the impact on quality, 46 CIs were followed by system changes and 63% (95% confidence interval 49%-77%) of these CIs were of minor severity. Examples of system changes are: double checking for potentially harmful drugs, standardised prescription form and contact to the national drug control agency regarding misleading drug labels. CONCLUSION: most of the system changes were based on minor critical incidents which were often detected only after a longer period of time. This shows the value of our "low-threshold" critical incident monitoring. Repeated checks along the drug delivery process (prescription, preparation, administration) are an important means to reduce adverse drug events.

Source: MEDLINE

A modified critical-incident analysis technique was used in a retrospective examination of the characteristics of human error and equipment failure in anesthetic practice. The objective was to uncover patterns of frequently occurring incidents that are in need of careful prospective investigation. Forty seven interviews were conducted with staff and resident anesthesiologists at one urban teaching institution, and descriptions of 359 preventable incidents were obtained. Twenty three categories of details from these descriptions were subjected to computer-aided analysis for trends and patterns. Most of the preventable incidents involved human error (82%), with breathing-circuit disconnections, inadvertent changes in gas flow, and drug syringe errors being frequent problems. Overt equipment failures constituted only 14% of the total number of preventable incidents, but equipment design was indictable in many categories of human error, as were inadequate experience and insufficient familiarity with equipment or with the specific surgical procedure. Other factors frequently associated with incidents were inadequate communication among personnel, haste or lack of precaution, and distraction. Results from multi-hospital studies based on the methodology developed could be used for more objective determination of priorities and planning of specific investments for decreasing the risk associated with anesthesia.
Abstract: BACKGROUND: In February 2001 Good Samaritan Hospital in Dayton, Ohio, conducted a Failure Mode and Effect Analysis (FMEA) on the blood transfusion process to reduce the risk of problems inherent in the procedure. DEVELOPING THE FMEA: The major steps of the analysis were to identify problems (failure modes), define their causes, and surmise the effects if failures occurred. Numerical scores were assigned for the likelihood of failure occurrence, the severity of the effects, and the possibility that the failure would escape detection. These scores were multiplied and reported as a risk priority number (RPN) for each failure mode. Solutions (process redesign actions) and monitoring plans (design validation) were developed to address the failure modes with the highest RPNs. PRESENTING THE FMEA: In March 2001 the FMEA document was presented to the Safety Board, which approved design changes such as use of a blood barrier system that restricts access to the blood until a patient-specific code is dialed. RESULTS: Measures were developed to analyze results, and rapid-cycle Plan-Do-Study-Act methodology was used to test and document redesign changes; most became the standard operating procedure. The new process accomplished its purpose of preventing serious, avoidable errors. No outcome errors occurred from March 2001 through June 2001 or in the 8 months following housewide implementation on June 18, 2001. DISCUSSION: FMEA was a valuable tool in error-trapping the blood transfusion process. Yet the FMEA process was time-consuming, tedious, and difficult and should be reserved for an organization's highest-priority processes.

Source: MEDLINE

137. The Safety Case Management Committee: expanding the avenues for addressing patient safety.

Author(s): Piotrowski MM, Saint S, Hinshaw DB

Citation: Joint Commission Journal on Quality Improvement, June 2002, vol./is. 28/6(296-305), 1070-3241;1070-3241 (2002 Jun)

Publication Date: June 2002

Abstract: BACKGROUND: The greatest gains in patient safety are likely to result from using a multifaceted framework of safety enhancement initiatives. The Safety Case Management Committee, which has been meeting at the VA Ann Arbor Healthcare System since early 1999, is one such initiative; it is directed at broadening organizational involvement in creating a safer clinical environment. The committee's objective is to address fundamental issues related to patient safety and quality of care. The committee aims to develop thematic approaches to improving major systems triggered by unsafe or risky incidents that demonstrate either iatrogenic harm or risk of harm to patients. COMMITTEE STRUCTURE AND FUNCTIONING: Committee members represent top management, middle management, and front-line employees, but membership is weighted toward those in direct patient care roles. The group also includes a consumer representative. Critical issues are addressed through rigorous case discussion, literature review, and expert consultation. RESULTS: In a 3-year period (Feb 1999 through Dec 2001), 85% of the group's 45 recommendations have been implemented. Topics have included reducing medication errors during emergency procedures, enhancing palliative care services, minimizing the risk of missed x-ray findings, optimizing anticoagulation management, reducing the risk of vascular catheter-related infection, and improving pain management. SUMMARY: The Safety Case Management Committee has successfully addressed actual and potential errors and has implemented strategic safety improvements. The dedicated efforts of highly motivated clinicians who serve on such a committee can augment and enhance risk management advances made through other channels.

Source: MEDLINE


Author(s): DeRosier J, Stalhandske E, Bagian JP, Nudell T

Citation: Joint Commission Journal on Quality Improvement, May 2002, vol./is. 28/5(248-67, 209), 1070-3241;1070-3241 (2002 May)

Publication Date: May 2002
Abstract: The authors describe HFMEA, a five-step process used to proactively evaluate a health care process, and provide examples of a team’s forms and actions regarding prostate-specific antigen testing.

Source: MEDLINE

139. [Avoiding human errors in the hospital--mission possible?]!

Author(s): Donchin Y

Citation: Harefuah, May 2002, vol./is. 141/5(453-4, 497), 0017-7768;0017-7768 (2002 May)

Publication Date: May 2002

Abstract: The way to combat the high frequency of errors and mistakes that endanger both the physician and the patient is by root cause analysis of accidents as well as investigation of "near misses". There is a need for a new approach to error prevention by re-education of the medical teams. A few examples are presented on how to approach an untoward event so as to learn from it rather than punish.

Source: MEDLINE

140. Proactive approach makes errors plummet: safety errors move to forefront.

Citation: Patient Education Management, 01 January 2002, vol./is. 9/1(8-9), 10870296

Publication Date: 01 January 2002

Source: CINAHL

141. York Hospital is a leader in proactive error prevention.

Citation: COR Clinical Excellence, 01 May 2001, vol./is. 2/5(1-4), 15320235

Publication Date: 01 May 2001

Source: CINAHL

142. Follow these 11 steps for error prevention.

Citation: ED Management, 01 June 2000, vol./is. 12/6(64-66), 10449167

Publication Date: 01 June 2000

Source: CINAHL

Google Advanced Search

Assessing risk: the role of probabilistic risk assessment (PRA) in patient safety improvement

J Wreathall, C Nemeth - Quality and Safety in Health Care, 2004 - qshc.bmj.com

... Few other approaches to safety assessment allow such “real life” combinations. Prospective analysis. ... Risk management combines quality management and the management of patient safety in the interest of limiting malpractice liability. ...

Challenges with applying FMEA to the process for reading labels on injectable drug containers

J Jeon, S Hyland, CM Burns, K ... - Human Factors and ..., 2007 - ingentaconnect.com

... on Accreditation of Healthcare Organizations (JCAHO) has required its accredited hospitals to conduct an annual proactive risk assessment ... Complying with the FMEA Requirements of the New Patient Safety Standards ... FMEA and RCA: the mantras; of modern risk management. ...

Prospective System Assessments Used to Enhance Patient Safety: Case Studies From a Collaboration of Engineers and Hospitals in Southwest Washington State

GA Coles - 2007 - link.aip.org
Prospective System Assessments Used to Enhance Patient Safety: Case Studies From a Collaboration of... Southwest Washington State between 2002 and 2007 in applying prospective system assessment ... The two case studies presented are: 1) an interhospital FMEA on patient ...

REQUIREMENTS FOR PROSPECTIVE RISK ANALYSIS IN HEALTH CARE

MMP Habraken, TW Van der Schaaf - heps2008.org

... To conclude, prospective risk analysis seems to be a powerful tool to improve patient safety in a proactive way. Nevertheless, existing prospective risk analysis methods such as FMEA and HFMEA™ need to be adapted in order to fulfill several important requirements for their ...

Promoting patient safety through prospective risk identification: example from perioperative care

Smith, M Boul, I Woods, S Johnson - Quality and Safety in Health ...., 2010 - qshc.bmj.com

... AS has received research funding via the UK Patient Safety Research Portfolio to carry out work for the NPSA. ... FMEA and RCA: the mantras of modern risk management ... Using failure mode and effects analysis to meet JCAHO's proactive risk assessment requirement. ...

Google Advanced Search

From the first 50 results...

National Center for Patient Safety - Using Healthcare Failure ...

National Center for Patient Safety - Using Healthcare Failure Modes and Effects ... The successes to date include developing HFMEASM, a practical proactive ... www.patientsafety.gov/.../HFMEA/HFMEA_JQI.html - Cached - Similar

Using failure mode and effects analysis to improve patient safety ...

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) ... (FMEA) was selected as the basis for the JCAHO proactive patient safety ... findarticles.com/p/articles/mi_m0FSL/is.../ai_105439643/ - Cached - Similar

Proactive Systems Analysis for Healthcare Organizations

Patient Safety, Quality and Risk Management - Patient Safety, Risk Assessment and ... Learn more about our proactive systems analysis and FMEA services. ... https://www.ecri.org/.../Proactive_Systems_Analysis.aspx - Cached - Similar

Optimizing FMEA and RCA efforts in health care

by RJ Latino - Cited by 5 - Related articles as proactive FMEA: that health care workers can learn how to make better decisions and, in the ... it can be demonstrated that such analyses increase patient safety while ..... American Society for Healthcare Risk Management/ASHRM. ... www.fmeainfocentre.com/papers/ashrm_paper_vol24no3.pdf - Similar

Promoting patient safety through prospective risk identification ...

by A Smith - 2010 - Cited by 2

Patient safety implies the transfer into healthcare of safety system principles used in other ..... FMEA and RCA: the mantras of modern risk management. ... qshc.bmj.com/content/19/1/69.full

Looking Ahead: The Use of Prospective Analysis to Improve the ...

by B Tezak - Related articles

One ROP requires healthcare organizations to conduct at least one annual .... The use of FMEA for prospective analyses allowed team members to review ... BA, MHSA, CHE, is the leader/director for risk management and patient safety at ...

What are the Risks of Risk Management? - Westgard QC

by S Westgard
Like most new new things in *healthcare, Risk Management* has a long history in ..... Since many of the measures of the *FMEA* are based on our subjective .... The VA National Center for *Patient Safety's Prospective Risk Analysis System*. ...

**HFMEA - Healthcare** Failure Mode & Effect Analysis

*Patient Safety* Introduction. Human Factors Engineering. *HFMEA* ppt & exercise ... proactive program for identifying risks to *patient safety* and reducing ...

**FMEA - Failure Mode & Effects Analysis Of Healthcare Processes**


**Institute for Healthcare Improvement: Failure Modes and Effects ...**

Institute for *Healthcare* Improvement Boston, Massachusetts, USA. Failure Modes and Effects Analysis (FMEA) is a systematic, proactive method for evaluating ...

**CERES: The evaluation of methods for the prospective patient ...**

by ML Durand - 2009

Title: The evaluation of methods for the prospective patient safety hazard ... The trend in *healthcare* for learning through experience of adverse events is ... FTA and FMEA provided better system coverage than HAZOP and identified more ...

https://dspace.lib.cranfield.ac.uk/handle/1826/4480 - Cached

**Dr Shelly Jeffcott - Proactive risk assessment using FMEA - What ...**

File Format: PDF/Adobe Acrobat - Quick View

How has it been adapted to *healthcare*, i.e. H/FMEA? ● Health care example .... The VA National Center for *Patient Safety's Prospective Risk System*. ...

**FMEA--Something Old, Something New**

by RD Reid - 2005 - Cited by 10 - Related articles

Clause 0.1 of ISO 9004 mentions *risk management* in the same breath with cost ... The Institute for Healthcare Improvement defines FMEA as “a systematic, proactive method ... FMEAs now tend to go by different names, such as healthcare FMEA, .... Effect Analysis,” Veterans Affairs National Center for *Patient Safety*. ...