

fmea analysis in healthcare

FMEA Analysis in Healthcare: A Critical Tool for Risk Mitigation

Introduction:

Healthcare is a high-stakes environment where even minor errors can have devastating consequences. From surgical complications to medication errors, the potential for harm is ever-present. This is why robust risk management strategies are absolutely critical. Failure Mode and Effects Analysis (FMEA) is one such strategy that's increasingly being adopted in healthcare settings to proactively identify and mitigate potential failures before they occur, saving lives and improving patient safety. This comprehensive guide will delve into the intricacies of FMEA analysis in healthcare, exploring its methodology, benefits, applications, and challenges. We'll provide practical examples and address common questions to equip you with the knowledge necessary to effectively implement FMEA in your healthcare organization.

What is FMEA Analysis?

Failure Mode and Effects Analysis (FMEA) is a systematic, proactive method used to identify potential failures in a process, product, or system, and to assess the severity, likelihood of occurrence, and detectability of those failures. It's a bottom-up approach, focusing on the individual components of a system to understand how their potential failures could impact the overall system. The goal is not just to identify potential problems but to prioritize them based on their risk level and implement corrective actions to reduce or eliminate those risks.

Why is FMEA Crucial in Healthcare?

The healthcare industry faces unique challenges demanding rigorous risk management. The consequences of failure can be catastrophic, leading to patient harm, legal repercussions, financial losses, and reputational damage. FMEA's proactive nature helps address these challenges by:

Improving Patient Safety: By identifying and mitigating potential risks, FMEA helps prevent adverse events and improve patient outcomes.

Reducing Medical Errors: FMEA can pinpoint vulnerabilities in processes that lead to medical errors, such as medication errors or surgical complications.

Enhancing Operational Efficiency: By identifying bottlenecks and inefficiencies, FMEA helps streamline processes and reduce waste.

Improving Compliance: FMEA can help healthcare organizations comply with regulatory requirements and industry best practices related to safety and quality.

Strengthening Risk Management: FMEA provides a structured framework for managing risks, improving the organization's overall risk profile.

Implementing FMEA in Healthcare: A Step-by-Step Guide

The FMEA process typically involves the following steps:

1. **Team Formation:** Assemble a multidisciplinary team with diverse expertise and perspectives relevant to the process under review.
2. **Process Definition:** Clearly define the process to be analyzed. Use flowcharts or other visual aids to illustrate the process steps.
3. **Potential Failure Mode Identification:** Brainstorm potential failure modes at each step of the process.
4. **Effects Analysis:** Determine the potential effects of each failure mode on the patient, the system, and the organization.
5. **Severity Rating:** Assign a severity rating to each potential effect based on its impact (e.g., 1-10 scale, with 10 being the most severe).
6. **Occurrence Rating:** Estimate the likelihood of each failure mode occurring (e.g., 1-10 scale).
7. **Detection Rating:** Assess the likelihood of detecting the failure mode before it impacts the patient or system (e.g., 1-10 scale).
8. **Risk Priority Number (RPN) Calculation:** Calculate the RPN for each failure mode by multiplying the severity, occurrence, and detection ratings ($\text{Severity} \times \text{Occurrence} \times \text{Detection} = \text{RPN}$). Higher RPN values indicate higher-risk failure modes.
9. **Action Planning:** Develop and implement corrective actions to reduce the RPN of high-risk failure modes.
10. **RPN Recalculation:** After implementing corrective actions, recalculate the RPN to assess the effectiveness of the actions.
11. **Documentation and Review:** Document the entire FMEA process and regularly review and update it as needed.

Applications of FMEA in Healthcare:

FMEA can be applied to a wide range of processes in healthcare, including:

Surgical procedures: Identifying potential failures in surgical instruments, techniques, and team coordination.

Medication administration: Analyzing potential errors in prescribing, dispensing, and administering medications.

Diagnostic testing: Identifying potential failures in laboratory procedures and interpretation.

of results.

Patient care pathways: Analyzing potential points of failure in the overall care process for specific conditions.

Emergency room operations: Evaluating potential failures in triage, treatment, and patient handoff.

Infection control protocols: Identifying potential breaches in infection control practices.

Challenges in Implementing FMEA in Healthcare:

While FMEA offers significant benefits, its implementation can present challenges:

Time and Resource Constraints: Performing a thorough FMEA requires time and dedicated resources.

Team Expertise: Successful FMEA relies on a skilled and collaborative team.

Data Collection: Gathering accurate data on failure modes and their effects can be challenging.

Maintaining Momentum: Sustaining the FMEA process over time requires commitment and ongoing review.

Conclusion:

FMEA analysis is a powerful tool for improving patient safety and reducing risks in healthcare. By systematically identifying and mitigating potential failures, healthcare organizations can create a safer and more efficient environment for both patients and staff. While implementing FMEA requires effort and resources, the potential benefits—in terms of improved patient outcomes, reduced costs, and enhanced reputation—far outweigh the challenges.

Sample FMEA Report Outline:

Title: FMEA Analysis: Medication Administration Process in Oncology Ward

Introduction: Briefly describes the purpose of the FMEA, the process being analyzed, and the team involved.

Process Description: Provides a detailed description of the medication administration process in the oncology ward, including a flowchart or diagram.

Potential Failure Modes and Effects Analysis: A table listing each step of the process, potential failure modes, effects, severity, occurrence, detection, RPN, and recommended actions.

Corrective Actions: Detailed descriptions of the actions to be taken to mitigate high-risk failure modes.

Implementation Plan: A schedule for implementing the corrective actions and monitoring their effectiveness.

Conclusion: Summarizes the findings of the FMEA and outlines next steps.

(Note: The full FMEA report would contain a detailed table with the data points mentioned above for each step of the medication administration process.)

(The following sections would expand upon the points in the outline above, providing detailed examples and explanations. Due to the length constraint, I am unable to provide fully detailed examples within this response. However, the following sections would be filled out with these details.)

Introduction Section: (Details on why this FMEA is being conducted, goals, scope, team members, etc.)

Process Description Section: (Detailed flow chart, step-by-step description of medication administration process in the Oncology ward)

Potential Failure Modes and Effects Analysis Section: (Table with detailed description of each potential failure mode, its effect, severity rating, occurrence rating, detection rating, RPN calculation and suggested actions.)

Corrective Actions Section: (Specific actions for each high-risk failure mode, including assigned responsibilities and timelines)

Implementation Plan Section: (Timeline for implementation of corrective actions, and ongoing monitoring plan)

Conclusion Section: (Summary of findings, RPN reduction achieved, and planned next steps.)

FAQs:

1. What is the difference between FMEA and Failure Mode Effects and Criticality Analysis (FMECA)? FMECA adds a criticality analysis to the FMEA process, focusing on the potential impact of failures on the overall system's operation.
1. How often should an FMEA be reviewed and updated? FMEAs should be reviewed and updated at least annually, or more frequently if significant changes occur in the process.
1. Who should be involved in an FMEA team? A multidisciplinary team with representatives from various departments (nursing, pharmacy, administration, etc.) and relevant expertise should be included.
1. What software can be used for FMEA analysis? Several software packages are

available to facilitate FMEA analysis, streamlining the process and improving data management.

1. How can I ensure the accuracy of data in my FMEA? Utilize a combination of historical data, expert judgment, and data from incident reports.
1. What are some common pitfalls to avoid when conducting an FMEA? Avoid bias, incomplete data collection, and overlooking subtle failure modes.
1. How can I effectively communicate the results of an FMEA to stakeholders? Present findings clearly and concisely through reports, presentations, and visual aids.
1. How does FMEA relate to other risk management tools? FMEA can complement other tools like Hazard Analysis and Critical Control Points (HACCP) and risk registers.
1. What are the key performance indicators (KPIs) to measure the success of an FMEA? Measure the reduction in the RPN values, the number of implemented corrective actions, and the reduction in adverse events.

Related Articles:

1. Improving Patient Safety with Root Cause Analysis: Explores the complementary use of root cause analysis to enhance the effectiveness of FMEA.
1. The Role of Human Factors in Healthcare FMEA: Discusses the importance of considering human factors in identifying potential failure modes.
1. Implementing FMEA in a Surgical Setting: Provides a case study of FMEA implementation in a surgical department.

1. FMEA and Compliance with Healthcare Regulations: Explains how FMEA contributes to regulatory compliance.
1. The Benefits of Using FMEA Software: Reviews various FMEA software options and their features.
1. Overcoming Challenges in Healthcare FMEA Implementation: Offers practical strategies to address common barriers to FMEA adoption.
1. A Comparative Study of FMEA and Other Risk Management Tools: Analyzes the strengths and weaknesses of FMEA compared to other methods.
1. Measuring the Effectiveness of FMEA in Reducing Medical Errors: Presents data on the impact of FMEA on error reduction rates.
1. Case Study: FMEA in Medication Reconciliation: Details a specific example of how FMEA was used to improve medication reconciliation processes.

fmea analysis in healthcare: Improved FMEA Methods for Proactive Healthcare Risk Analysis Hu-Chen Liu, 2019-02-14 This book offers an in-depth and systematic introduction to improved failure mode and effects analysis (FMEA) methods for proactive healthcare risk analysis. Healthcare risk management has become an increasingly important issue for hospitals and managers. As a prospective reliability analysis technique, FMEA has been widely used for identifying and eliminating known and potential failures in systems, designs, products or services. However, the traditional FMEA has a number of weaknesses when applied to healthcare risk management. This book provides valuable insights into useful FMEA methods and practical examples that can be considered when applying FMEA to enhance the reliability and safety of the healthcare system. This book is very interesting for practitioners and academics working in the fields of healthcare risk management, quality management, operational research, and management science and engineering. It can be considered as the guiding document for how a healthcare organization proactively identifies, manages and mitigates the risk of patient harm. This book also serves as a valuable reference for postgraduate and senior undergraduate students.

fmea analysis in healthcare: Failure Mode and Effect Analysis D.H. Stamatis, 2003-05-07

Author D. H. Stamatis has updated his comprehensive reference book on failure mode and effect analysis (FMEA). This is one of the most comprehensive guides to FMEA and is excellent for professionals with any level of understanding.!--nl--This book explains the process of conducting system, design, process, service, and machine FMEAs, and provides the rationale for doing so. Readers will understand what FMEA is, the different types of FMEA, how to construct an FMEA, and the linkages between FMEA and other tools. Stamatis offer a summary of tools/methodologies used in FMEA along with a glossary to explain key terms and principles. The updated edition includes information about the new ISO 9000:2000 standard, the Six Sigma approach to FMEA, a special section on automotive requirements related to ISO/TS 16949, the "robustness" concept, and TE 9000 and the requirements for reliability and maintainability. Also includes FMEA forms and samples, design review checklist, criteria for evaluation, basic reliability formulae and conversion failure factors, guidelines for RPN calculations and designing a reasonable safe product, and diagrams, and examples of FMEAs with linkages to robustness.

fmea analysis in healthcare: The Basics of FMEA Raymond J. Mikulak, 2017-08-09

Demonstrates How To Perform FMEAs Step-by-StepOriginally designed to address safety concerns, Failure Mode and Effect Analysis (FMEA) is now used throughout the industry to prevent a wide range of process and product problems. Useful in both product design and manufacturing, FMEA can identify improvements early when product and process changes are

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Commission Resources, Inc, 2005 Failure Mode and Effects Analysis (FMEA), a systematic approach to error prevention, helps you examine specific processes to identify failures before they happen, determine the consequences, and manage potential risks. This book features a guide through FMEA, from identifying high- and low-risk situations to implementing the processes you develop.

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willing to get to the root causes of problems? As Medicare, Medicaid, and major insurance companies increasingly deny payment for never events, it has become imperative that hospitals and doctors develop new ways to prevent these avoidable catastrophes from recurring. Proactive tools such as root cause analysis (RCA), basic failur

fmea analysis in healthcare: Effective FMEAs Carl S. Carlson, 2012-04-11 Outlines the correct

procedures for doing FMEAs and how to successfully apply them in design, development, manufacturing, and service applications There are a myriad of quality and reliability tools available to corporations worldwide, but the one that shows up consistently in company after company is Failure Mode and Effects Analysis (FMEA). Effective FMEAs takes the best practices from hundreds of companies and thousands of FMEA applications and presents streamlined procedures for veteran FMEA practitioners, novices, and everyone in between. Written from an applications viewpoint—with many examples, detailed case studies, study problems, and tips included—the book covers the most common types of FMEAs, including System FMEAs, Design FMEAs, Process FMEAs, Maintenance FMEAs, Software FMEAs, and others. It also presents chapters on Fault Tree Analysis, Design Review Based on Failure Mode (DRBFM), Reliability-Centered Maintenance (RCM), Hazard Analysis, and FMECA (which adds criticality analysis to FMEA). With extensive study problems and a companion Solutions Manual, this book is an ideal resource for academic curricula, as well as for applications in industry. In addition, Effective FMEAs covers: The basics of FMEAs and risk assessment How to apply key factors for effective FMEAs and prevent the most common errors What is needed to provide excellent FMEA facilitation Implementing a best practice FMEA process Everyone wants to support the accomplishment of safe and trouble-free products and processes while generating happy and loyal customers. This book will show readers how to use FMEA to anticipate and prevent problems, reduce costs, shorten product development times, and achieve safe and highly reliable products and processes.

fmea analysis in healthcare: Improving Diagnosis in Health Care National Academies of

Sciences, Engineering, and Medicine, Institute of Medicine, Board on Health Care Services,

Committee on Diagnostic Error in Health Care, 2015-12-29 Getting the right diagnosis is a key aspect of health care - it provides an explanation of a patient's health problem and informs subsequent health care decisions. The diagnostic process is a complex, collaborative activity that involves clinical reasoning and information gathering to determine a patient's health problem. According to Improving Diagnosis in Health Care, diagnostic errors-inaccurate or delayed diagnoses-persist throughout all settings of care and continue to harm an unacceptable number of patients. It is likely that most people will experience at least one diagnostic error in their lifetime, sometimes with devastating consequences. Diagnostic errors may cause harm to patients by preventing or delaying appropriate treatment, providing unnecessary or harmful treatment, or resulting in psychological or financial repercussions. The committee concluded that improving the diagnostic process is not only possible, but also represents a moral, professional, and public health imperative. Improving Diagnosis in Health Care, a continuation of the landmark Institute of Medicine reports To Err Is Human (2000) and Crossing the Quality Chasm (2001), finds that diagnosis-and, in particular, the occurrence of diagnostic errors—has been largely unappreciated in efforts to improve the quality and safety of health care. Without a dedicated focus on improving diagnosis, diagnostic errors will likely worsen as the delivery of health care and the diagnostic process continue to increase in complexity. Just as the diagnostic process is a collaborative activity, improving diagnosis will require collaboration and a widespread commitment to change among health care professionals, health care organizations, patients and their families, researchers, and policy makers. The recommendations of Improving Diagnosis in Health Care contribute to the growing momentum for change in this crucial area of health care quality and safety.

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user-friendly, and will provide practical information regarding many aspects of establishing and managing a healthcare epidemiology program. The Society for Healthcare Epidemiology of America (SHEA) has recruited over 50 recognized leaders in the field to share their expertise. They discuss overarching goals, as well as successful strategies for handling specific situations and problems. There is also extensive information on infection control in the outpatient setting and measures to take after exposure to infectious agents.

fmea analysis in healthcare: Patient Safety Institute of Medicine, Board on Health Care Services, Committee on Data Standards for Patient Safety, 2003-12-20 Americans should be able to count on receiving health care that is safe. To achieve this, a new health care delivery system is needed – a system that both prevents errors from occurring, and learns from them when they do occur. The development of such a system requires a commitment by all stakeholders to a culture of safety and to the development of improved information systems for the delivery of health care. This national health information infrastructure is needed to provide immediate access to complete patient information and decision-support tools for clinicians and their patients. In addition, this infrastructure must capture patient safety information as a by-product of care and use this information to design even safer delivery systems. Health data standards are both a critical and time-sensitive building block of the national health information infrastructure. Building on the Institute of Medicine reports *To Err Is Human* and *Crossing the Quality Chasm*, Patient Safety puts forward a road map for the development and adoption of key health care data standards to support both information exchange and the reporting and analysis of patient safety data.

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health care organizations and government agencies. ASHRM initiatives focus on developing and implementing safe and effective patient care practices, preserving financial resources, and maintaining safe working environments.

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fmea analysis in healthcare: Handbook of Maintenance Management and Engineering Mohamed Ben-Daya, Salih O. Duffuaa, Abdul Raouf, Jezdimir Knezevic, Daoud Ait-Kadi, 2009-07-30 To be able to compete successfully both at national and international levels, production systems and equipment must perform at levels not even thinkable a decade ago. Requirements for increased product quality, reduced throughput time and enhanced operating effectiveness within a rapidly changing customer demand environment continue to demand a high maintenance performance. In some cases, maintenance is required to increase operational effectiveness and revenues and customer satisfaction while reducing capital, operating and support costs. This may be the largest challenge facing production enterprises these days. For this, maintenance strategy is required to be aligned with the production logistics and also to keep updated with the current best practices. Maintenance has become a multidisciplinary activity and one may come across situations in which maintenance is the responsibility of people whose training is not engineering. This handbook aims to assist at different levels of understanding whether the manager is an engineer, a production manager, an experienced maintenance practitioner or a beginner. Topics selected to be included in this handbook cover a wide range of issues in the area of maintenance management and engineering to cater for all those interested in maintenance whether practitioners or researchers. This handbook is divided into 6 parts and contains 26 chapters covering a wide range of topics related to maintenance management and engineering.

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fmea analysis in healthcare: Handbook of Research on Patient Safety and Quality Care through Health Informatics Michell, Vaughan, 2013-09-30 Medical and health activities can greatly benefit from the effective use of health informatics. By capturing, processing, and disseminating information to the correct systems and processes, decision-making can be more successful and quality care and patient safety would see significant improvements. The Handbook of Research on Patient Safety and Quality Care through Health Informatics highlights current research and trends from both professionals and researchers on health informatics as applied to the needs of patient

safety and quality care. Bringing together theory and practical approaches for patient needs, this book is essential for educators and trainers at multiple experience levels in the fields of medicine and medical informatics.

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fmea analysis in healthcare: Quality and Safety in Anesthesia and Perioperative Care Keith J. Ruskin, Marjorie P. Stiegler, Stanley H. Rosenbaum, 2016 Quality and Safety in Anesthesia and Perioperative Care offers practical suggestions for improving quality of care and patient safety in the perioperative setting. Chapters are organized into sections on clinical foundations and practical

applications, and emphasize strategies that support reform at all levels, from operating room practices to institutional procedures. Written by leading experts in their fields, chapters are based on accepted safety, human performance, and quality management science and they illustrate the benefits of collaboration between medical professionals and human factors experts. The book highlights concepts such as situation awareness, staff resource management, threat and error management, checklists, explicit practices for monitoring, and safety culture. *Quality and Safety in Anesthesia and Perioperative Care* is a must-have resource for those preparing for the quality and safety questions on the American Board of Anesthesiology certification examinations, as well as clinicians and trainees in all practice settings.

fmea analysis in healthcare: Utilizing the 3Ms of Process Improvement in Healthcare

Richard Morrow, 2017-07-27 Utilizing the 3Ms of Process Improvement in Healthcare supplies step-by-step guidance on how to use the 3Ms of change leadership to improve healthcare processes. Complete with forms, templates, and healthcare case studies, it illustrates the proper application of the 3Ms. It weaves stories throughout the book of role models who have succeeded, as w

fmea analysis in healthcare: Evaluating Surgical Risk Using FMEA and MULTIMOORA

Methods under a Single-Valued Trapezoidal Neutrosophic Environment Peng-Fei Cheng, Dan-Ping Li, Ji-Qun He, Xiang-Hong Zhou, Jian-Qiang Wang, Hong-Yu Zhang, Human errors during operations may seriously threaten patient recovery and safety and affect the doctor-patient relationship. Therefore, risk evaluation of the surgical process is critical. Risk evaluation by failure mode and effect analysis (FMEA) is a prospective technology that can identify and evaluate potential failure modes in the surgical process to ensure surgical quality and patient safety. In this study, a hybrid surgical risk- evaluation model was proposed using FMEA and multiobjective optimization on the basis of ratio analysis plus full multiplicative form (MULTIMOORA) method under a single-valued trapezoidal neutrosophic environment. This work aimed to determine the most critical risk points during the surgical process and analyze corresponding solutions.

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Sujan, Friedemann Bitsch, 2021-08-25 This book constitutes the proceedings of the 40th International Conference on Computer Safety, Reliability and Security, SAFECOMP 2021, which took place in York, UK, in September 2021. The 17 full papers included in this volume were carefully reviewed and selected from 76 submissions. They were organized in topical sections as follows: machine learning safety assurance; security engineering; safety and assurance cases; machine learning applications; safety validation and simulation; and fault tolerance.

fmea analysis in healthcare: Reliability Centered Maintenance (RCM) Neil B. Bloom,

2005-12-22 A properly implemented and managed RCM program can save millions in unscheduled maintenance and breakdowns. However, many have found the process daunting. Written by an expert with over 30 years of experience, this book introduces innovative approaches to simplify the RCM process such as: single vs. multiple failure analysis, hidden failures analysis, potentially critical components analysis, run-to-failure and the difference between redundant, standby, and backup functions. Included are real life examples of flawed preventive maintenance programs and how they led to disasters that could have easily been avoided. Also illustrated in detail, with real-life examples, is the step-by-step process for developing, implementing, and maintaining a premier classical RCM program. Senior management, middle management, supervisors, and craftsmen/technicians responsible for plant safety and reliability will find this book to be invaluable as a means for establishing a first class preventive maintenance program.

fmea analysis in healthcare: *Human Error in Medicine* Marilyn Sue Bogner, 2018-02-06 This

edited collection of articles addresses aspects of medical care in which human error is associated with unanticipated adverse outcomes. For the purposes of this book, human error encompasses mismanagement of medical care due to: * inadequacies or ambiguity in the design of a medical device or institutional setting for the delivery of medical care; * inappropriate responses to antagonistic environmental conditions such as crowding and excessive clutter in institutional settings, extremes in weather, or lack of power and water in a home or field setting; * cognitive

errors of omission and commission precipitated by inadequate information and/or situational factors -- stress, fatigue, excessive cognitive workload. The first to address the subject of human error in medicine, this book considers the topic from a problem oriented, systems perspective; that is, human error is considered not as the source of the problem, but as a flag indicating that a problem exists. The focus is on the identification of the factors within the system in which an error occurs that contribute to the problem of human error. As those factors are identified, efforts to alleviate them can be instituted and reduce the likelihood of error in medical care. Human error occurs in all aspects of human activity and can have particularly grave consequences when it occurs in medicine. Nearly everyone at some point in life will be the recipient of medical care and has the possibility of experiencing the consequences of medical error. The consideration of human error in medicine is important because of the number of people that are affected, the problems incurred by such error, and the societal impact of such problems. The cost of those consequences to the individuals involved in medical error, both in the health care providers' concern and the patients' emotional and physical pain, the cost of care to alleviate the consequences of the error, and the cost to society in dollars and in lost personal contributions, mandates consideration of ways to reduce the likelihood of human error in medicine. The chapters were written by leaders in a variety of fields, including psychology, medicine, engineering, cognitive science, human factors, gerontology, and nursing. Their experience was gained through actual hands-on provision of medical care and/or research into factors contributing to error in such care. Because of the experience of the chapter authors, their systematic consideration of the issues in this book affords the reader an insightful, applied approach to human error in medicine -- an approach fortified by academic discipline.

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Mundra, Robin Doss, Subhajit Bhattacharya, 2021-09-03 This book features original papers from the 3rd International Conference on Smart IoT Systems: Innovations and Computing (SSIC 2021), presenting scientific work related to smart solution concepts. It discusses scientific works related to smart solutions concept in the context of computational collective intelligence consisted of interaction between smart devices for smart environments and interactions. Thanks to the high-quality content and the broad range of the topics covered, the book appeals to researchers pursuing advanced studies.

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fmea analysis in healthcare: *A Human Error Approach to Aviation Accident Analysis* Douglas A. Wiegmann, Scott A. Shappell, 2017-12-22 Human error is implicated in nearly all aviation accidents, yet most investigation and prevention programs are not designed around any theoretical framework of human error. Appropriate for all levels of expertise, the book provides the knowledge and tools required to conduct a human error analysis of accidents, regardless of operational setting (i.e. military, commercial, or general aviation). The book contains a complete description of the Human Factors Analysis and Classification System (HFACS), which incorporates James Reason's model of latent and active failures as a foundation. Widely disseminated among military and civilian organizations, HFACS encompasses all aspects of human error, including the conditions of operators and elements of supervisory and organizational failure. It attracts a very broad readership. Specifically, the book serves as the main textbook for a course in aviation accident investigation taught by one of the authors at the University of Illinois. This book will also be used in courses designed for military safety officers and flight surgeons in the U.S. Navy, Army and the Canadian Defense Force, who currently utilize the HFACS system during aviation accident investigations. Additionally, the book has been incorporated into the popular workshop on accident analysis and prevention provided by the authors at several professional conferences world-wide. The book is also targeted for students attending Embry-Riddle Aeronautical University which has satellite campuses throughout the world and offers a course in human factors accident investigation for many of its majors. In addition, the book will be incorporated into courses offered by Transportation Safety International and the Southern California Safety Institute. Finally, this book serves as an excellent reference guide for many safety professionals and investigators already in the field.

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