REVIEW ARTICLE

Vigilance System Requirements Across US and EU for Medical Device

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ABSTRACT

Medical device vigilance is concerned about device problems (incidents) their analysis and mitigation to ensure that device performance is good and that patient safety are maintained. The main aim of this is to outline the criteria of the medical device vigilance program and to highlight the requirements that still remain in the state laws of regulated markets (US & EU) and to increase access to safe, reliable and therapeutic benefits. The severity of the Subject, risk assessment should carried out by the manufacturer prior to marketing. In US, Medical Device surveillance deals with post-marketing monitoring where the manufacturer or importer is required submit reports to regulatory authorities; same as in the EU. US medical device tracking system involved with different sections to update adverse event. The user or manufacturer has to report incidents to member states where necessary actions are to be taken as early as possible to protect or reduce hazard of casualty or severe decline in terms of safety and quality by implementing the CAPA for risk analysis.

Keywords: Vigilance, FSCA, PMS, Medical device, FTA, US, EU.

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INTRODUCTION

Under the post market surveillance of medical device in US, passed a legislation of FDA Modernization Act 1970 for Class II & III devices.

Council directive of 90/385/EEC & 93/42/EEC published for manufacturer and member states to support the vigilance requirements of medical device, and MEDDEV guidance to attain equivalence between access to safe and effective.[1] developed within the framework of the Directive on General Product Safety (GPSD

OBJECTIVES

- To minimize potential risk of use, ensure that the intended consumer is capable od using medical device safely and efficiently throughout the product life cycle.
- To identify potential design-related risks in both normal and liability circumstances
- To evaluate hazards of medical device by risk analysis and its control measures.

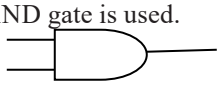
DISCUSSION

Assessment of precise risks can be determined by two methods:

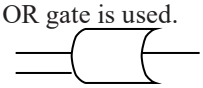
- Fault tree analysis (FTA) (Figure 1)
- Failure mode and effects analysis

The logic gates determines whether the sub event probabilities or frequencies should be multiplied, for an AND gate or an OR gate.

And gate – if all events under a gate are necessary for the higher event to occur, an AND gate is used.



Or gate – if each of the event sufficient to produce the higher event on its own, an OR gate is used.



Example of a Simplified Fault Tree Diagram for an Infusion Pump

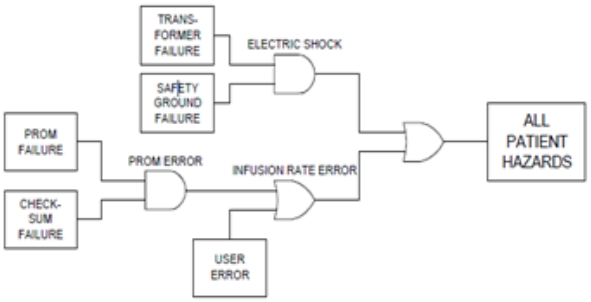


Figure 1: Fault tree analysis process

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Where in case of EUROPE the risk analysis is carried out on,

- Identifying the hazard(s)
- Identifying the subject(s) at risk
- Describing the potential harm
- Describing how the hazard may harm the subject; hence the risk analysis between US And EU follow same procedures

UNITED STATES OF AMERICA (USA)

The US legal regulatory basis is based on statutes enacted by the US Congress and federal regulations, which determine how statutes are implemented by federal agencies such as the FDA. Requirements for reporting adverse events for marketed medical devices are provided by the Medical Devices Regulations (21 CFR Part 803).

Guidance documents issued by the FDA are not enforceable as law but provide guidance documents for the FDA's interpretation of the regulations. Relevant FDA guidance documents regarding adverse event reporting include the following:

- Medical Device Reporting: An Overview (April 1996);
- Medical Device Reporting for User Facilities (April 1996)
- Medical Device Reporting for Manufacturers (March 1997).[2]

Submitting to eMDR

The FDA has two options for manufacturers and importers to electronically submit MDRs:

- Web Interface using the eSubmitter application
- AS2 Gateway-to-Gateway using HL7 ICSR XML.[3]

EUROPE

EU Pharmacovigilance System: Legal and Regulatory Basis

The legal base and regulatory guidance concerning adverse event reporting within the system and the reporting of adverse events experienced in the clinical assessment of medical devices are found in the following legal acts and documents:

- Medical Devices Directive (Directive 93/42/ EEC)
- In Vitro Diagnostic (IVD) Medical Devices Directive (Directive 98/79/EC)
- Active Implantable Medical Devices (AIMD) Directive (Directive90/385/EEC)

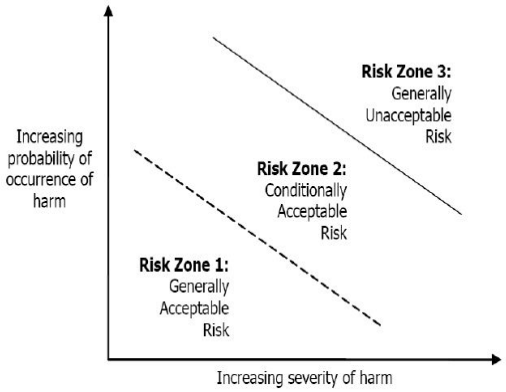

Figure 2: Safety Risk Zones (6)

- Guidelines on a medical devices vigilance system (MEDDEV 2.12-1 rev 6, December 2009)
- Rules on medical devices - Clinical evaluation: A guide for manufacturers and Notified Bodies (MEDDEV 2.7.1 rev 3, December 2009)

The main differences between the medical device vigilance process in general in 1998 and the process today are:

- the level of detail of the reporting criteria has expanded
- reporting time frames have become more consolidated
- reporting formats have been standardized.[4]

Hazard Handles Measure

Defending actions, e.g. default in use modes
Information for safety, e.g., warnings in labeling
Many actions have need of interference:

- Right reaction for the conditions, e.g. a patient-specific response
- Timeliness

The severity and possibilities of harm can be reduced by risk reduction measures. Risk control strategy also includes the process that advance to detect ability of hazardous and quality risks.[5]

Safety Risks Zones

Vigilance system for medical device aims to promote the immediate, early, and harmonized application of FSCA in all Member States where the device is in use, opposed to the country by country action (Figure 2).

MEDICAL DEVICE TRACKING

Follow-up of the deice should be carried out to know the results of the user and patients to assist manufacturer to reduce adverse effects or recall if any major deficiency is found in the device.

Tracking System

US- Post-market surveillance
EMA- adverse incident tracking system (AITS)

Criterion for an Event to be Reported to Competent Authorities by Manufactures

- An occurred incident.
- Incident of medical device
- Death of a patient.

Vigilance Exchange Program

Intend to exchange information are:

- Confidential information
- Non-confidential information.

Serious incidents related to device and its global distribution would influence exchange between NCAR.

Basis:

1. Consequential
2. Rpidity of the occurrence
3. Populace that is susceptible (newborn or aged)
4. Avertable
5. Community fear or offend. e.g.; lead aprons containing radioactive material

Table 1: Time scales to issue a FSCA:(8)

Draft notification of safety in the field	*Comment for minimum of 48 hours*
Reply to EU on FSCA queries	Written declaration in the event of a critical government risk or 21 days.

Table 2: Mandatory Reporting Requirements for Manufacturers and Importers: (US)

Reporter	*What to report*	*Report form*	*To whom*	*When*
Manufacturer	Deaths, severe injuries, and malfunctions reported for 30 days	3500A Form FDA	FDA	Awareness of an case within 30 calendar days
	5-day report for a case designated by FDA or an incident requiring remedial action to avoid excessive risk of serious public health damage	3500A Form FDA	FDA	Awareness of case within 5 working days.
Importers	Death and severe injuries reports	3500A Form FDA	FDA	Awareness of a case within 30 calendar days
		3500A Form FDA	Manufacture and FDA	Awareness of a case within 30 calendar days

Table 3: Comparison between US and EU

Parameters	*US*	*EU*
Post marketing monitoring activities	Tracking of medical device, MDR Event files, documents and written processes, handling of complaints.	Adverse events reporting FSCA and safety reports, inquires, clinical follow-up documents post-market enforcement.
Types of reports	30–day reports, 5-day reports, baseline reports, additional reports, annual reports.	Periodic reporting of trends, Initial reporting of adverse events, final reports.
Exchange of surveillance	For all products regulated under US and EC Law as a medical device, post-market vigilance reports will be exchanged	Exchange data in and out of FSCA and comparable events.
Follow-up of medical device	Have a monitoring system been in place since 1993	AITS created by evaluating user accounts to explore the device failures modes
Analysis of danger	Analysis of the faulty tree.	By defining the topic of danger, severity.
Time to report	Within thirty business days Within five business days	There are usually 10 working days for European manufactures to submit initial reports. There are 30 calendar days for severe injuries and near incidents.
Not incidents reportable	The supplier can send an RAE instance request: inaccurate information when the unit is produced by the other manufacturer	Client identified deficiencies, the root cause of the adverse event due to pre-existing conditions in patients, side effects obviously stated on the label of the manufacturer.
Records	Adverse events documents, assessment documents, monitoring and inspection documents	Adverse events documents, assessment documents, records compatible with consumer/user.
Recall	The manufacturer must trigger recall	The manufacturer must trigger recall
Applicable forms	3500A-Form 3500-Form 3419-Form	Reporting of incidents and online incidents report.

6. Pros / risk ratio

Recall

Recall the FSCA to decrease the danger of damage to patients, operators or others or to minimize the re-occurrence of the occurrence. The following measures would be included in FSCA (Table 1):

- Return of a medical device to the manufacturer or its representative (which is termed recall)
- Device modification
- Device exchange
- Device destruction
- Advice given by manufacturer regarding the use of the device.[7]

Reporting Codes for Adverse Events

Med watch of medical device reporting handbook contains codes for adverse events which helps to fill FDA 3500A form.[7]

User Facility Reporting Requirements

- Reports of death
- Reports of serious injury

- Send an annual report to FDA in Form3419 by January 1st of every year (Table 2 and 3).

TYPES OF REPORT

Follow-up Report

A follow-up report should be submitted by the manufacturer to NCA, when the investigation time is closer to the NCAs timelines in the original report.

Final Report

A report containing the results of the injury and its action in a statutory declaration

- Illustration of actions:
- No action;
- Extra device inspection in use.

Trend Reports

Trend reports must be presented when the rate of reportable events, incidents that are generally exempt from reporting, and events those are generally not reportable is significantly increased.

CONCLUSION

whichever technique is used, it is now compulsory during the design phase of a medical device, it is now mandatory to conduct a risk or danger analysis either by FTA(The most favored risk analysis method by the pacemaker manufacturer and FDA) or by the FEMA (plasma and blood virus inactivation systems)

Minimizing the process of human intervention would reduce risk and increase efficiency. The benefits of undertaking risk analysis during the construction of medical devices can be important and can be used to mitigate some or all of the cost of introducing risk of mitigation initiatives.

Thus manufacture need to be aware an understand vigilance reporting requirements of all of the jurisdictions that they operate under. Robust, well documented compliant an vigilance reporting process need to be in place not only to meet regulatory requirements, but also to provide evidence to manufacturers that their medical device continues to operate as designed, is performing as anticipated & remains state of the art.

REFERENCES

1. European Commission. EU general risk assessment methodology (Action 5 of Multi-Annual Action Plan for the surveillance of products in the EU (COM(2013)76). 2015;2015(February):1–55.
2. Xiao A. 21 CFR Part 803. 2014;
3. Facilities U, Facilities U. eMDR – Electronic Medical Device Reporting eMDR News Electronic Medical Device Reporting (eMDR) Submitting to eMDR Enrolling in the eMDR Program. 2019;7–9.
4. Summary E. Medical device vigilance requirements under the new EU regulations Table 1 . Reporting time frames in the EU for commercialised products. 2019;1–5.
5. Parliament R of the E. Regulation (EU) 2017/746 – of the European Parliament and of the Council on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU [Internet]. Vol. L177, Official Journal of the European Union. 2017. p. 176–331. Available from: https://eur-lex.europa.eu/eli/reg/2017/746/oj
6. Principles B, Risk OF, For M, Device M. Basic Principles of Ris Management for Medic Device Design. 2019;1–21.
7. Gupta P, Janodia MD, Jagadish PC, Udupa N. Medical device vigilance systems: India, US, UK, and Australia. Med Devices Evid Res. 2010;3(1):67–79.
8. FDA. Mandatory Reporting Requirements: Manufacturers, Importers and Device User Facilities. 2018;(August 2018):1–6. Available from: https://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/PostmarketRequirements/ReportingAdverseEvents/default.htm