Clinic 2 - Medical Device Post-Market Surveillance - 0.5 RU

Presented by:

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Post-Market Surveillance (PMS)

- The process used to monitor the safety of a drug, medical device or combination product after it has been placed on the market.

- Uses a number of approaches to monitor drug and device safety, including spontaneous reporting databases, prescription event monitoring, electronic health records, patient registries, and record linkage between health databases.

  - USA
  - Canada
  - EU and UK
  - India
Post-Market Surveillance Requirements

Medical Device History in the USA and EU:

- **MAUDE** - reports received by the FDA of adverse events involving medical devices. The data consists of user facility reports since 1991, voluntary AE reports since June 1993, distributor reports since 1993, and manufacturer reports since August 1996.


- **EN ISO 13485** (1996, 2003, 2016) gives an outline of a quality management system (QMS) structure which compels the need for a feedback system specifically to provide early warning of quality problems and for input into CAPA processes.

- **EN ISO 14971** (1998, 2012, 2019) specifies in addition to the pre-market assessment of risks associated with a new device, requirements for production and post-production information to be considered as part of the overall risk assessment process throughout the life of the device.
Medical Device History in the USA and EU Continued:

- **FDA CDRH 2012** – Strengthening Our National System for Medical Device Post-Market Surveillance → UDI, development of national and international device registries, Modernize AE/SAE reporting (eMDR)

- **MEDDEV 2.12-1** rev 8 Materiovigilance was introduced in 2013

- EU Medical Device Regulations (**EU MDR**) and Invitro-diagnostic Regulations (**EU IVDR**) came into effect in 2017 with a May 2020 and May 2022 effective implementation date, respectively
  - PMS Plan
  - PMS Report / Periodic Safety Update Report (PSUR)
  - Vigilance
  - Trend Reporting
  - Post-Market Clinical Follow-up (PMCF)
Post-Market Surveillance Information

- Multiple sources: Safety = Product performance + Effectiveness
Proactive and Reactive PMS Data

- **Proactive Data**
  - Literature Search
  - Real World Evidence
  - R&D data
  - KOL / Expert User Feedback
  - SPC Population data
  - Customer Surveys
  - Customer/Usability Workshops
  - Customer Training data
  - Social Media
  - Installation & Service data
  - PM Clinical data

- **Reactive Data**
  - Audits & Inspections
  - Nonconformance
  - OOS / OOT
  - Complaints
  - Complaint Trending
  - MDR/Vigilance
  - Field Corrective Actions
  - Recalls

Signal Detection → Action
Signal Detection - When do I take action?

- **Question**: How do I make the Data / Information Actionable?
- **Answer**: Risk Management!

1. Is there a new hazard, hazardous situation or harm (e.g. a new or novel event)?
   a. Estimate occurrence and update the Risk Management File
   b. Is the new risk acceptable?
   c. Take appropriate action / CAPA:
      - MDR/Vigilance, Field Safety Corrective Action, Recall/Mkt Withdrawal
      - Labeling
      - Customer / User training
      - Redesign
      - Manufacturing process change
      - Post-Market Clinical Follow-up Investigation

2. Is there an increase (or decrease) in occurrence rates?
   a. Continuous data evaluation
Risk Management within EU MDR

Quality Management System

- **QMS**
  Articles: 1, 2, 5, 8, 9, 10, 11, 12, 13, 15, 16, 17, 25, 29, 30, 31
  Annexes: I, II, IV, VII, IX, X, XI, XVI

- **Regulatory**
  Articles: 5, 6, 7, 8, 9, 10, 11, 13, 15, 18, 19, 20, 22, 27, 32, 52, 61
  Annexes: II, III, IV, VI, VIII, IX, XII, XVI

- **PMS and Vigilance**
  Articles: 8, 10, 13, 16, 25, 30, 71, 83-100
  Annexes: I, III, IX, XIV

- **Labeling**
  Articles: 7, 10, 17, 18, 20, 27, 29, 31
  Annexes: I, V, VI

- **Traceability and Supply Chain**
  Articles: 10, 11, 12, 13, 14, 16, 18, 24, 27, 93
  Annexes: I, II, V, VI, VII, IX, XI

- **Clinical**
  Articles: 5, 8, 9, 10, 21, 54, 61-82
  Annexes: I, II, XIV, IX

- **Economic Operators**
  Articles: 10, 11, 12, 13, 14, 16
  Annexes: IX

- **Design Control**
  Articles: 5, 8, 9, 10, 17, 22, 23, 25
  Annexes: I, II, IX, XIII

- **Risk Management**
  Articles: 7, 10, 17, 61; Annexes: I, II, XIV
# Example FMEA Linking Risk Management to PMS

<table>
<thead>
<tr>
<th>Unique ID #</th>
<th>Application Step</th>
<th>Function/Purpose</th>
<th>Potential Failure Modes &amp; Hazards</th>
<th>Potential Effects</th>
<th>Harms</th>
<th>Complaint Codes</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>Use of screwdriver</td>
<td>To drive screws / connect materials</td>
<td>Use of screwdriver handle as a hammer or use of screwdriver as a chisel</td>
<td>1. Excessive blunt force on the screwdriver handle 2. Handle breaks creating sharp edges</td>
<td>User is cut by sharp edges of broken handle - Tissue laceration</td>
<td>Ex.1</td>
<td>3</td>
</tr>
<tr>
<td>D-1</td>
<td>Screwdriver Handle</td>
<td>Fits in hand and provides the grip for turning the screwdriver</td>
<td>Handle comes apart from the screwdriver</td>
<td>Tool is unusable</td>
<td>Delayed procedure - no screwdriver available</td>
<td>Ex.2</td>
<td>1</td>
</tr>
<tr>
<td>P-1</td>
<td>Handle molding process</td>
<td>Mold handle onto screwdriver</td>
<td>Bubbles or cracks molded into handle</td>
<td>1. Excessive blunt force on the screwdriver handle 2. Handle breaks 3. Tool is unusable</td>
<td>Delayed procedure - no screwdriver available</td>
<td>Ex.2</td>
<td>1</td>
</tr>
</tbody>
</table>

The rows below provide examples for purposes of the template. Remove this row and the example rows as highlighted in blue below upon use of the template.
## Example FMEA Linking Risk Management to Design & Mfg

<table>
<thead>
<tr>
<th>Application Step</th>
<th>Potential Failure Modes &amp; Hazards</th>
<th>Potential Effects</th>
<th>Harms</th>
<th>Potential Cause(s)</th>
<th>Current Control Measure(s)</th>
<th>Initial Risk Classification</th>
<th>Additional Risk Control Measure(s)</th>
<th>Verification of Control Measure(s)</th>
<th>Residual Risk Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of screwdriver</td>
<td>Use of screwdriver handle as a hammer or use of screwdriver as a chisel</td>
<td>1. Excessive blunt force on screwdriver handle 2. Handle breaks creating sharp edges</td>
<td>User is cut by sharp edges of broken handle - Tissue laceration</td>
<td>Foreseeable misuse</td>
<td>Durable handle design Unbreakable materials</td>
<td>Unacceptable</td>
<td>Caution labeling</td>
<td>Design Validation</td>
<td>AFAP</td>
</tr>
<tr>
<td>Screwdriver Handle</td>
<td>Handle comes apart from the screwdriver</td>
<td>Tool is unusable</td>
<td>Delayed procedure No screwdriver available</td>
<td>Inappropriate materials Inadequate Handle molding process</td>
<td>Design Verification Process Validation Inspection/Testing</td>
<td>Acceptable</td>
<td>N/A</td>
<td>N/A</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Handle molding process</td>
<td>Bubbles or cracks molded into handle</td>
<td>1. Excessive blunt force on screwdriver handle 2. Handle breaks 3. Tool is unusable</td>
<td>Delayed procedure</td>
<td>Molding process errors: Time Temperature Pressure</td>
<td>Process Validation</td>
<td>AFAP</td>
<td>Increased Inspection / implementation of test methods</td>
<td>Verification of inspection techniques / Test Method Validation</td>
<td>Acceptable</td>
</tr>
</tbody>
</table>
Hints for Your Risk Management File

❖ Be sure to establish acceptance limits
  ▪ Acceptable / Not Acceptable
  ▪ Green – Yellow – Red
  ▪ Realistic limits that reflect product safety keeping in mind that
    Risk = probability of occurrence of harm x severity of harm

❖ Make sure that acceptance limits are action thresholds
  ▪ What actions are taken when you move from green to yellow
  ▪ What actions are taken when risk is in the red

❖ Ensure the understanding of unacceptable risk
  ▪ Unacceptable risk = unsafe product
Continuous Post-Market Surveillance

Product and Process Design and Development including Labeling

Product Concept


Action involves Product, Process or Labeling?

Yes

Action involves Product, Process or Labeling?

Perform Appropriate Actions

Yes

Action Required?

Update Clinical Evaluation and PMS and Risk Management Documentation*

Continuous Post-Market Surveillance

No

No

Yes

* For EU MDR / IVDR this includes
  - Risk Management File/Report (Benefit / Risk Analysis)
  - CER
  - PMCF Report
  - SSCP for Class III & Implantable devices
  - PMS Report (Class I) / PSUR
  - EUDAMED database
QUESTIONS
Thank you

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