Post-approval evidence development schemes established by regulatory authorities for high-risk medical devices . A protocol for a systematic Review.

Citation

Jesús Aranda López, Agnieszka Dobrzynska, Maria Piedad Rosario Lozano, Juan Carlos Rejón Parrilla, David Mark Epstein, Juan Antonio Blasco Amaro. Post-approval evidence development schemes established by regulatory authorities for high-risk medical devices . A protocol for a systematic Review.. PROSPERO 2023 CRD42023431233 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42023431233

Review question

Generic question: What type of post-approval evidence development schemes are operating worldwide with respect to high-risk Medical Devices?

The aim is to find and catalog the aims, methods, criteria and procedures used by regulatory authorities worldwide to establish and manage post-approval evidence development schemes for high risk Medical Devices.

Searches

- Databases for published articles:
- MEDLINE
- Embase
- Cochrane
- WoS (Web of Science)
- Databases for grey literature:
- INAHTA and EUNETHTA websites
- Documents from IMDRF and Non-IMDRF members regulatory websites
- Documents from the main HTA agencies that evaluate medical devices (e.g.: NICE, CADTH, FDA, Roszdravnadzor, SFDA, CDSCO, ANDI, other HTA body.)
- Documents from HTA Observatories (e.g.: WHO, NIHR, PAHO, AHWP, ASEAN, APEC, etc.) websites
- Documents from “think tanks” websites (e.g.: OHE, Ossian,)

Experts in the field will be consulted about other seminal papers that should be included in the review.

Restrictions:

Search date: No temporal limitation established

Human studies

Conference abstracts excluded

Types of study to be included

Systematic reviews will be included. Key documents derived by experts in the field. Narrative reviews, conference articles and editorials, and primary studies will be included regarding the relevance of data retrieved.

Condition or domain being studied

Given the limited clinical evidence available for new high-risk medical devices, post-approval evidence assumes a crucial role in facilitating decision-making across the product life cycle. We will review the literature related to post-approval evidence development schemes for high-risk medical devices, in order to identify and synthesize how schemes are operated worldwide with respect to the restrictions or limitations under new medical devices are given a “Certificate of Comformity”.

Participants/population

In European Union, under certain circumstances where there is a scarcity of clinical evidence for high-risk devices, notified bodies have the authority to issue certificates of conformity that are subject to specific conditions that mandate the collection of further clinical data within a specified period after the device's initial market entry. In this review we will examine and consolidate information on how post-approval evidence development schemes for high-risk medical devices are implemented worldwide. Specifically, we will focus on understanding the „conditional approval“ in other regulatory jurisdictions.

Inclusion criteria:

1. Class III and implantable medical devices or High-risk medical devices

2. Post-market evidence development schemes established by medical device regulatory authorities

3. Regulation state

4. Conditional approval/certificate of conformity/Restrictions or limitations

5. Adverse event reporting schemes

Exclusion criteria:

1. Non-human studies.

2. Pre-market evidence schemes.

3. Health Technology Assessment reports unless they address Conditional approval/certificate of conformity/Restrictions or limitations of high-risk medical devices

4. Regulatory bodies from countries which do not template high-risk medical devices legislation

Intervention(s), exposure(s)

We will consider different classification of medical devices according to their corresponding jurisdictions. We will consider the different regulations available related to high-risk medical devices (according to its references in countries laws) from IMDRF and non-IMDRF.

The interventions are different types of post-approval development schemes for high-risk medical devices (Class III and implantable; MDR – Article 51) in different regulatory jurisdictions.

Comparator(s)/control

Given the focus of the study, it is not considered.

Context

Given the advances on new technologies development worldwide, it is compulsory to endorse regulatory standards for approving medical devices according to scientific and clinical evidence. Since the Medical Device Regulation (EU 2017/745) came into force, the Coordinating Research and Evidence for Medical Devices (CORE-MD) was developed to consider how best to evaluate high-risk medical devices that are implanted into patients, focusing on clinical evaluation and how it can be developed in the EU. Due to the unknown evidence submitted for high-risk medical devices already on the market, because of the confidential activities given among Notified bodies (NBs) and manufacturers, the CORE-MD group pretend to obtain a frame of reference to determine common certificate of conformity criteria on post-market evidence development for high-risk medical devices.

Main outcome(s)

The main outcomes based on screening results are the following:

1. Classification of medical devices in the jurisdictions studied

2. Adverse event reporting systems variability

3. Post-market evidence development schemes and other limitations or restrictions attached to the certificate of conformity

4. Period time established to report an adverse event

5. Clinical registries to support post-market surveillance activities

6. Re-evaluation/Re-submission procedures and classification of outcomes of re-evaluation

Measures of effect

Taxonomy of aims, methods and procedures used in different jurisdictions worldwide to establish limitations or restrictions on the certificate of conformity.

Additional outcome(s)

1. Classification of medical devices in the jurisdictions studied: According to the jurisdiction studied, we will find their corresponding classification code (e.g.: FDA Medical Device Classification), Class of device (e.g.: Class I, IIa, IIb, III – EU Jurisdiction), Risk level (Low risk, Low-to-medium risk, Medium-to-high risk, High risk – Canada).

2. Post- market evidence development schemes established by regulatory authorities.

3. Adverse event reporting systems: According to the FDA in the USA, the manufacturer, distributor, competitor, healthcare providers and patients have the duty to report medical devices adverse events while in the EU reporting by clinicians are encouraged but not compulsory.

4. Period time established to report an adverse event: e.g.: in the USA and Australia manufacturers need to report the adverse event within 30 days following the date of awareness and within 10 days if the event caused death or serious deterioration in the state of health.

5. Clinical registries to support post-market surveillance activities: The Australian TGA makes information on adverse event reports available in real time through its website and provides formal feedback to stakeholders involved in adverse event reporting

Measures of effect

Not applicable

Data extraction (selection and coding)

● Study selection

The references from the bibliographic search will be classified according to their relation with the inclusion criteria and the adequacy of the study design. Two reviewers will independently screen and select studies for inclusion in the systematic review. The first selection will be carried out by title and abstract, and the second one, by full-text screening. Reviewers will attempt to contact study authors to obtain incomplete data if necessary. Both reviewers will reach an agreement in case of discrepancies. A third reviewer will participate in the process to resolve them. Researchers won´t be blinded to each other's decisions. Decisions will be electronically recorded in Covidence software.

● Data extraction

Data abstraction will be performed according to the different reports obtained from the search strategy. For each eligible study and/or publication suggested by the experts on the field, one reviewer will extract data of interest while a second reviewer will resolve uncertainties. In case of conflicts, To address the discrepancies, a third reviewer will be engaged for resolution. Results will be synthesized and presented in summarized formats such as tables, figures, and/or flowcharts, capturing its essential features.

Risk of bias (quality) assessment

We expect to include heterogeneous documents due to the nature of the topic. Quality assessments of selected studies will be performed by two authors independently using dedicated tools in a second stage. Disagreements between individual judgements will be resolved by discussion. When an agreement is not achieved, the rest of the reviewer team will be invited.

Strategy for data synthesis

We will employ qualitative synthesis methods of the available evidence to describe the differences among the post-marketing evidence and regulations related to the different jurisdictions found in systematic reviews literature. We will summarize study characteristics with respect to the classification systems of medical devices; the conditions and limitations from the market certification (e.g.: CE mark in EU) of High-risk medical devices; the post-market pathway from each jurisdiction to maintain the medical device on market and the schemes developed to that purpose (if these were available). We expect considerably different and heterogenous outcomes among the included studies, therefore we are not going to plan to perform a formal synthesis through meta-analysis.

Analysis of subgroups or subsets

It will be considered regarding the type of information retrieved and its quality.

Contact details for further information

Jesús Aranda López

jesus.aranda@juntadeandalucia.es

Organisational affiliation of the review

Andalussian Health Technology Assessment Unit (AETSA)

Progress and Health Foundation (FPyS)

Parque Científico y Tecnológico Cartuja

Avda. Américo Vespucio, 15.

Building S-2. 41092 (Seville) Spain

www.aetsa.org

Review team members and their organisational affiliations

Dr Jesús Aranda López. Andalussian Health Technology Assessment Unit (AETSA), Progress and Health Foundation (FPS)

Dr Agnieszka Dobrzynska. Andalussian Health Technology Assessment Unit (AETSA), Progress and Health Foundation (FPS)

Ms Maria Piedad Rosario Lozano. Andalussian Health Technology Assessment Unit (AETSA), Progress and Health Foundation (FPS)

Mr Juan Carlos Rejón Parrilla. Andalussian Health Technology Assessment Unit (AETSA), Progress and Health Foundation (FPS)

Professor David Mark Epstein. University of Granada (UGR)

Mr Juan Antonio Blasco Amaro. Andalussian Health Technology Assessment Unit (AETSA), Progress and Health Foundation (FPS)

Collaborators

Ms Françoise Schlemmer. The European Association for Medical devices of Notified Bodies (Team-NB)

Mr Sanjeev Yoganathan. The Danish Medicines Agency (DKMA)

Dr Petra Schnell-Inderst. UMIT – Private Universität für Gesundheitswissenschaften, Medizinische Informatik und Technik GmbH

Assistant/Associate Professor Tom Melvin. School of Medicine, Trinity College Dublin

Type and method of review

Systematic review

Anticipated or actual start date

15 May 2023

Anticipated completion date

03 November 2023

Funding sources/sponsors

Coordinating Research and Evidence for Medical Devices (CORE-MD) Horizon 2020 project Call:

H2020-SC1-BHC-2018-2020 ID: SC1-HCO-18-2020

Grant number(s)

State the funder, grant or award number and the date of award

Grant agreement ID: 965246

Conflicts of interest

Language

English

Country

Spain

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

MeSH headings have not been applied to this record

Date of registration in PROSPERO

31 July 2023

Date of first submission

20 July 2023

Details of any existing review of the same topic by the same authors

None

Stage of review at time of this submission

The review has not started

Stage	Started	Completed
Preliminary searches	No	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

31 July 2023

31 July 2023