Clinical Evaluation of Medical Devices Pursuant to MEDDEV 2.7.1:

CUMBERSOME BURDEN OR COST-EFFECTIVE OPPORTUNITY?

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In accordance with the Medical Device Directive 93/42/EEC (MDD), as amended by Directive 2007/47/EC [1] and national medical device legislation in Europe, any medical device is requested to be evaluated by the legal medical device manufacturer regarding its clinical performance and safety. This includes an assessment of biocompatibility in accordance with EN ISO 10993-1 [2] and a clinical evaluation in accordance with MEDDEV 2.7.1 [3]. This clinical evaluation is intended to critically evaluate the clinical benefits of the medical device in comparison to its potential risks. Therefore, any clinical evaluation is part of the compulsory risk management process according to EN ISO 14971 [4], and critical findings must further be considered in the current risk management process of the legal medical device manufacturer.

MEDDEV 2.7.1, which is based upon the two Global Harmonization Task Force (GHTF) documents SG5/N1R8 [5] and SG5/N2R8 [6], explains that the clinical evaluation must be understood as an ongoing process conducted throughout the life cycle of a medical device. It is first performed during the conformity assessment process for CE-marking and requires periodic re-evaluations taking into account any relevant new information on the product. This is particularly any available post-marketing surveillance data, data obtained through clinical investigations or post-market clinical follow-up studies, and published clinical data on substantially equivalent medical devices (predicate devices) marketed for a comparable intended purpose.

In accordance with the MDD Annex X, the conformity of a medical device with this directive and the evaluation of side effects and the acceptability of the benefit/risk ratio must be based upon clinical data. The evaluation of this data must take account of any relevant harmonized standards and must follow a “defined methodologically sound procedure” based upon:

- Either a critical evaluation of relevant scientific literature currently available relating to the safety, performance, design characteristics and intended purpose of the device. However, the manufacturer must demonstrate equivalence of the device under consideration and the device which was referred to in the literature
- Or a critical evaluation of all clinical investigations made with the device under consideration
- Or a critical evaluation of the combined clinical data provided through clinical investigations with the device under consideration and clinical data identified through scientific literature.

This section of the MDD is important to understand the strategy and methodological requirements set out by MEDDEV 2.7.1 regarding the practical realization of a clinical evaluation document:

1. In order to follow a “defined methodologically sound procedure”, MEDDEV 2.7.1 requests to prospectively prepare a clinical evaluation plan which clearly describes the procedures to be followed and the questions to be answered by common procedures for systematic literature research.

2. The literature research and the critical evaluation must be performed by suitably qualified medical experts following the steps and stages set out in Figure 1 of the guideline (see below).

3. The scientific evidence of clinical investigations performed with the device under consideration respectively of published clinical data must be evaluated under consideration of applicable harmonized standards. This is, first of all, the ISO 14155 [7]. Further to this, any vertical standards for particular medical devices must be considered. Unreliable clinical data, i.e. data of low scientific evidence as defined in MEDDEV 2.7.1 or defined by the Oxford Center for Evidence-based Medicine
[8], will not be suitable for a clinical evaluation process.

4. In principle, clinical data of substantial equivalent medical devices (“predicate” devices), if published in peer-reviewed journals by qualified authors, may be suitable to document clinical effectiveness and safety of the medical device under consideration. However, this substantial equivalence must be justified and documented in detail in the clinical evaluation report, considering the technical properties of the respective devices, their intended purposes, indications, contraindications and warnings.

5. According to MEDDEV 2.7.1 Clause 5.1, the evaluation must also address and verify any clinical claims about the device and confirm the adequacy/suitability of the manufacturer’s product labeling, product brochures and instructions for use.

On this background, a clinical evaluation plan and report, prepared strictly according to the detailed requirements of MEDDEV 2.7.1, is suitable to fulfill the provisions of the MDD and the respective national medical device legislation. Furthermore, a clinical evaluation focusing on substantial equivalent predicate devices can – in many cases – avoid the performance of a cost- and time-consuming clinical investigation. Therefore, the European requirement which requests a clinical evaluation document for any medical device respectively device group (if similar devices can be combined in a device group) is a real opportunity for medical device manufacturers to save time and money during the conformity assessment procedure.

Later, if a medical device is regularly marketed, post-market clinical follow-up investigations pursuant to MEDDEV 2.12/2 [9] may still be an appropriate tool to perform limited marketing-driven clinical investigations or registry studies with the aim to extend the safety data (e.g. long-term tolerability or statistical assessment of adverse device effects based upon large patient numbers) of an innovative medical device.
References:

2. EN ISO 10993-1:2009 Biological evaluation of medical devices - Part 1: Evaluation and testing within a risk management system
4. EN ISO 14971:2009 Medical devices - Application of risk management to medical devices

Author: Dr. Dieter R. Dannhorn

MD Registration Support Ltd., a UL Company
Grenzenstrasse 13, D-88416 Ochsenhausen, Germany
T: +49 7352 9114 31
E: dieter.dannhorn@mdrs-ltd.com

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