Compliance of medical devices with Regulation (EU) 2017/745 and Medical Device Single Audit Program (MDSAP)

Internship Report - ST02: End of Study Internship

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Acronyms

EC: European Commission

SMA: Soft Medical Aesthetics

EU /UE : European Union / Union Européenne

MDD: Medical Device Directive

MDR: Medical Device Regulation

QMS: Quality Management System

PMS: Post Market Surveillance

PSUR: Post Surveillance Updated Report

ISO: International Organization for Standardization

Abstract

In order to be a leader in its field, each company strives to provide products of great value that meet their client's expectations. That's why ensuring compliance with the various regulatory requirements is one of the basics a company needs to have.

Attracting new clients and widening the market share while ensuring the safety of its medical devices has always been SMA's main goal. As the medical devices sector is a highly regulated sector, manufacturers must implement the necessary actions to comply with the requirements of the European medical device Regulation as well as those of the other countries outside the EU where their devices are marketed.

Therefore throughout the internship period, our mission was to put in place the necessary actions in order to meet the requirements of the medical device Regulation 2017/745 and the Medical Device Single Audit Program (MDSAP).

Keywords: Regulation 2017/745, MDSAP, Technical documentation, Quality Management System, Medical Devices

Résumé

Afin d'être leader dans son domaine, l'entreprise doit fournir à ses clients des produits qui répondent à leurs attentes. C'est pourquoi le respect des différentes exigences réglementaires est l'une des bases qu'une entreprise doit avoir.

Attirer de nouveaux clients et élargir ses parts de marché tout en garantissant la sécurité de ses dispositifs médicaux a toujours été le principal objectif de SMA. Puisque le secteur des dispositifs médicaux est un secteur très réglementé, les fabricants doivent mettre en œuvre les actions nécessaires pour se conformer aux exigences, comme celles du nouveau Règlement Européen ainsi que celles des pays hors l'UE où leurs dispositifs sont commercialisés.

Par conséquent, tout au long de la période de stage, notre mission a été de mettre en place les actions nécessaires afin de répondre aux exigences du Règlement 2017/745 sur les dispositifs médicaux et du programme MDSAP.

Mots-clés : Règlement 2017/745, MDSAP, Documentation technique, Système de Management de la Qualité, Dispositifs Médicaux

Introduction

The medical device industry is one of the key players of the health industries that supplies the technology enabling healthcare providers to diagnose, treat or prevent diseases. The ageing of the world's population on the one hand, and the increase in life expectancy on the other, are the most important drivers of demand in this sector.

In order to meet the need of patients and to enable them to benefit from technological progress, medical devices are undergoing constant changes. However, the higher the degree of innovation and sophistication, the more difficult the constraints and challenges are to overcome.

These challenges, which concern medical device manufacturers as well as regulatory authorities, include striking the right balance between protecting patients and users and getting medical devices to the market in an optimal timeframe.

Today the placing on the market of medical devices requires obtaining the EC marking according to the new European Medical Devices Regulation 2017/745 which replaced the two Directives 93/42/EEC on medical devices and 90/385/EEC on active implantable medical devices. This Regulation, which has triggered an avalanche of changes in the medical device sector, aims to take into account technological and scientific advances while ensuring patient safety and traceability of medical devices throughout their life cycles. It can also improve the dissemination of information allowing for transparency with the competent authorities.

However, manufacturers who already have medical devices placed on the market according to one of the directives, benefit from a transitional period to comply with the requirements of this new Regulation. This is the case of Soft Medical Aesthetics: a manufacturer of Class IIa medical devices according to the Directive who wants to benefit from the transitional period to put in place the necessary actions to comply with the regulatory requirements.

This end-of-study project focuses on the application of the regulatory requirements of Regulation 2017/745 and the Medical Device Single Audit Program (MDSAP) within Soft Medical Aesthetics. It is divided into two parts: the first concerns the study of the existing situation, which will enable us to analyze the current state of art and deduce an action plan, and the second will focus on the implementation of the planned actions.

The report consists of four chapters:

The first aims to present the company, its products and its competitive environment.

The second is a bibliographical study presenting Regulation 2017/745 and the Medical Device Single Audit Program. The third is dedicated to the presentation of the actions planned and implemented to comply with regulatory requirements.

The last chapter is dedicated to the presentation of the professional and personal benefits of this internship.

Chapter I: Presentation of the host company

I- General presentation of Soft Medical Aesthetics: history, products and target market

1- History

Founded in 2009 by Dr. Sandrine Sebban, Soft Medical Aesthetics (SMA) is a French company based in Paris operating in the field of aesthetic and restorative medicine.

The history of the company began with the development of a new injection technique.

In fact, after many years of using sharp needles to perform filler injections, Dr. Sebban as a doctor in aesthetic medicine was conscious that the skin is extremely sensitive to the numerous punctures. This procedure was risky due to several complications and side effects such as necrosis, edema, bruising or ecchymosis and it could also be very painful.

To significantly minimize the risks, she developed the Soft Filling Technique using non-traumatic round-tipped needles known as SoftFil® micro-cannulas. In 2009, the first range of SoftFil® Classic cannulas was launched.

Since then, Soft Medical Aesthetics has steadily grown and developed several products in both medical and cosmetic fields [1].

SMA's data sheet is presented in the table below:

Table 1: SMA's data sheet (source: author based on [1])

Company name	Soft Medical Aesthetics
Activity	Manufacture and marketing of sterile medical devices and cosmetic products.
Legal form	Simplified Stock Company
SIREN number	518712120
Foundation date	2009
President	Sandrine Sebban
General Manager	Isabelle Johnson
Share capital	10 000,00 €
Headquarter	55 boulevard Pereire, 75017 Paris
Website	https://www.softfil.com/

2- The products

Since its creation, SMA has demonstrated its commitment to provide products that combine innovation, performance, and high quality to meet the needs of both patients and physicians.

2.1- Softfil® medical devices

SMA is specialized in the design and manufacture of micro-cannulas kits which are an upgraded version of the conventional hypodermic needles. Instead of having a sharp point like a needle, micro-cannulas have a round tip that allows much more flexibility and less pain, ecchymosis, and bruising [2].

SMA designs and manufactures three ranges of sterile and single-use micro-cannulas with various diameters and different lengths:

- SoftFil® Classic

  This range of micro-cannulas has been developed based on **the Soft Filling Technique**, which is a standardized injection method for restoring volume to the face, neck, or hands and correcting wrinkles without pain or trauma with very few insertion points [3].

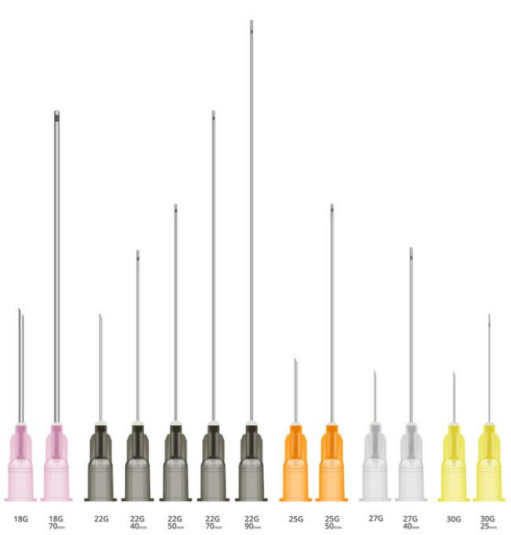


Figure 1: SoftFil® Classic micro-cannulas[3]

- SoftFil® Precision

  The main improvements of the precision micro-cannula range compared to the classic range are centimetric graduation all along the stainless steel tube to control the injection depth, and a red dot on the hub to indicate the location of the hole [4].

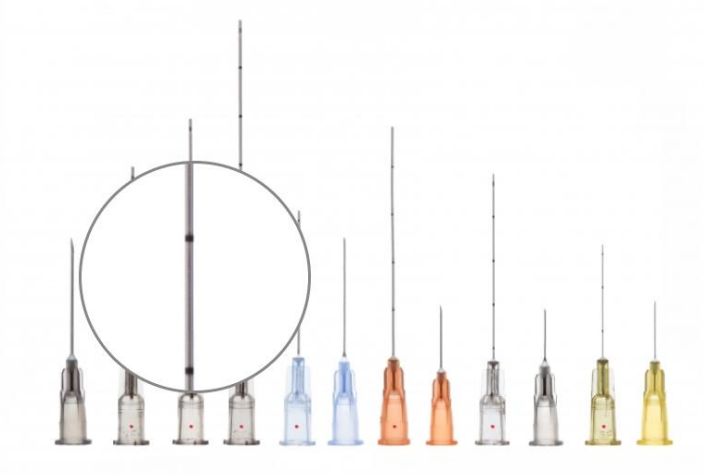


Figure 2: SoftFil® Precision micro-cannulas[4]

- SoftFil® EasyGuide

The SoftFil® EasyGuide range consists of a micro-cannula and a "guide needle". The needle of this range under international patent (patent published in France under the n°FR-3 024 366 on 05/02/2016) was designed by Dr. Sebban. With its V shape, this needle allows combining both the creation of the pre-hole and the easy insertion of the micro-cannula.[5]

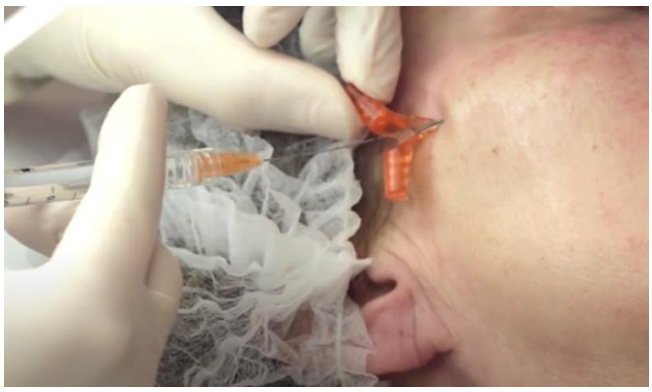


Figure 3: injection performed using SoftFil® EasyGuide[5]

A range of needles (SoftFil® Needle) is also available.

Medical devices manufactured by SMA are class IIa according to rule 6 of Annex X of the European Medical device Regulation 2017/745 since they are "surgically invasive devices intended for transient use" [6].

2.2-SoftFil® skincare products

In order to provide patients with skin care products complementary to injections that enable them to have optimal and long-term results, various cosmetic products according to Regulation 1223/2009 are also developed by SMA.

Six products are currently available:

- SoftFil® Post-Act Mask which is a mask enriched with hyaluronic acid for intense hydration of the skin after the injection.
- SoftFil® Sublim'Mask for daily care which is a mask enriched with bio-cellulosic fiber obtained by fermenting coconut milk and can be used on a regular basis to improve the elasticity of the skin.
- Sublim'Eye patch contour which offers a moisturizing and smoothing effect for the eye contour area.
- SoftFil® roller which provides a non-surgical treatment that promotes the absorption of cosmetics and helps reduce acne scars, hyperpigmentation and fine lines..
- Skin vibrating massager used for skin regeneration [7].

3- Target market

The market targeted by Soft Medical Aesthetics is essentially the aesthetic medicine market. In fact, this market continues to grow due to factors such as the increase and aging of the world's population, technological advances in aesthetic medicine and the growth in the number of clinics offering both surgical and non-surgical aesthetic procedures. For instance, according to a survey carried out in 2018 by ISAPS (International Society of Aesthetic Plastic Surgery), the total number of non-surgical cosmetic procedures performed worldwide increased by 5.4% [8]. The results of this survey are presented in the figure 4 here after:

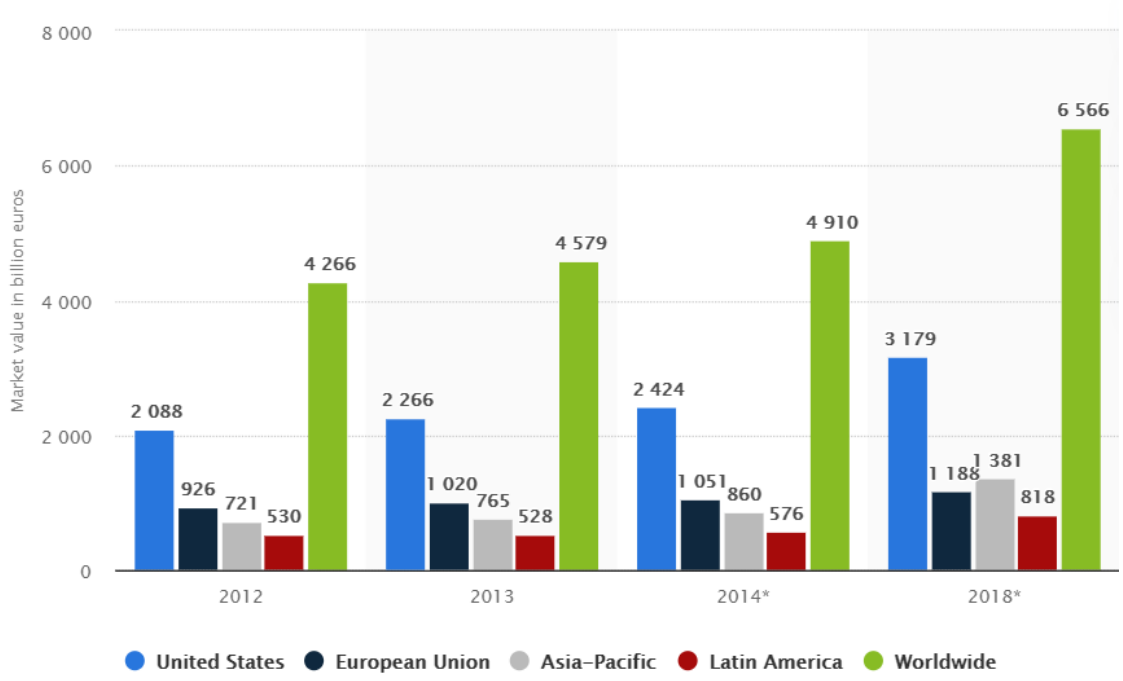


Figure 4: Value of global aesthetic medical and surgical market from 2012 to 2018, by region (in billion Euros) [9]

At the same time, SMA also targets the market of devices used to inject fillers. Actually, as specified by Market Research Future, the global market for fillers is likely to reach $10 billion by 2023, with annual growth of approximately 12.5% between 2017 and 2023.[9]

The largest increases in non-surgical procedures concern botulinum toxin and hyaluronic acid injections, recording an increase of 14.5% compared to 2017[8].

4- Organizational structure and responsibilities

Organization structure and responsibilities are represented in the flowchart hereafter:

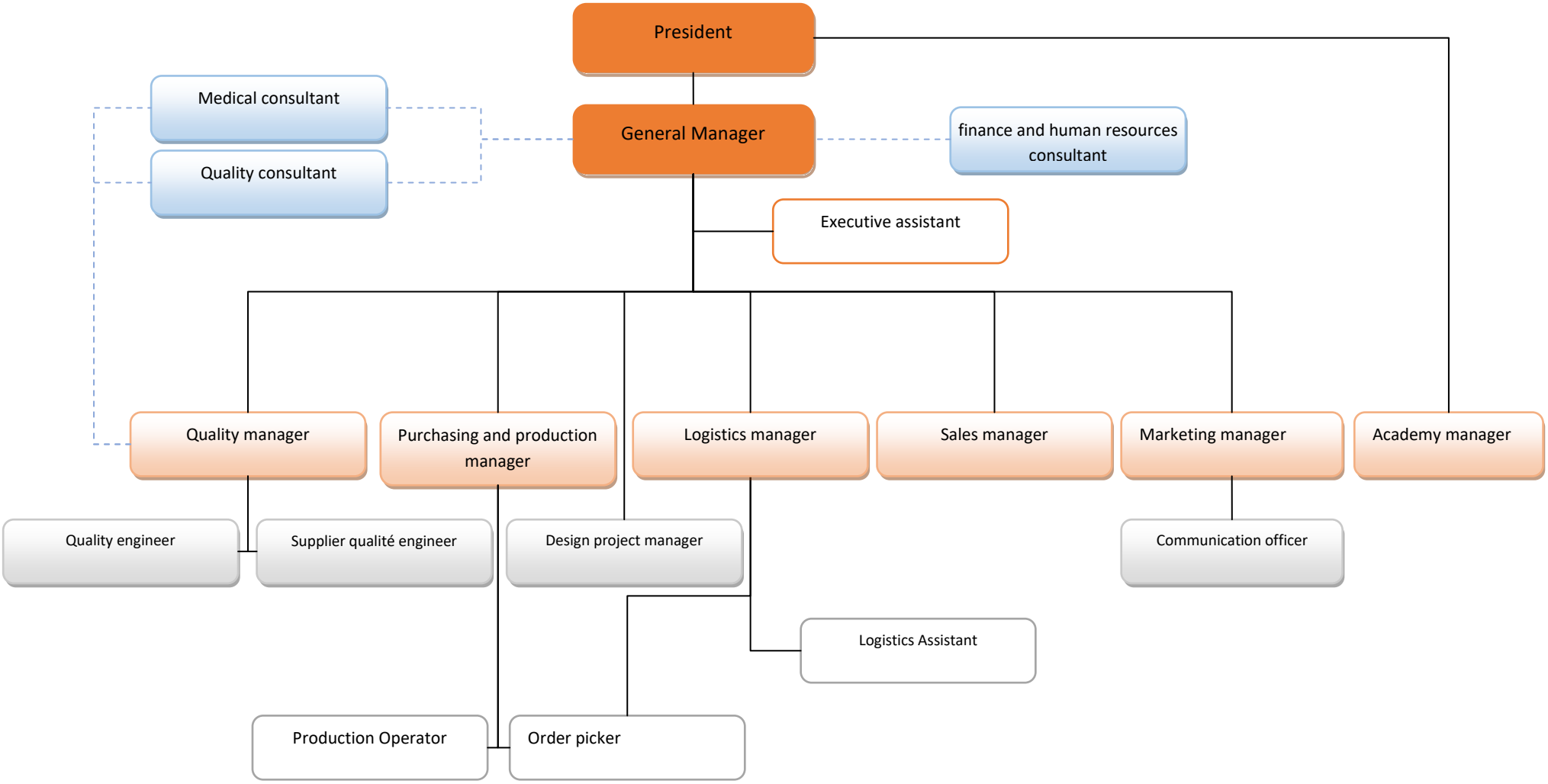


Figure 5: Organizational structure and responsibilities (source author)

5- The competitive environment of the company

There are several companies that manufacture medical devices similar to those of Soft Medical Aesthetics and which are considered to be direct competitors. The most important competitors, as well as the products available are summarized in the following table:

Table 2: competitor's products (author based on [10] [11] [12] [13])

Competitors	Products description	Features
TSK	Tsk offers two types of micro-cannulas: CSH and STERIGLIDE	TSK cannulas are characterized by their high precision and ultra-thin walls. The cannulas are easy to insert, which reduces patient discomfort and the risk of hematomas. Thanks to their high precision, these cannulas allow more precise placement of the filling product and a reduction in product loss.
Dermasculpt	Dermasculpt offers a single type of micro-cannula with 10 different sizes	Among the advantages of Dermasculpt's cannulas are flexibility, elimination of the risk of necrosis and ophthalmoplegia and the ability to stimulate collagen.
Sterimedix	Sterimedix offers three types of micro-cannulas: Silkann, GTI cannula and fat transfer cannula	These flexible cannulas combine quality and safety, reducing the risk of cross-contamination and infection.
Laboderm	Laboderm offers a single type of micro-cannula called Dermanov' with 12 different sizes	These cannulas offer a very wide choice of diameters and lengths with a color code to distinguish the different diameters. Thanks to high quality steel, a balance between rigidity and flexibility is ensured.

Chapter II: Normative and regulatory developments in the service of patient safety

1- European Regulation 2017/745 on medical devices

1.1- The transition from the medical device directives to the medical device regulation

The European single market is one of the EU's most important achievements. Comprising 28 Member States, it is considered to be the largest single market with a population of around 500 million consumers[14]. One of the cornerstones of this market is the concept of the free movement of goods, which stipulates that if a product obtains marketing authorization in one Member State, it can also be marketed in the other Member States.

For medical devices, having an EC marking is mandatory in order to benefit from this right of free movement in the EU. However, before affixing an EC marking to a medical device, the manufacturer must demonstrate its compliance with the essential requirements defined in the relevant regulations.

This was ensured through Directives 93/42/EEC on medical devices and 90/385 on active implantable medical devices which were introduced respectively in 1993 and in 1990.

However, over the past years, several weaknesses have been identified in these directives. These weaknesses include the following:

- The classification rules do not take into account medical and technological developments such as software and nanomaterials

- The texts of the directives are interpreted differently in the EU countries

- Patients and healthcare professionals do not have sufficient information about the performance and safety of medical devices

- The responsibilities of some economic operators such as distributors and importers are not sufficiently explained

In order to alleviate these issues and to ensure patient safety through improved traceability and transparency, the Directives were replaced by the new Medical Device Regulation 2017/745 which was published in May 2017.

1.2- The major changes introduced by Regulation 2017/745

Unlike Directives 93/42/EEC and 90/385/EEC, Regulation 2017/745 is based on a global approach that includes the entire life cycle of the medical device. This approach aims to promote the traceability and safety of medical devices in the European market. To achieve this objective, major changes have been introduced by this new Regulation.

Among these changes are the following:

- General safety and performance requirements

The new general safety and performance requirements (GSPR) in Annex I of Regulation 2017/745 replace the essential requirements of the directives. These GSPR are much more comprehensive and introduce new requirements, such as the establishment of a risk management plan and system that are documented and updated on an ongoing basis. In addition, they add the assessment of the impact of information from the post-market surveillance system [6].

- Changes in the classification rules

Regulation 2017/745 proposes 22 classification rules and 80 criteria, whereas the directive distinguishes 18 rules and 56 criteria. There are **5 important changes in the classification rules** added by the regulation. These changes are summarized in the diagram below:

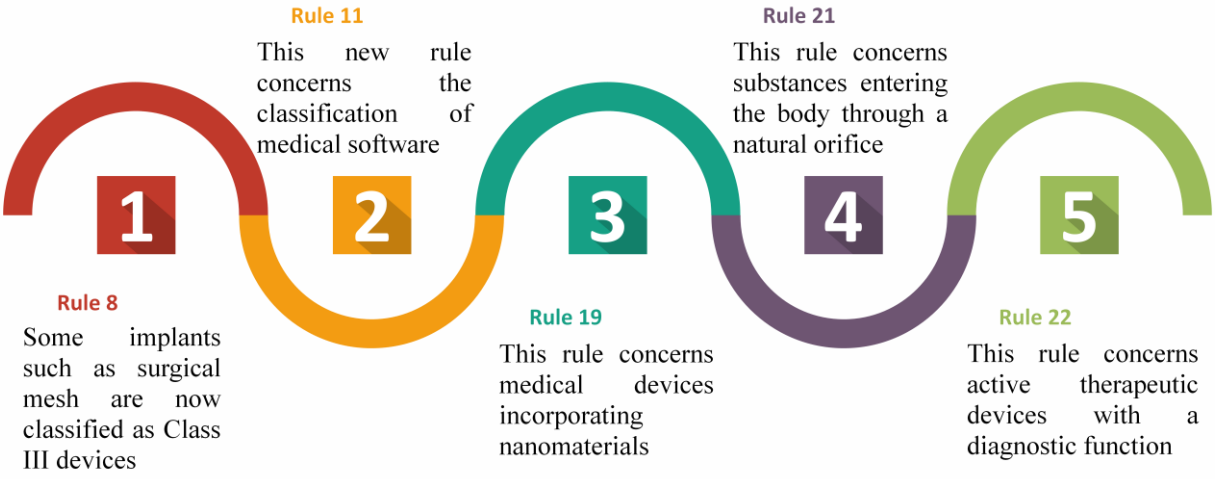


Figure 6: changes in the classification rules (source: author based on [6])

- New clinical requirements

The clinical assessment requirements under the Regulations have been enhanced. With the MDR, in order to claim clinical equivalence with a similar device, the manufacturer must have an agreement allowing full access to the technical documentation necessary to demonstrate equivalence. This limits significantly the possibility of using equivalence and obliges manufacturers to be more reactive in order to generate the clinical data required to provide sufficient clinical evidence.

For Class III medical devices and implantable devices, clinical investigations must be conducted by manufacturers. In addition, new documents should also be provided including the summary of safety and clinical performance (SSCP) for Class III medical devices and implantable devices, and the Periodic Security Activity Report (PSUR) which is mandatory for Class IIa, IIb and III devices.

The SSCP should be published on the EUDAMED platform for public access to ensure better transparency.

The PSUR summarizes the results of the analysis of the data collected in the framework of post-market surveillance. Its objective is to assess the risk-benefit ratio and to update the risk analysis or the clinical evaluation report if necessary [6].

- A person responsible for regulatory compliance

Section 15 of the MDR requires Manufacturers to have a person responsible for regulatory compliance (PRCC) who will be responsible for ensuring that:

- the medical devices comply with the regulatory requirements set out in the MDR;

- the technical documentation is updated;

- post-market surveillance and post-market clinical surveillance are conducted in accordance with regulatory requirements;

- vigilance and incident reporting requirements are met.

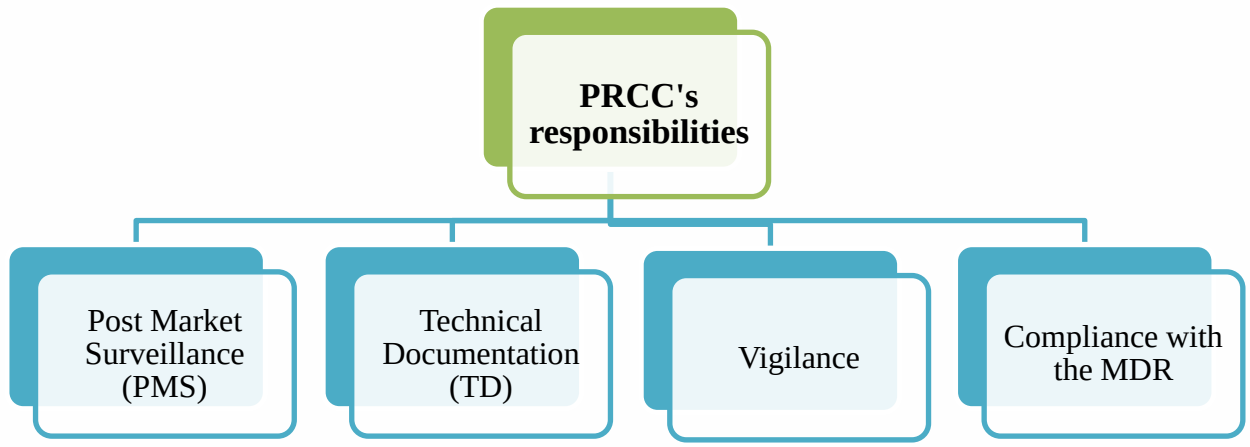


Figure 7: PRCC's responsibilities (source :author based on [6])

- Improving the traceability of medical devices: the EUDAMED database

Eudamed is a European database allowing the exchange of information on medical devices between the European Commission, the competent authorities of the Member States, notified bodies, and the different economic operators.

The objectives of this database are:

- providing publicly accessible information on medical devices placed on the EU market as well as the different economic operators

- improving the traceability of medical devices through an identification system. A unique Device Identifier (UDI) consisting of an IUD-ID and an IUD-IP is assigned to each medical device.

- facilitating access to information about incidents involving medical devices

- indicating the obligations concerning clinical investigations [6].

- Technical file structure

Annexes II and III to the MDR provide details on the content of the technical documentation and the technical documentation for post-market monitoring.

The new structure of the technical documentation according to the Regulation brings a number of new features such as:

- complete information about the manufacturing processes and their validation;

- a post-market clinical surveillance plan and an evaluation report of the post-market clinical surveillance are included in the documentation;

- the UID-ID, the list of the different configurations available on the market and a presentation of similar devices shall be included in the description of the medical device [6].

1.3- MDR timelines

The new medical device regulation 2017/745 entered into force on 26 May 2017, marking the start of the transition period which was supposed to last three years.

However, due to the corona crisis and in order to allow authorities and manufacturers to prioritize the fight against this pandemic, on April 24, 2020, the European Medical Device Regulation was postponed by one year. MDR, originally envisaged to go into effect May 26, 2020, will now become mandatorily applied on May 26, 2021. [15]

To introduce these changes concerning the dates of application of some of Regulation 2017/745 provisions, Regulation 2020/561 was published in the Official Journal of the European Union.

Key dates according to regulation 2020/561 are shown in the diagram below:

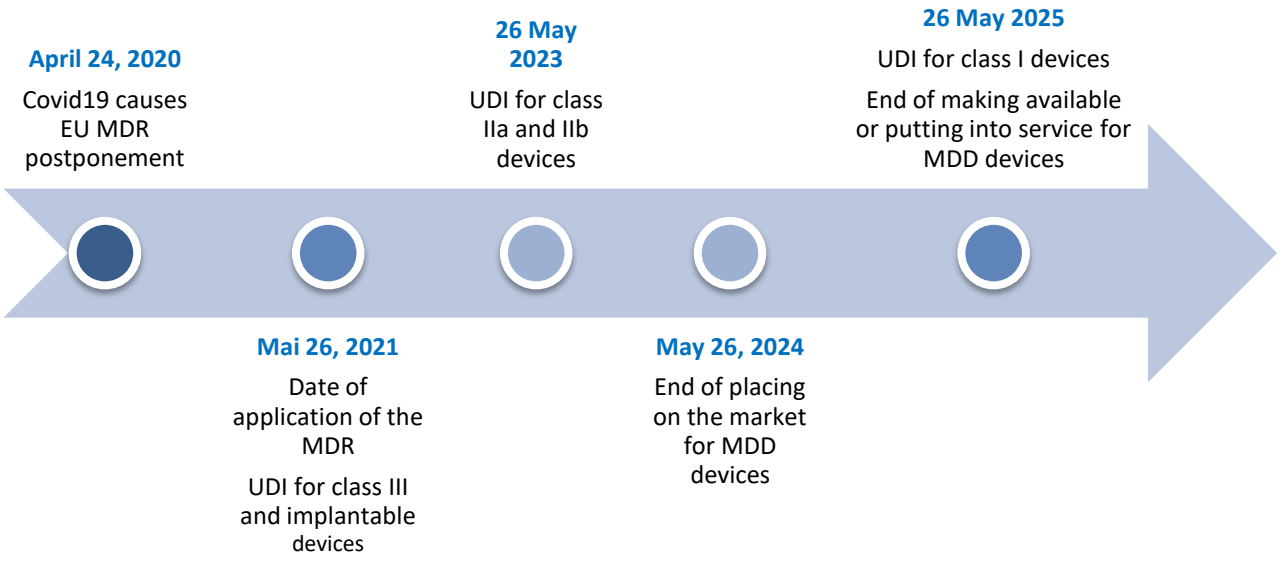


Figure 8: Key dates according to regulation 2020/561 (source: author based on [15])

2. International regulation: the Medical Device Single Audit Program (MDSAP)

2.1- Presentation of the MDSAP

The International Medical Device Regulators Forum (IMDRF) wanted to set up a global auditing approach that allows manufacturers to assess the compliance of their quality management system with the requirements of different regulatory authorities.

To this end, a working group was identified in 2012 to develop a program with standardized requirements called the Medical Device Single Audit Program (MDSAP). The MDSAP allows an auditing organization to verify compliance with the regulatory jurisdictions of the countries participating in the program through a single regulatory audit conducted by an auditing organization. The cornerstone of the program is the "audit model" which is the document used by the auditor to assess the conformity of the quality management system.

MDSAP audits include initial certification audits followed by two annual surveillance audits and finally a recertification audit the year after the two surveillance audits.

Regulators that are participating in the MDSAP are:

- US Food and Drug Administration
- The Brazilian National Health Surveillance Agency ANVISA
- Japan Ministry of Health, Labor and Welfare
- Australian Therapeutic Goods Administration (TGA)
- Health Canada (HC)

Unlike other countries participating in the MDSAP, for Canada this program has become mandatory since January 1, 2019 for Class II, III and IV medical devices [16].

2.2- Advantages of the MDSAP

The main objective of the MDSAP is to minimize regulatory barriers through promoting better alignment of technical requirements and regulations based on international standards and best practices.

Besides, by participating in the MDSAP, manufacturers can benefit from several advantages, including

- Fewer regulatory audits and interruptions related to inspection as only one audit is required to assess compliance with the requirements of 5 countries.

- A reduction of the regulatory burden and audit-related expenses

- Better knowledge of regulatory requirements

- Audits are predictable since the auditor uses a standard audit model

- The audit bodies are supervised by the different regulatory authorities of the countries participating in the program.

- The marketing of medical devices in the countries participating in this program is facilitated[17].

2.3- The MDSAP audit process

The MDSAP audit model includes a set of audit tasks that are based on the ISO 13485:2016 standard as well as the various regulations applicable in Japan, Australia, Canada, Brazil, and the United States.

The audit is based on a process approach and a risk approach. Its purpose is to ensure that, for each process, risks are properly identified, evaluated and the necessary corrective and preventive actions are planned and implemented. For this purpose, the conformity assessment is based on samples of records and procedures. Within the framework of this program, 7 processes are evaluated, including 4 main processes and 3 complementary processes:

- The **management** process is the first process that will be evaluated to assess the involvement and commitment of the management in the planning, monitoring and implementation of the quality management system. The **marketing authorization and facility registration** process, which is directly linked to the management process, examines the different approvals and the relationship between the manufacturer and its legal representatives in the different countries

- The next process that will be evaluated during the audit is the **measurement, analysis and improvement** process. The ability of the manufacturer to implement preventive and corrective actions to address non-conformities is assessed. Processes associated with nonconformance events will be highlighted for further evaluation. The process of **adverse events and advisory notices** is also reviewed.

- The **design and development** process is audited, with a focus on devices that have been recently manufactured or changed and those associated with non-conformities. The manufacturer shall demonstrate that it applies risk management throughout the design process.

- Next, the process **production and service controls** is examined to see how production controls are implemented.

- The **purchasing** process supports the 4 main processes and focuses on examples associated with design changes and high-risk activities.

At the end of the audit, non-conformities are classified according to a scale going from 1 to 5 set up by the Global Harmonization Task Force (GHTF) [18] [19].

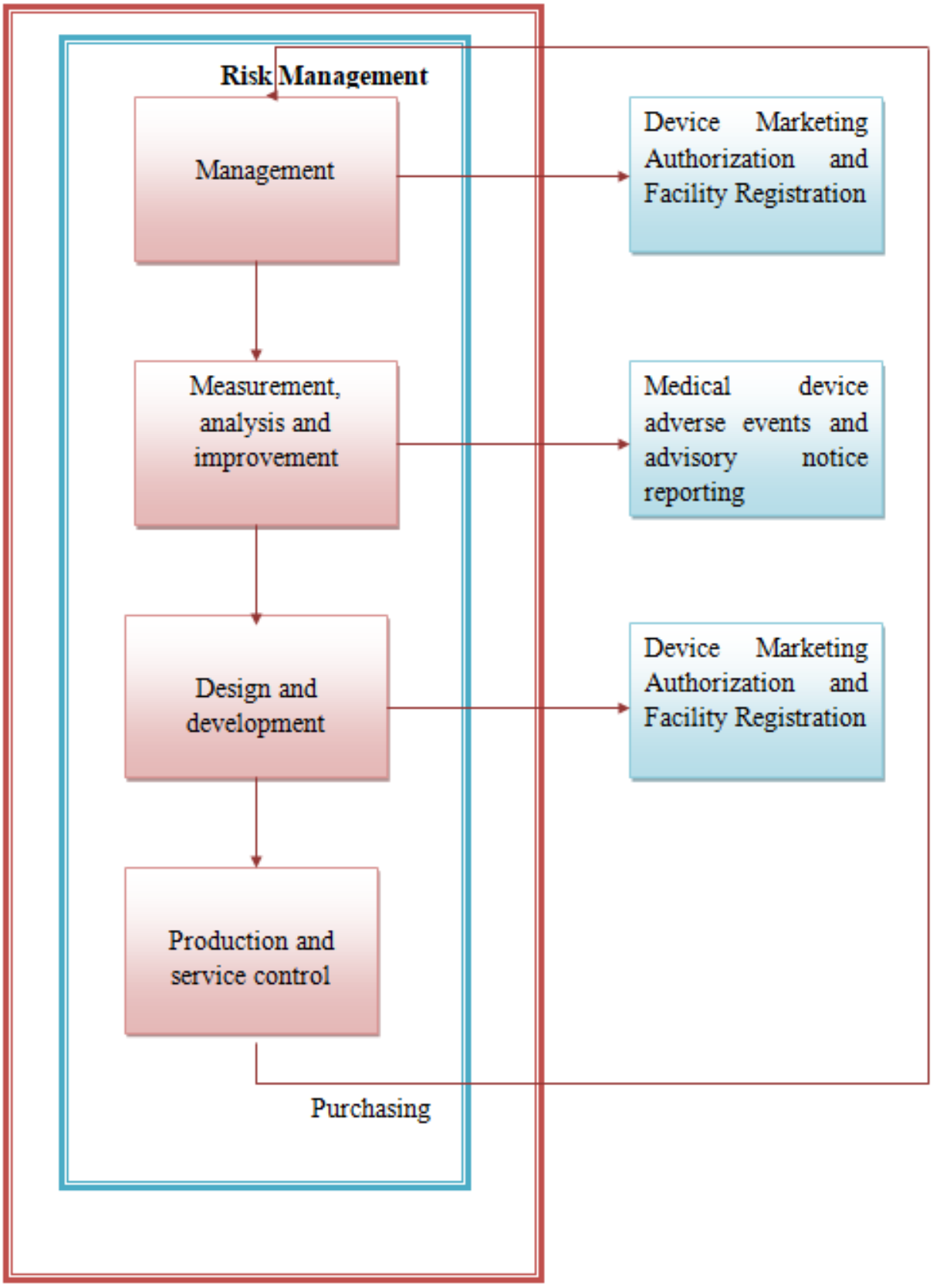


Figure 9: audit sequence according to the audit manual (source: author based on [19])

Chapter III: Conformity of the quality management system and technical documentation related to post-market surveillance with regulatory requirements

The regulation of medical devices is a complex and rapidly evolving field that aims to ensure optimal performance and improved patient safety. To achieve this objective, a good understanding of the regulatory requirements as well as cooperation between the different stakeholders throughout the life cycle of the medical device is necessary.

The purpose of this chapter is to present the methods applied throughout this project to assess compliance with the various regulatory requirements that apply to Soft Medical Aesthetics and to put in place the necessary actions. It is divided into two main parts: the first one deals with the requirements of Regulation 2017/745 and the second one is dedicated to the MDSAP program.

1- Compliance with the medical device Regulation 2017/745

1.1- Integration of regulatory requirements of the medical device regulation into the quality management system

The majority of problem-solving methods revolve around a variable number of steps. Among these methods, we distinguish the PDCA method (plan, do, check, act).

In this part of our project, we will conduct a continuous improvement process based on the PDCA cycle.

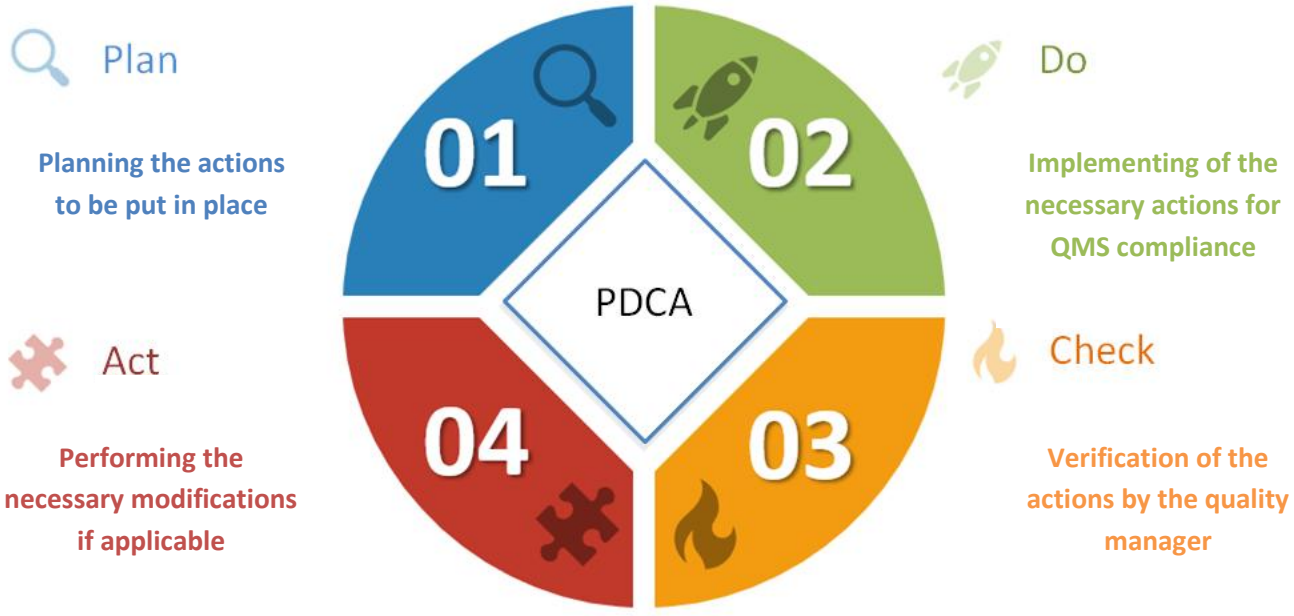


Figure 10: methodology used to integrate requirements of regulation 2017/745 into the QMS (source author)

1.1.1- Plan: planning the actions to be put in place

The quality management system of Soft Medical Aesthetics is already compliant with the ISO 13485:2016 standard. Therefore, in order to comply with the requirements of Regulation 2017/745, a comparison between the quality management system requirements of the Regulation and the ISO 13485:2016 (Medical devices - Quality management systems - Requirements for regulatory purposes) standard is necessary.

To do so, we will rely on the technical report FD CEN/TR 17223 which is a guidance down up by the European Committee of Standardization that explains the relationship between the ISO 13485:2016 standard, Medical Devices Regulation 2017/745 and In Vitro Diagnostic Medical Devices Regulation 2017/746.

On the basis of this technical report, an action plan has been elaborated following a meeting of the quality team that identified the actions to be implemented, the persons in charge of each action and the deadlines.

An extract from this action plan is presented in the table hereafter:

Table 3: action plan for quality management system transition

ACTION PLAN FOR QUALITY MANAGEMENT SYSTEM TRANSITION

RDM Annexe or article 10 reference	RDM Annexe or article 10 text	ISO 13485 reference	Comment	Actions to be implemented by SMA	Resp.	target date	closeout date
Annex I, Chapter 1, 1.	Devices shall achieve the performance intended by their manufacturer and shall be designed and manufactured in such a way that, during normal conditions of use, they are suitable for their intended purpose. They shall be safe and effective and shall not compromise the clinical condition or the safety of patients, or the safety and health of users or, where applicable, other persons, provided that any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient and are compatible with a high level of protection of health and safety, taking into account the generally acknowledged state of the art.	7.1, 7.3, 7.5	Partially covered. EN ISO 13485 includes requirements to apply risk management in product realization. The detail of the specific requirements of Annex 1, Chapter 1 of the Regulation is not stated explicitly	1, Creating the GSPR record 2, Integration of evidence already taken into account 3, Determination of further action to be taken 4, Implementation of the new measures	QARA trainee QARA trainee and project manager Project manager Project manager	08/04/2020 10/04/2020 17/04/2020 30/04/2021	08/04/2020 09/04/2020 16/04/2020 30/04/2020
Annex I, Chapter 1,2.	The requirement in this Annex to reduce risks as far as possible means the reduction of risks as far as possible without adversely affecting the benefit-risk ratio	7.1	Not covered. ENISO13485 includes requirements to apply a risk based approach to the quality management system and apply risk management in product realization. The detail of the specific requirements of Annex 1, Chapter 1 of the Regulation is not stated explicitly	updating the risk management procedure updating the risk mangement file	QARA intern Project manager	20/04/2020 20/04/2020	20/04/2020 20/04/2020
3 MDR	Manufacturers shall conduct a clinical evaluation in accordance with the requirements set out in Article 61 and Annex XIV, including a PMCF.	7.3.7	Partially covered. ENISO13485requires clinical evaluation in accordance with applicable regulatory requirements. The details contained in Article 61 or AnnexXIV are not provided explicitly	updating the clinical evaluation procedure	QARA intern	19/05/2020	20/05/2020

1.1.2- Do: implementation of the necessary actions for QMS compliance

a. Compliance with general safety and performance requirements

Fulfilling the 'Essential Requirements' of the medical device directive 93/42/EEC was one of the most important conditions to market a medical device in Europe. With the new medical device Regulation 2017/745, compliance with the 'General Safety and Performance Requirements' (GSPR) is the keystone for proving that a device is safe and will perform well throughout its life cycle.

These requirements listed in Annex I of the MDR could be divided into three parts:

- ✓ General requirements

This part includes requirements related to risk management, the benefit-risk ratio, and the characteristics and performance of the medical device.

- ✓ Requirements regarding design and manufacture

These requirements concern the physical, chemical and biological properties of medical devices. Other requirements for specific types of medical devices are also provided. For instance, there are requirements for devices that can be used by lay persons, devices with a measuring function and devices supplying energy.

- ✓ Information supplied with the device

This part contains requirements regarding instructions for use, labeling and sterile packaging.

In order for Soft Medical Aesthetics to provide the European authorities with proof of GSPR compliance, a record listing the general safety and performance requirements of the MDR is prepared. This record contains, for each requirement, the applicable standard, references to documents proving compliance or a justification for non-application of a requirement.

Soft Medical Aesthetics ORIGINAL	DOCUMENT D'ENREGISTREMENT RÉPONSES AUX EXIGENCES GENERALES EN MATIERE DE SECURITE ET DE PERFORMANCES ANSWERS TO GENERAL SAFETY AND PERFORMANCE REQUIREMENTS	ENR / S1 / 22 Page 1 / 50 | Indice :1 Date :06/04/2020

Dossier Technique concerné : Techncial file affected :	TD	Produit / Groupe de produits : Product / Range of products:		Révision : Revision:	

Légende : **Caractères noirs - Exigences générales en matière de sécurité et de performances à l'annexe I du Règlement 2017/745**
Caractères violets - Principes essentiels spécifiques de la réglementation australienne 2017 (EP)
Caractères verts - Exigences en matière de sureté et d'efficacité de la règlementation canadienne 2017 (CAN SER)

Key: Black font –General safety and performancerequirements from Annex I of Rugulation 2017/745
Purple font - Specific Essential Principles from Australian Regulations 2017
Green font - Specific canadian Safety abd effectiveness Requirements 2017

Abréviations utilisées et signification / Abbreviations and meaning:

NormeApplicable : Si l'exigence est applicable, préciser les normes ou spécifications disponibles permettant de couvrir cette exigence.Sinon indiquer NA (Non Applicable).
ApplicableStandard: If the requirement is applicable, specify the standards or specifications available to cover this requirement. Otherwise mention NA (Not Applicable).

Document de Référence / Justifiersi NA : Préciser les procédures, rapports ou autres documents utilisés pour démontrer la conformité à l'exigence essentielle.Justifier, si non applicable.
Reference document / Justifyif NA: Specify the procedures, reports or others documents used to demonstrate compliance with the essential requirement. Justify, if non applicable.

Archivage : Préciser le lieu où se trouvent les originaux.
Archiving: Specify where originaldocuments are located.

N°	Exigence Requirement		Norme Applicable Applicable Standard	Document de Référence / Justifiersi NA Reference document / Justifyif NA	Archivage Archiving
I.	**Exigences Générales**	**General requirements**			
1.	Les dispositifs atteignent les performances prévues par leur fabricant et sont conçus et fabriqués de telle manière que, dans des conditions normales d'utilisation, ils soient adaptés à leur destination. Ils sont sûrs et efficaces et ne compromettent pas l'état clinique ou la sécurité des patients ni la sécurité ou la santé des utilisateurs ou, le cas échéant, d'autres personnes, étant entendu que les risques éventuels liés à leur utilisation constituent des risques acceptables au regard des bénéfices pour le patient et compatibles avec un niveau élevé de protection de la santé et de la sécurité, compte tenu de l'état de l'art généralement admis.	Devices shall achieve the performance intended by their manufacturer and shall be designed and manufactured in such a way that, during normal conditions of use, they are suitable for their intended purpose. They shall be safe and effective and shall not compromise the clinical condition or the safety of patients, or the safety and health of users or, where applicable, other persons, provided that any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient and are compatible with a high level of protection of health and safety, taking into account the generally acknowledged state of the art			

Figure 11: answers to general safety and performance requirements record (source author)

After carrying out this record, a meeting between the members of the quality team was organized to fill in the above table with the different documents proving compliance with the essential requirements.

b- Compliance with risk management requirements

Compared to Directive 93/42/EEC, the Regulation 2017/745 adopts a more comprehensive risk-based approach and contains more explicit requirements for risk management throughout the life cycle of a medical device.

For each medical device the Regulation requires manufacturers to

- establish a risk management plan

- identify and analyze potential risks

- estimate the risks related to intended use and misuse

- minimize risks without altering the risk/benefit ratio.

- assess the impact of information arising from the production and post-surveillance phases on risk assessment

- make necessary changes to control measures if applicable (e.g., implement alarms or add safety information)

In the same context and in order to align with the requirements of Regulation 2017/745, a new version of the ISO 14971 standard on risk management was published in 2019.

In order to take into account all these regulatory requirements, a revision of the risk management procedure is necessary. To this end, two gap analyses were carried out:

- the first compares the requirements of MDD 93/42/EEC and MDR 2017/745 on risk management.
- the second one compares the requirements of ISO 14971:2019 and ISO 14971:2012

Following the procedure for risk management was modified as follows:

- ✓ Adding definitions concerning profit, benefit-risk ratio, damage and error of use
- ✓ Replacing the deviations and convergences between the essential requirements of the Directive and the requirements of ISO 14971:2012 by the deviations and convergences between the general safety and performance requirements of Regulation 2017/745 and EN ISO 14971:2019 as defined in ISO/TR 24971.
- ✓ Emphasizing that the assessment of each risk should take into account those associated with the intended use and misuse of the product.
- ✓ Specifying that all the actions implemented are aimed at eliminating or reducing the risk to the lowest possible level without altering the profit-risk ratio.
- ✓ Adding that SMA informs the user of any residual risk.

c- Compliance with clinical evaluation requirements

As the scope and requirements of the clinical evaluation in the MDR 2017/745 are more important that in the MDD 93/42/EEC, it is necessary to update the clinical evaluation procedure to comply with the new requirements.

The changes made concern the following points:

- **Definitions:** several new definitions concerning clinical evaluation have been added in the procedure. These definitions concern clinical data, clinical evaluation, clinical investigation, clinical evidence and clinical benefit.

- **Timing of the clinical evaluation of a medical device:**

The clinical evaluation is performed throughout the life cycle of the medical device and on a continuous basis using the clinical data obtained from the application of both the post-market clinical surveillance plan and the post-market surveillance plan. The scale and scope of this clinical evaluation shall be appropriate to the intended purpose of the medical device, its nature, its risk class, and the risks it may pose to patients and users. This evaluation takes into account both favorable and unfavorable data.

- if the clinical evaluation is based on demonstration of equivalence with another device biological, technical and clinical equivalence must be demonstrated

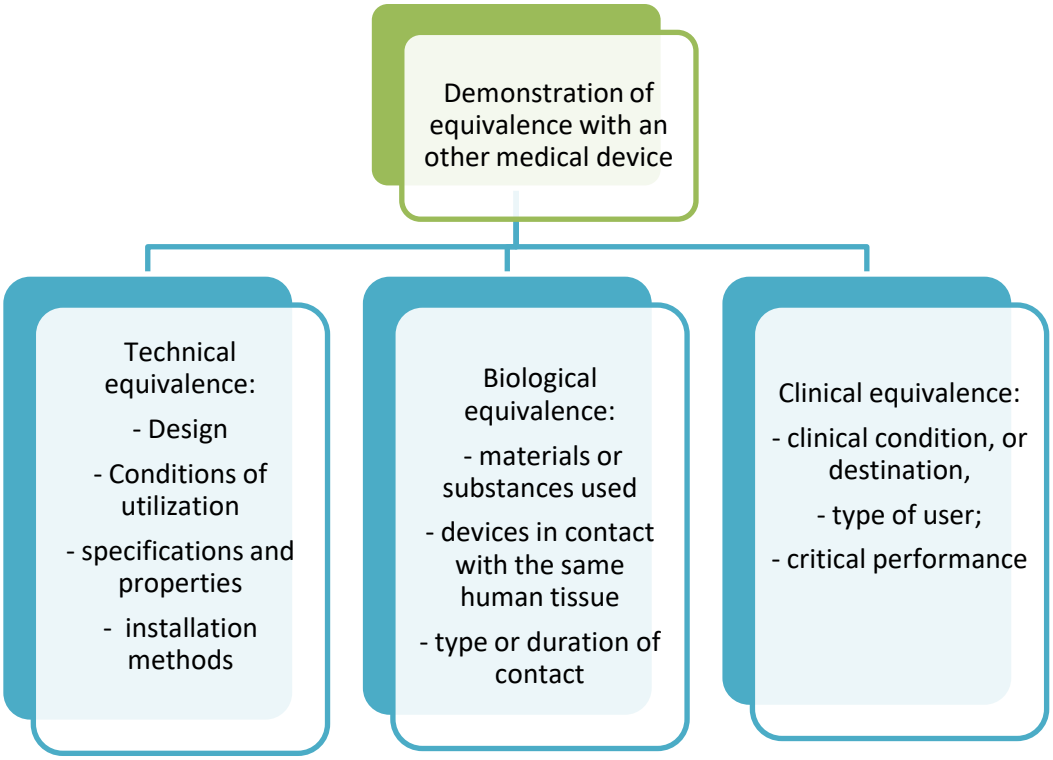


Figure 12: requirements to demonstrate equivalence with another medical device (source: author based on [6])

1.2- Technical documentation on post-market surveillance

According to the EU MDR, Post-Market Surveillance (PMS) is defined as "all activities carried out by manufacturers in cooperation with other economic operators to institute and keep up to date a systematic procedure to proactively collect and review experience gained from devices they place on the market, make available on the market or put into service for the purpose of identifying any need to immediately apply any necessary corrective or preventive actions".

These activities are organized in a post-marketing surveillance system which is established for each medical device according to its risk class. This system is an integral part of the technical documentation and the quality management system. It must be documented and updated throughout the life cycle of the medical device.

The content of the technical documentation on post-market surveillance is described in Annex III of Regulation 2017/745.

This part explains the methodological approach used to ensure compliance of medical devices marketed by Soft Medical Aesthetics with the requirements related to post-market surveillance.

1.2.1- Identification of input data

There are two types of PMS: 'reactive' PMS and 'proactive' PMS.

In reactive PMS, the manufacturer reacts to an event. This event can range from a customer claim to a serious incident causing serious injury or death to a patient. These activities are considered "passive" since they are essentially data collection activities.

For "proactive" PMS, the manufacturer makes efforts to anticipate and prevent events before they occur, which can be achieved through customer and user surveys, post-marketing clinical studies, and regulatory and standards monitoring. In the case of "proactive" PMS activities, manufacturers actively seek information to gain insight into the actual performance of the medical device.

Under the Regulations, manufacturers are required to collect data not only in a proactive but also in a reactive manner. The first step in this process is the identification of the data that will be collected by Soft Medical Aesthetics in the context of PMS activities. The table below groups the identified sources of post-marketing surveillance data.

Table 4: classification of input data

Reactive PMS	Proactive PMS
✓ **Review of design changes** ✓ **Investigation of customer complaints** ✓ **In-process testing** ✓ **Non-conformities** ✓ **Vigilance including serious and non-serious events**	✓ Regulatory and standards monitoring ✓ User and/or patient satisfaction survey ✓ Expert User Group Survey ✓ Market information ✓ Safety information associated to similar medical devices

1.2.2- Updating/creating procedures and records

The table below regroups the various documents that have been revised to take into account the requirements of the MDR regarding post-market surveillance.

Table 5: procedures and records updated or created to meet the requirements of the MDR 2017/745

Document	Reason of creation/update	Details
Processing of field feedback procedure	According to the annex III of the MDR, manufacturers should include in their PMS plan "effective and appropriate methods and tools to investigate complaints and analyze market-related experience collected in the field"	This procedure describes the measures implemented by SMA to collect and analyze customer feedback collected in the field. It applies to any customer feedback concerning the products manufactured and/or placed on the market by SMA.

Field feedback collection form	According to the annex III of the MDR, manufacturers should include in their PMS plan "effective and appropriate methods and tools to investigate complaints and analyze market-related experience collected in the field"	This record allows us to collect information about customers and their feedback, regardless of whether it is positive or negative about the products. It also enables the quality department to assess the impact of this information on risk management and the need to implement corrective or preventive actions.
Trend monitoring and analysis procedure	According to the annex III of the MDR manufacturers should include in their PMS plan "methods and protocols to manage the events subject to the trend report including the methods and protocols to be used to establish any statistically significant increase in the frequency or severity of incidents as well as the observation period"	This procedure describes the measures implemented by SMA to monitor and analyze trends in the context of post-marketing surveillance.
Post market surveillance procedure	This document was updated to include the MDR requirements concerning the post-market surveillance and the clinical post-market surveillance.	The procedure was revised to take into account the requirements of Regulation (EU) 2017/745 and to integrate the different reactive and proactive data sources previously identified.

1.2.3- Writing PMS Plan and PMS report

Following the identification of post-market surveillance input data and the updating of associated documents, a PMS plan was written. This document sets out the steps taken to plan post-market surveillance activities, including the process and frequency of activities and the systematic collection, recording and analysis of post-market data and post-market clinical data for SoftFil® medical devices.

This document contains general information about the medical device including the list of UDIs, frequency of use, indications and contraindications. Besides, for each input, the person responsible for collecting the data, the frequency of collection and the methods of data analysis and summary are specified. After finishing the PMS plan, a PMS report is written. The aim of this document is to:

- synthesize results of post-market activities based on proactive and reactive data related to Soft Medical Aesthetic (SMA) products

- discuss these results regarding:

  - Products safety and performance
  - The acceptability of the risk/benefit ratio
  - The need to update the Clinical Evaluation Report
  - The need to update the current PMS plan
  - The need to update the risk management file
  - The need to implement a PMCF

Since SMA's medical devices are Class IIa devices, this PSUR is updated once every two years.

2. Compliance with MDSAP requirements

The methodological approach used to ensure compliance with MDSAP requirements is shown in the figure below:

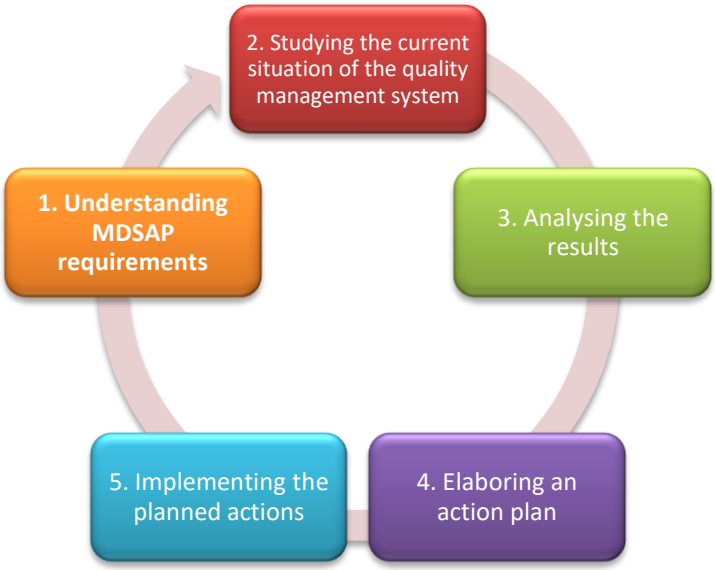


Figure 13: Methodological approach to ensure compliance with MDSAP requirements (source: author)

2.1- Understanding MDSAP requirements

Since MDSAP is based on the requirements of ISO 13485:2016 and the regulations of the five countries that are members of the program, a study of these various documents is required.

For this purpose, the following documents have been consulted:

- 21 Code of Federal Regulations 803 related, 21 Code of Federal Regulations 807, 21 Code of Federal Regulations 806, 21 Code of Federal Regulations 820, 21 Code of Federal Regulations 821 which are the medical device regulations applied in the United States.

- Therapeutic goods Regulations 2002 which are the regulations adopted in Australia
- Resolution RDC 16 2013, Resolution RDC 67 2009, and Resolutions 23 2013 which the Brazilian Regulations of medical devices
- Medical Devices Regulations (SOR/98-282) which are the regulations applied in Canada
- Japanese medical device quality management system requirements
- All being compared with ISO 13485:2016-Medical devices-Quality management systems-Requirements for regulatory purposes

2.2- Studying the current situation of the quality management system

The success of a project is strongly linked to a good understanding of the existing situation. In this context, a diagnostic tool was developed to assess the compliance of the existing quality management system and to identify deviations from the MDSAP requirements.

2.2.1- Presentation of the tool

The diagnostic tool developed is based on the MDSAP audit manual and consists of 3 sheets which are:

- {Presentation of the diagnostic tool}

This first sheet explains the purpose of the tool, the content of each sheet, and the rating scale used.

Each requirement can be assessed with a compliance rate of "100%" if the requirement is met or "0%" if the requirement is not met. In case a requirement is not applicable to the company, then it is possible to select "Not Applicable".

SoftFil®

Presentation of the Medical Device Single Audit Program (MDSAP)diagnostic tool

Instructions for use

Objective: the purpose of the following self-diagnostic tool is to assess the conformity of Soft Medical Aesthetics' quality management system to the requirements of the MDSAP program. It is also used to prioritize the actions to be implemented based on the calculated compliance rates. It is based on the audit model which contains specific instructions for performing audits under the MDSAP program.

Presentation of the sheets:

The tool consists of 3 sheets :

{presentation of the diagnostic tool}

* Explanation of how the tool works
* Rating scales used

{compliance assessment}

* MDSAP program requirements by process
*If the requirement is met, the evidentiary document that proves compliance with the requirement is mentioned

{Results}

* The conformity rates per chapter are calculated
* A radar graph to visualize the results of compliance rates

Rating scales used

veracity levels	Choice of veracity	compliance rate	Compliance level
Level 1 : requirement met	yes	100%	Compliant
Level 2 : requirement is not met	No	0%	Insufficient
Level 3 :requirement is no applicable	Not applicable	NA	NA

Figure 14: presentation of the diagnostic tool (source author)

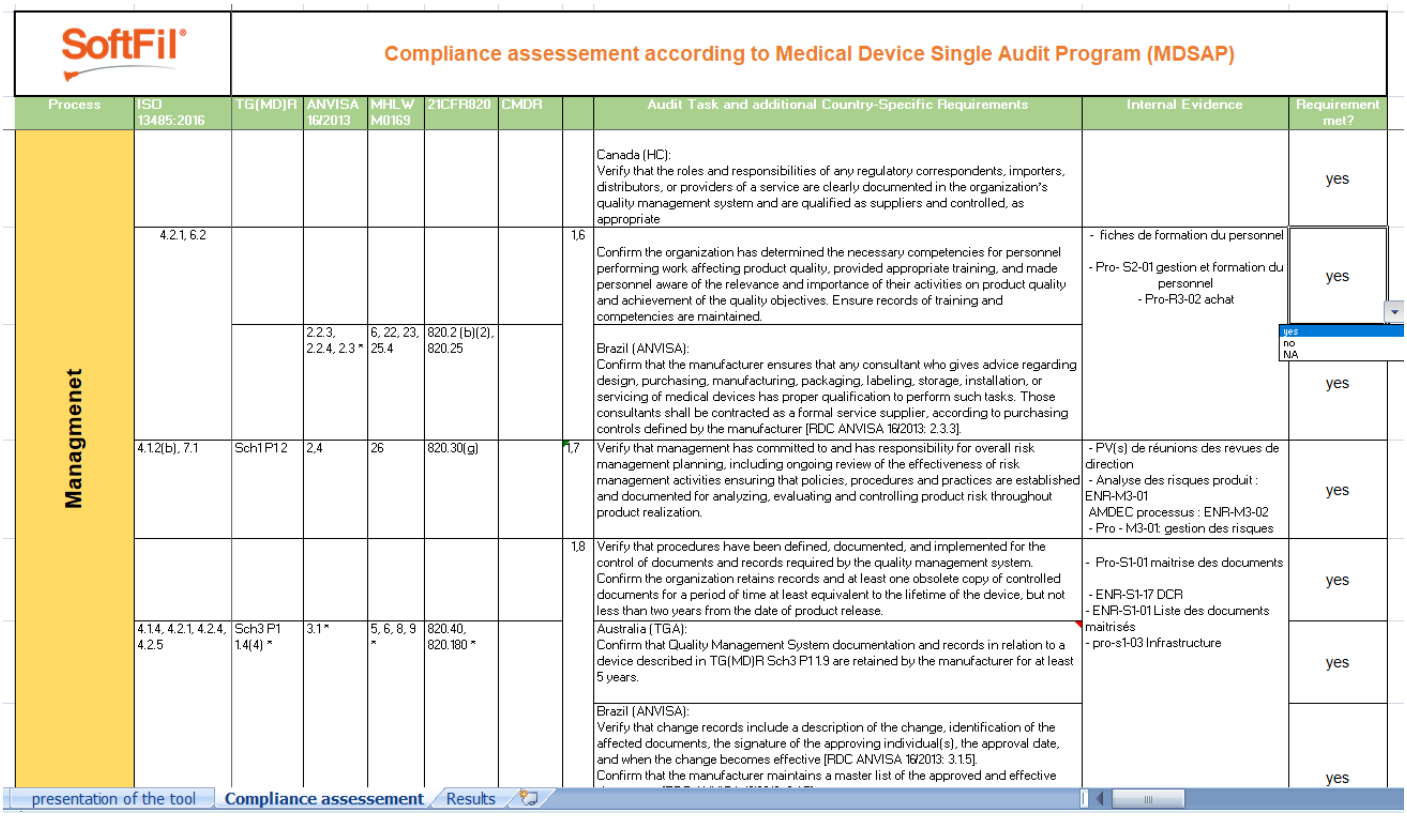
- {Compliance assessment}

As presented previously, the MDSAP consists of 7 processes. This second sheet includes the different requirements of ISO 13485: 2016 as well as the requirements of other countries classified by process. For each requirement, the following question is asked: **is the requirement met?**

The possible answers to this question are:

- YES: if the requirement is fully met
- NO: if the requirement is not met
- NA: if the requirement is not applicable to the company

In addition, for each requirement, the internal evidence must be specified.



SoftFil®

Compliance assessement according to Medical Device Single Audit Program (MDSAP)

Process	ISO 13485:2016	TG(MD)R	ANVISA 16/2013	MHLW M0169	21CFR820	CMDR		Audit Task and additional Country-Specific Requirements	Internal Evidence	Requirement met?
Managmenet								Canada (HC): Verify that the roles and responsibilities of any regulatory correspondents, importers, distributors, or providers of a service are clearly documented in the organization's quality management system and are qualified as suppliers and controlled, as appropriate		yes
	4.2.1, 6.2						1,6	Confirm the organization has determined the necessary competencies for personnel performing work affecting product quality, provided appropriate training, and made personnel aware of the relevance and importance of their activities on product quality and achievement of the quality objectives. Ensure records of training and competencies are maintained.	- fiches de formation du personnel - Pro- S2-01 gestion et formation du personnel - Pro-R3-02 achat	yes
			2.2.3, 2.2.4, 2.3 *	6, 22, 23, 25.4	820.2 (b)(2), 820.25			Brazil (ANVISA): Confirm that the manufacturer ensures that any consultant who gives advice regarding design, purchasing, manufacturing, packaging, labeling, storage, installation, or servicing of medical devices has proper qualification to perform such tasks. Those consultants shall be contracted as a formal service supplier, according to purchasing controls defined by the manufacturer [RDC ANVISA 16/2013: 2.3.3].		yes
	4.1.2(b), 7.1	Sch1 P1 2	2,4	26	820.30(g)		1,7	Verify that management has committed to and has responsibility for overall risk management planning, including ongoing review of the effectiveness of risk management activities ensuring that policies, procedures and practices are established and documented for analyzing, evaluating and controlling product risk throughout product realization.	- PV(s) de réunions des revues de direction - Analyse des risques produit : ENR-M3-01 AMDEC processus : ENR-M3-02 - Pro - M3-01: gestion des risques	yes
							1,8	Verify that procedures have been defined, documented, and implemented for the control of documents and records required by the quality management system. Confirm the organization retains records and at least one obsolete copy of controlled documents for a period of time at least equivalent to the lifetime of the device, but not less than two years from the date of product release.	- Pro-S1-01 maitrise des documents - ENR-S1-17 DCR - ENR-S1-01 Liste des documents maitrisés - pro-s1-03 Infrastructure	yes
	4.1.4, 4.2.1, 4.2.4, 4.2.5	Sch3 P1 1.4(4) *	3.1 *	5, 6, 8, 9 *	820.40, 820.180 *			Australia (TGA): Confirm that Quality Management System documentation and records in relation to a device described in TG(MD)R Sch3 P1 1.9 are retained by the manufacturer for at least 5 years.		yes
								Brazil (ANVISA): Verify that change records include a description of the change, identification of the affected documents, the signature of the approving individual(s), the approval date, and when the change becomes effective [RDC ANVISA 16/2013: 3.1.5]. Confirm that the manufacturer maintains a master list of the approved and effective		yes

yes
no
NA

presentation of the tool | Compliance assessement | Results

Figure 15: compliance assessment according to MDSAP (source author)

- {Results}

In the light of the answers provided, the compliance rates per process are calculated as follows:

$$\text{The compliance rate per process} = \frac{\sum \text{compliance rates of each requirement per process}}{\sum \text{requirements per process}}$$

A summary table of compliance rates by process is created, as well as a radar graph to visualize in a clear way the results obtained. Refer to figure 16 hereafter.

2.2.2- Results obtained

Several meetings between members of the quality team have been scheduled to assess the conformity of the quality management system and to fill in the diagnostic tool table with the different proofs of conformity to the requirements.

The results obtained are shown in the following figure 16:

SoftFil®

Overall results of compliance assessment

Process	compliance rate
Management	100%
Device Marketing Authorization and Facility Registration	67%
Measurement, Analysis and Improvement	68%
Medical Device Adverse Events and Advisory Notices Reporting	50%
Design and Development	94%
Production and Service Controls	93%
Purchasing	86%

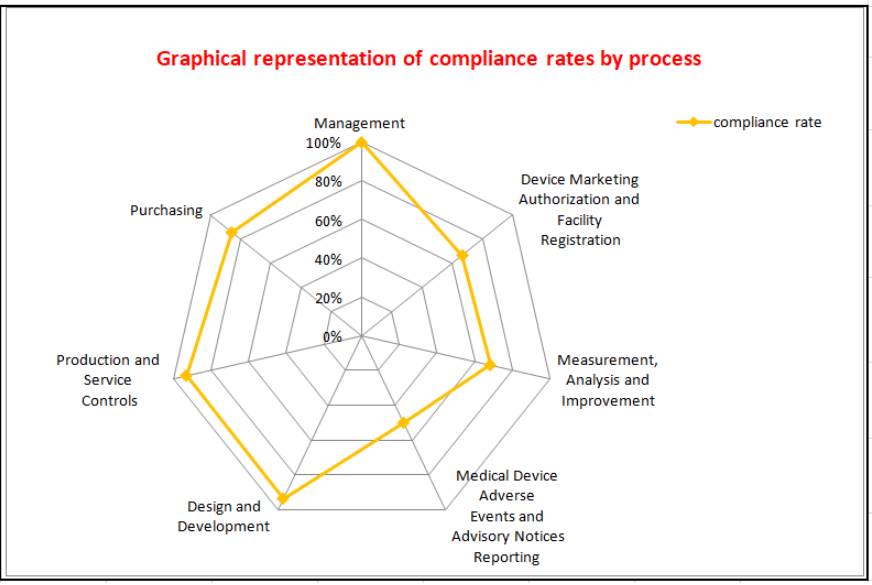


Figure 16: overall results of compliance assessment (source author)

2.3- Analyzing the results

Regarding the processes management, design and development, production and service controls, as well as purchasing, most of the requirements of the MDSAP program are met. The compliance rates for these processes are 100%, 94%, 93%, and 86% respectively.

However, medical device adverse events and advisory notices reporting, device marketing authorization and facility registration and measurement analysis and improvement processes have a low compliance rate. The compliance rates for these processes are 50%, 67%, 68% respectively.

With regard to process medical device adverse events and advisory notices reporting, this can be explained by the fact that not all the requirements concerning the modalities of notification of incidents in the different countries are taken into account in the vigilance procedure. Since this process has the lowest compliance rate, it will be given priority when actions are planned.

Concerning process device marketing authorization and facility registration, this can be justified by the fact that soft medical aesthetics has not yet appointed a registration holder in some MDSAP member countries.

For the process measurement, analysis and improvement, some requirements regarding audit planning, claims management and post-market surveillance are not met.

2.4- Elaborating an action plan

After evaluating the results of the conformity assessment, an action plan is drawn up. An extract from this action plan is presented in the table hereafter:

SoftFil®	Action plan for MDSAP compliance		
Action to be implemented	process involved	Responsabile	date of completion
Updating the materiovigilance procedure	Medical Device Adverse Events and Advisory Notices	Quality and regulatory affairs intern	10/06/2020
Conducting a recall simulation	Medical Device Adverse Events and Advisory Notices	Quality and regulatory affairs intern	in progress: the action was initiated on 8 June 2020
updating the audit procedure	Measurement, analysis and improvement	Quality manager	in progress
update the complaints management procedure	Measurement, analysis and improvement	Quality manager	in progress
update the design and development procedure	Design and development	project design manager	in progress

Figure 17: action plan for MDSAP compliance (source: author)

Since the process "Medical device adverse events and advisory notices reporting" represents the lowest rate of conformity, it was decided to give it priority in the implementation of actions. In the following section, the actions implemented concern this process.

2.5- Implementing the planned actions

2.5.1- Performing a recall simulation

In order to demonstrate compliance with the regulatory requirements in terms of traceability and vigilance applicable to medical devices, a recall simulation is carried out to ensure that the emergency measures put in place are effective in the event of a serious threat to public health.

The objective is to ensure that all implicated products can be identified, located, and recalled within 48 hours.

This simulated recall goes through several stages:

a- **The choice of distributors to contact:**

The first step in this simulation is to choose the distributors to contact. To do this, we will systematically select new distributors to test their reactivity, those who didn't show compliance at the previous simulation and those who responded late or did not respond during the previous year's recall simulation.

b- Selection of product batches

Only one batch is selected for each customer. A batch includes only one material family and can contain one or more deliveries (item numbers).

The sum of the quantities delivered to the distributor per batch is calculated by adding the quantities ordered for each item number. This calculation also considers any unit returned back from the customer.

Finally, a summary table is produced with the following information:

- The name of the company
- The country
- The vigilance correspondent and his/her email address
- The number and date of the item
- The reference of the article
- The batch number
- The quantity delivered

An extract from the summary table for company X is presented in the table below:

Table 6: extract from the summary table for company X

Company	Country	vigilance correspondent	email address	Item number	Date	Reference	Batch number	Quantity delivered
X	France	S.S	S.S@X.com	BM5448 BM5581 BM5680 BM5927 BM5962 BM6203	14/06/2019 15/07/2019 02/09/2019 04/10/2019 15/10/2019 04/12/2019	CP2550/XL	1810W-41/42 Exp 2023-09-09	45,000

c- Contacting the selected distributors

After selecting the distributors to be contacted and drawing up the summary table of the selected batches, a field safety notice is sent to each distributor.

Actions that should be taken by the distributor:

- Check the inventory
- Return the answer form completed with the following information:
    - Contact information

- The quantity of products in stock
- Concerning the products withdrawn from stock, the date of withdrawal from stock, the invoice number and the number of products

Distributors must return the requested information within 48 hours to prove that they are able to identify, locate and recall all products as soon as possible.

d- **Verifying the quantities**

After receiving the requested information from the distributors, a verification of the correspondence between the quantity indicated by the customer as received and the quality delivered by Soft Medical Aesthetics is carried out.

If the information provided by a distributor is different from the information available in SMA's database, the distributor is invited to verify once again that the information provided.

e- **Writing a report about the recall simulation**

The last step in this recall simulation is to write a report that summarizes all the information provided by the distributors. This report can be presented to the competent authorities or to the notified body to prove that the traceability of Soft Medical Aesthetics medical devices is ensured.

2.5.2- Updating the vigilance procedure

In the MDSAP, each country has specific rules and requirements regarding the information that must be reported to the competent authorities, who can make a report and within what timeframe.

In order to comply with these requirements, the vigilance procedure must be updated to include a summary of the vigilance requirements in the countries participating in the MDSAP.

For this purpose, the summary table presented below is made up of both the incident reporting requirements for MDSAP member countries and those of the new Regulation 2017/745.

Table 7: summary of the vigilance requirements according the MDSAP and MDR 2017/745

Country	Regulatory authority	What to report?	When?	Who reports?	Should events that happened outside the country be reported?	How to report?
USA	FDA (Food and Drug Administration)	any event that necessitates remedial action to avoid a risk of significant harm to public health	Within 5 days	Manufacturers and importers	Yes within 30 days	There are two options to submit reports on Medical Devices through FDA website: ✓ Web Interface by using the e-Submitter application ✓ AS2 Gateway-to-Gateway by using HL7 ICSR XM
		deaths, serious injuries and malfunction	Within 30 day			
Australia	TGA (Therapeutic Goods Association)	Serious Threat to Public Health	Within 2 days	Manufacturers and Australian Sponsors	No	Via IRIS in TGA's website
		Adverse Events that could lead to death and/or serious deterioration of health	10 days			
		Near Adverse Event which is an event that if repeated, could result in death or serious injury.	30 days			

Country	Regulatory authority	What to report?	When?	Who reports?	Should events that happened outside the country be reported?	How to report?
Brazil	Agência Nacional de Vigilância Sanitária (ANVISA)	Events representing a 'serious threat to public health'	Within 3 days	Manufacturers and Brazilian Registration Holder	Only for events related to 'Death serious threat to public health and counterfeit Devices'	Via SNVS in ANVISA's website
		Events that could potentially lead to the 'death or serious deterioration in the state of health of a patient, a user, or other person'	Within 10 days			
		Events that if repeated, could lead to 'the death or serious deterioration in the state of health of a patient, a user, or other person'	Within 30 days			
Japan	Pharmaceuticals and Medical Devices Agency and Ministry of Health, Labour and Welfare	Deaths plus malfunctions, breakage, and functions.	Within 15 days	Market Authorization Holder	Yes Events occurring outside Japan that are associated with medical devices authorized to be sold in Japan must be reported.	Via PMDA's Website
		Serious events	Within 30 days			
Canada	Health Canada	Events that could potentially lead to 'the death or serious deterioration in the state of	Within 10 days	Manufacturers and Canadian Importers	No	Reports could be submitted vie:

Country	Regulatory authority	What to report?	When?	Who reports?	Should events that happened outside the country be reported?	How to report?
		health of a patient, a user, or other person’				✓ Facsimile: Reports may be submitted by facsimile to 613-954-0941. ✓ postal mail or courier to the this address: ‘Canada Vigilance – Medical Device Problem Reporting Program Marketed Health Products Directorate Health Canada Address Locator 0701E 200 Tunney’s Pasture Driveway Ottawa, Ontario K1A 0K9’ ✓ email: mdpr@hc-sc.gc.ca)
		Events that that if repeated could lead to ‘the death or serious deterioration in the state of health of a patient, a user, or other person’	Within 30 days			

Country	Regulatory authority	What to report?	When?	Who reports?	Should events that happened outside the country be reported?	How to report?
Europe	The competent authority of the country in which an incident occurred	Events that represent a serious threat to public health	Within 2 days	Manufacturers	Only Field Safety Corrective Actions related to medical devices should be reported	Via EUDAMED website
		Events that could potentially lead to death or serious deterioration of health	Within 10 days			
		Serious incidents	Within 30 days			

Chapter IV: Internship impact

1- Acquired skills

My internship in the company Soft Medical Aesthetics allowed me to carry out diversified missions that gave me an overview of all the activities of a quality and regulatory affairs department. I was able to improve my knowledge concerning not only the European regulation through the application of the requirements of Regulation 2017/745 but also the international regulation by implementing the requirements of the Medical Device Single Audit Program (MDSAP).

Among the skills I have been able to acquire I can mention:

- ✓ writing technical documentation for post-market surveillance
- ✓ carrying out a product recall simulation by exchanging with distributors in different countries.
- ✓ updating and creating procedures and records to implement the requirements of Regulation 2017/745
- ✓ validating a software application used in the quality management system to meet the requirements of the ISO 13485 standard.
- ✓ verifying the conformity of a quality management system to the requirements of MDSAP and the implementation of the necessary corrective and preventive actions
- ✓ conducting regulatory and standards monitoring
- ✓ autonomy and time management
- ✓ improving my level of written and spoken English
- ✓ adapting to a new work environment

The radar diagram below shows the evolution of my skills following my internship:

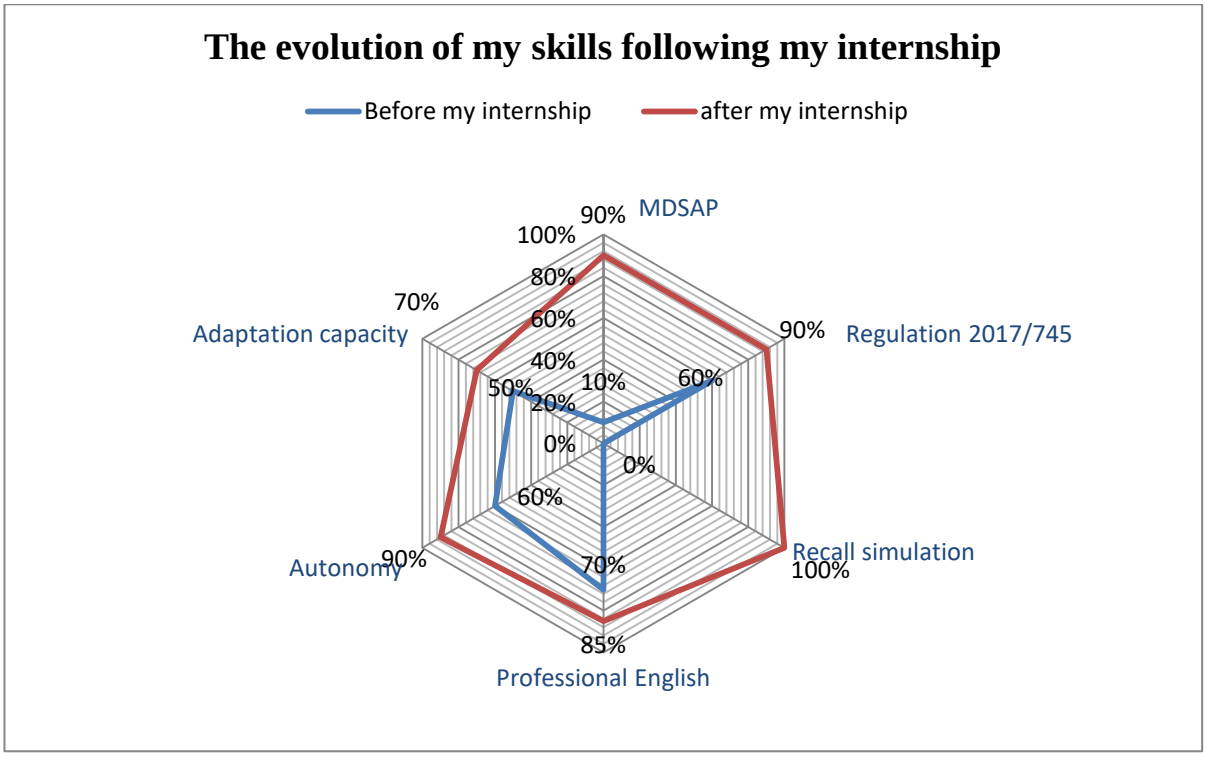


Figure 18: the evolution of my skills following my internship (source author)

2- Skills to be acquired

Although I have acquired a lot of skills through this internship, I am aware that I have a lot to learn. The discussions I had with the project manager within SMA confirmed to me the importance of acquiring new skills in chemical characterization and clinical evaluation of medical devices. In addition, I will have the opportunity to participate to an internal audit planned on the last week of July. This audit will be performed during 3 days, by an out-sourced consultant, who is also auditor for notified bodies. It will notably complete my internship by providing an impartial evaluation of the procedures I had the opportunity to implement.

3- Links with academic training

Having followed the Medical Devices and Regulatory Affairs course at the University of Technology of Compiègne, the lessons I attended gave me theoretical knowledge about European regulations and standards applied to medical devices. These lessons allowed me to learn about quality management tools and the different regulatory requirements of Regulation 2017/745 which helped me enormously to successfully complete my internship mission. However, it is unfortunate that we do not have a course that explains in detail with practical examples how to compile technical documentation and technical documentation for post-marketing surveillance. At the end of this internship, my interest in the field of quality and regulatory affairs of medical devices was confirmed. Through the job of a quality and regulatory affairs officer, which consists of applying standards and regulations to ensure the traceability and performance of medical devices, I feel that I am contributing to ensuring patient safety.

Conclusion

The purpose of this end-of-study project is to ensure compliance of SMA's medical devices with the requirements of Regulation 2017/745 and medical device single audit program. To do so, an analysis of the current situation was carried out in order to put in place the necessary actions.

For each mission, a well-defined methodology has been implemented:

Concerning the MDSAP, a diagnostic tool to assess the conformity of the company's quality management system was developed. Following this evaluation, an action plan was elaborated and actions such as a simulation of a product recall were implemented.

With the intention of obtaining the MDSAP certificate, SMA will soon proceed an internal audit to ensure that all requirements have been met and the planned actions have been effectively carried out. This internal audit will be followed by a certification audit.

To ensure compliance with Regulation 2017/745, the technical documentation on post-marketing surveillance was developed and the procedures and records of the quality management system were updated.

In addition, several other missions were carried out during this training course, including the realization of a monthly regulatory and standards monitoring, the validation of a software application, and participation in the requalification of sterilization.

The experience and knowledge acquired during this project are a real asset to my professional life. I had the opportunity to work in a flexible and autonomous way, with the privilege of proposing my own solutions and playing an important role in implementing actions to ensure that SMA's quality management system and products comply with applicable standards and regulations.

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