Guidance for Industry and FDA Staff

Class II Special Controls Guidance Document: Intervertebral Body Fusion Device

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U.S. Department of Health and Human Services
Food and Drug Administration
Center for Devices and Radiological Health

Orthopedic Spinal Devices Branch
Division of General, Restorative, and Neurological Devices
Office of Device Evaluation

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Preface

Public Comment

Written comments and suggestions may be submitted at any time for Agency consideration to the Division of Dockets Management, Food and Drug Administration, 5630 Fishers Lane, Room 1061, (HFA-305), Rockville, MD, 20852. Alternatively, electronic comments may be submitted to http://www.fda.gov/dockets/ecomments. When submitting comments, please refer to Docket No. 2006D-0020. Comments may not be acted upon by the Agency until the document is next revised or updated.

Additional Copies

You may also send an e-mail request to dsmica@fda.hhs.gov to receive an electronic copy of the guidance or send a fax request to 240-276-3151 to receive a hard copy. Please use the document number (**1540**) to identify the guidance you are requesting.

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Guidance for Industry and FDA

Class II Special Controls Guidance Document: Intervertebral Body Fusion Device

This guidance represents the Food and Drug Administration's (FDA's) current thinking on this topic. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations. If you want to discuss an alternative approach, contact the FDA staff responsible for implementing this guidance document. If you cannot identify the appropriate FDA staff, call the appropriate number listed on the title page of this guidance document.

1. Introduction

This guidance document was developed as a special control guidance to support the reclassification of intervertebral body fusion devices that contain bone grafting material into class II (special controls).[1] The intervertebral body fusion device is an implanted single or multiple-component spinal device made from a variety of materials, including titanium and polymers. The device is inserted into the intervertebral body space of the cervical or lumbosacral spine, and is intended for intervertebral body fusion. FDA is issuing this guidance in conjunction with a Federal Register (FR) notice announcing the final rule.

This guidance document does not apply to intervertebral body fusion devices used in conjunction with bone morphogenic proteins or scaffolds, i.e., those that contain any therapeutic biologic.

Following the effective date of a final rule reclassifying the device, any firm submitting a 510(k) for an intervertebral body fusion device will need to address the issues covered in the special control guidance document. However, the firm need only show that its device meets the recommendations of the guidance document or in some other way provides equivalent assurances of safety and effectiveness.

[1] Intervertebral body fusion devices that include any therapeutic biologic (e.g., bone morphogenic protein) will remain class III and continue to require premarket approval applications.

The Least Burdensome Approach

The issues identified in this guidance document represent those that we believe need to be addressed before certain devices can be marketed. In developing the guidance, we carefully considered the relevant statutory criteria for Agency decision-making. We also considered the burden that may be incurred in your attempt to comply with the guidance and address the issues we have identified. We believe that we have considered the least burdensome approach to resolving the issues presented in the guidance document. If, however, you believe that there is a less burdensome way to address the issues, you should follow the procedures outlined in the "A Suggested Approach to Resolving Least Burdensome Issues" document. It is available on our Center web page at: www.fda.gov/cdrh/modact/leastburdensome.html.

FDA's guidance documents, including this guidance document, do not establish legally enforceable responsibilities. Instead, guidance documents describe the Agency's current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word *should* in Agency guidance documents means that something is suggested or recommended, but not required.

2. Background

FDA believes that special controls, when combined with the general controls, will be sufficient to provide reasonable assurance of the safety and effectiveness of intervertebral body fusion devices that contain bone grafting material. Thus, a manufacturer who intends to market a device of this generic type should (1) conform to the general controls of the Federal Food, Drug, and Cosmetic Act (the Act), including the premarket notification requirements described in 21 CFR 807, Subpart E, (2) address the specific risks to health associated with the intervertebral body fusion devices identified in this guidance, and (3) obtain a substantial equivalence determination from FDA prior to marketing the device.

This special controls guidance document identifies the regulation and product code for intervertebral body fusion devices that contain bone grafting material (refer to **Section 4. Scope)**. In addition, other sections of this special controls guidance document list the risks to health identified by FDA and describe measures that, if followed by manufacturers and combined with the general controls, will generally address the risks associated with these devices and lead to a timely 510(k) review. This document supplements other FDA documents regarding the content requirements of a 510(k) submission. You should also refer to 21 CFR 807.87, the guidance entitled **Format for Traditional and Abbreviated 510(k)s**,[2] and "**How to Prepare a 510(k)**

[2] http://www.fda.gov/cdrh/ode/guidance/1567.html

Submission" on FDA Device Advice at http://www.fda.gov/cdrh/devadvice/314.html.

Under "**The New 510(k) Paradigm - Alternate Approaches to Demonstrating Substantial Equivalence in Premarket Notifications; Final Guidance**,"[3] a manufacturer may submit a Traditional 510(k) or an Abbreviated 510(k). FDA believes an Abbreviated 510(k) provides the least burdensome means of demonstrating substantial equivalence for a new device, particularly once a class II special controls guidance document has been issued. Additionally, manufacturers considering certain modifications to their own cleared devices may lessen the regulatory burden by submitting a Special 510(k).

3. The Content and Format of an Abbreviated 510(k) Submission

An Abbreviated 510(k) submission must include the required elements identified in 21 CFR 807.87, including the proposed labeling for the device sufficient to describe the device, its intended use, and the directions for its use. In an Abbreviated 510(k), FDA may consider the contents of a summary report to be appropriate supporting data within the meaning of 21 CFR 807.87(f) or (g); therefore, we recommend that you include a summary report. The report should describe how this special control guidance document was used during the device development and testing and should briefly describe the methods or tests used and a summary of the test data or description of the acceptance criteria applied to address the risks identified in this document, as well as any additional risks specific to your device. This section suggests information to fulfill some of the requirements of section 807.87 as well as some other items that we recommend you include in an Abbreviated 510(k).

Coversheet

The coversheet should prominently identify the submission as an Abbreviated 510(k) and cite the title of this special controls guidance document.

Proposed labeling

Proposed labeling should be sufficient to describe the device, its intended use, and the directions for its use. (Please refer to **Section 13. Labeling** for specific information that should be included in the labeling for the device type covered by this guidance document.)

Summary report

We recommend that the summary report contain:

Description of the device and its intended use

[3] http://www.fda.gov/cdrh/ode/parad510.html

We recommend that you describe the performance specifications and, when appropriate, include detailed, labeled drawings of the device. Please refer to **Section 5**. **Device Description** for specific information that we recommend you include in the device description for devices of the types covered by this guidance document.) You should also submit an "indications for use" enclosure.[4]

Description of device design requirements

We recommend that you include a brief description of the device design requirements.

Identification of the risk analysis method

We recommend that you identify the risk analysis method(s) you used to assess the risk profile, in general, as well as the specific device's design and the results of this analysis. (Please refer to **Section 6. Risks to Health** for the risks to health generally associated with the use of this device that FDA has identified.)

Discussion of the device characteristics

We recommend that you discuss the device characteristics that address the risks identified in this class II special controls guidance document, as well as any additional risks identified in your risk analysis.

Description of the performance aspects

We recommend that you include a brief description of the test method(s) you have used or intend to use to address each performance aspect identified in **Sections 7-12** of this class II special controls guidance document. If you follow a suggested test method, you may cite the method rather than describing it. If you modify a suggested test method, you may cite the method but should provide sufficient information to explain the nature of and reason for the modification. For each test, you may either (1) briefly present the data resulting from the test in clear and concise form, such as a table, **or** (2) describe the acceptance criteria that you will apply to your test results.[5] (See also 21 CFR 820.30, Subpart C - Design Controls for the Quality System Regulation.)

Reliance on standards

If you choose to rely on a recognized standard for any part of the device design or testing, you may include either a:

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[4] Refer to http://www.fda.gov/cdrh/ode/indicate.html for the recommended format.

[5] If FDA makes a substantial equivalence determination based on acceptance criteria, the subject device should be tested and shown to meet these acceptance criteria before being introduced into interstate commerce. If the finished device does not meet the acceptance criteria and, thus, differs from the device described in the cleared 510(k), FDA recommends that submitters apply the same criteria used to assess modifications to legally marketed devices (21 CFR 807.81(a)(3)) to determine whether marketing of the finished device requires clearance of a new 510(k).

- statement that testing will be conducted and meet specified acceptance criteria before the device is marketed; or
- declaration of conformity to the standard.[6]

Because a declaration of conformity is based on results from testing, we believe you cannot properly submit a declaration of conformity until you have completed the testing the standard describes. For more information, please refer to section 514(c)(1)(B) of the Act and the FDA guidance, Use of Standards in Substantial Equivalence Determinations; Final Guidance for Industry and FDA.[7]

If it is not clear how you have addressed the risks identified by FDA or additional risks identified through your risk analysis, we may request additional information about aspects of the device's performance characteristics. We may also request additional information if we need it to assess the adequacy of your acceptance criteria. (Under 21 CFR 807.87(l), we may request any additional information that is necessary to reach a determination regarding substantial equivalence.)

As an alternative to submitting an Abbreviated 510(k), you can submit a Traditional 510(k) that provides all of the information and data required under 21 CFR 807.87 and described in this guidance. A Traditional 510(k) should include all of your methods, data, acceptance criteria, and conclusions. Manufacturers considering certain modifications to their own cleared devices should consider submitting Special 510(k)s.

The general discussion above applies to any device subject to a special controls guidance document. The following is a specific discussion of how you should apply this special controls guidance document to a 510(k) for an intervertebral body fusion device.

4. Scope

The scope of this guidance document is limited to the device below, 21 CFR 888.3080, product code MAX (orthosis, spinal intervertebral fusion).

21 CFR 888.3080 Intervertebral body fusion device.

(a) Identification. An intervertebral body fusion device is an implanted single or multiple component spinal device made from a variety of materials, including titanium and polymers. The device is inserted into the intervertebral body space of the cervical or lumbosacral spine, and is intended for intervertebral body fusion.

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[6] See **Required Elements for a Declaration of Conformity to a Recognized Standard** (Screening Checklist for All Premarket Notification [510(K)] Submissions), http://www.fda.gov/cdrh/ode/reqrecstand.html.

[7] http://www.fda.gov/cdrh/ode/guidance/1131.html

(b) Classification.

(1) Class II (special controls) for intervertebral body fusion devices that contain bone grafting material. The special control is FDA's guidance: "Class II Special Controls Guidance Document: Intervertebral Body Fusion Device." (See Sec. 888.1(e) for the availability of this guidance document.)

(2) Class III (premarket approval) for intervertebral body fusion devices that include any therapeutic biologic (e.g., bone morphogenic protein). Intervertebral body fusion devices that contain any therapeutic biologic require premarket approval.

The scope of this guidance does not include combination products, such as an intervertebral body fusion device using bone morphogenic proteins or scaffolds.

A legally marketed intervertebral body fusion device may serve as a predicate for intervertebral body fusion devices composed of alternate materials as long as those materials do not contain combination products or for intervertebral body fusion devices with new indications for use or novel technological or design features. In addition to the recommendations discussed in this guidance, FDA may recommend additional testing and labeling for intervertebral body fusion devices composed of alternative materials, or with new indications for use, or novel technological or design features For guidance about these devices and additional testing and labeling, please contact the Orthopedic Spinal Devices Branch at 240-276-3676.

5. Device Description

To fully describe the intervertebral body fusion device, we recommend that you provide:

- a written description of the device
- its indications for use
- a table of device sizes and geometries
- complete, dimensioned engineering drawings of each subject device component
- identification of the materials from which the subject components are manufactured and any voluntary material standards to which these materials conform
- a magnified photograph and/or sketch of the intervertebral body fusion device attached to a spinal model.

In addition, we recommend that you identify any of your instruments unique to the implantation of your intervertebral body fusion device and for each instrument, provide:

- the trade name and functional description

- photographs or drawings
- the material composition
- any material standards met
- any previous clearance.

If your instrument is exempt from the 510(k) requirements of the act, we recommend that you indicate its classification regulation (e.g., 21 CFR 888.4540). If it is not exempt or previously cleared, bundling with your intervertebral body fusion device submission may be appropriate. For information about bundling premarket submissions see the guidance entitled, **Bundling Multiple Devices or Multiple Indications in a Single Submission**.[8]

6. Risks to Health

In the table below, FDA has identified the risks to health generally associated with the use of the intervertebral body fusion device addressed in this guidance document. The measures recommended to mitigate these identified risks are given in this guidance document, as shown in the table below. We recommend that you also conduct a risk analysis, prior to submitting your 510(k), to identify any other risks specific to your device and include the results of this analysis. If you elect to use an alternative approach to address a particular risk identified in this guidance document, or have identified risks additional to those in this guidance document, you should provide sufficient detail to support the approach you have used to address that risk.

Identified Risk	Recommended Mitigation Measures
Infection	Section 11. Sterility
Adverse tissue reaction	Section 12. Biocompatibility
Pain and loss of function	Section 8. Mechanical Testing Section 9. Animal Testing Section 10. Clinical Testing Section 13. Labeling
Soft tissue injury	Section 13. Labeling
Vertebral endplate injury	Section 7. Material Characterization Section 8. Mechanical Testing

[8] https://www.fda.gov/downloads/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm089732.pdf.

	Section 12. Biocompatibility Section 13. Labeling
Reoperation	Section 13. Labeling
Psuedoarthrosis (i.e., non-union)	Section 13. Labeling

7. Material Characterization

We recommend that you describe all material components of the device. The information should identify the source and purity of each component. Alternatively, you may submit a Certificate of Analysis (CoA) or Materials Safety Data Sheet (MSDS) or, if you include the appropriate letter of cross reference, you may reference a Device Master File.

Polymers

If the intervertebral body fusion device is manufactured from a polymer, we recommend that you provide the following information to characterize the final sterilized material:

- information describing leachables
- material properties
- molecular weight
- molecular weight distribution
- chemical and crystal structures
- percent of crystallinity
- degree of cross-linking of that polymer.

For any materials manufactured from polymers or that have the potential for leachables, we recommend that you provide an exhaustive extraction analysis of the final sterilized device. Extractions should be done using both a polar (e.g., saline) and a non-polar solvent (e.g., hexane, acetonitrile). Some solvents may be appropriate for only certain materials. We recommend that you provide your rationale for the solvents you select for the extraction tests. The test report should include:

- the instrument sensitivities
- the type of solvent used
- the amount of leachables and impurities detected at part-per-billion (ppb) levels.

We recommend that you identify each leachable and impurity, whether detected qualitatively or quantitatively, examples of which include:

- any low molecular weight materials
- residual monomers
- solvent
- sulfur contents
- catalysts
- initiators
- lubricants.

We recommend that you compare the leachables and impurities in the materials used in your device and a valid predicate. If the results from your device and the predicate differ, we recommend that you provide a rationale that supports finding those differences acceptable.

Materials Affected by Aging

If the intervertebral body fusion device is manufactured from a material that may be affected by aging, we recommend you provide a material characterization and, if applicable, mechanical testing evaluating the aging effects. We also recommend that you perform chemical analyses to characterize the aged material as outlined above for polymers.

We recommend that you characterize the material of the final sterilized device before and after aging to show whether aging altered the material structure (e.g., molecular weight distribution, crystallinity, cross-linking). You should choose a validated method of aging. If shelf life or aging affects the device, we recommend that you perform mechanical testing demonstrating that the aged device performs adequately. We believe the same mechanical tests performed before the device was aged are appropriate.

If the identical material is used in a predicate device with the same indications and spinal levels, you may identify the predicate device in lieu of providing the above information. You should submit a comparison of the predicate device and your device showing that both devices are manufactured out of identical materials. We consider materials identical if they:

- have identical composition;
- are produced by identical material processing; and
- are intended for the same use.

8. Mechanical Testing

We recommend that you include mechanical testing or provide a rationale for not conducting mechanical testing.

We recommend that you test constructs comprised of components that are of the worst case (e.g., most likely to fail) final design version. You should also provide a rationale for selecting this construct as worst case. We recommend that you test all non-metallic and metallic components after sterilization, if the mechanical properties of those components can be affected by sterilization. The components tested should comprise the worst case constructs in terms of design, materials, and manufacturing-related processing. The Orthopedic Spinal Devices Branch is available to answer your questions about testing set-ups to address a specific intervertebral body fusion device, identification of a worst case construct, or additional testing for a particular device.

For the intervertebral body fusion device, we recommend you provide complete test reports for:

- static and dynamic torsion testing of cervical intervertebral body fusion devices
- static and dynamic axial compression and compression shear testing of lumbar and cervical intervertebral body fusion devices
- subsidence testing of lumbar and cervical intervertebral body fusion devices.

However, depending on the specific design (e.g., anterior cord design), material (e.g., polymer, composite), and/or method of attachment, we may recommend additional testing (e.g., dynamic torsion testing, expulsion testing, wear testing, creep testing) for a given intervertebral body fusion device.

Refer to the sections below for details of the static and dynamic testing, wear testing, and subsidence testing. In addition, refer to **Test Report** at the end of this section for a description of the information we recommend that you include in a test report.

Static and Dynamic Testing Descriptions

Static and dynamic construct testing should involve a minimum of six samples of the worst case construct. We recommend that you provide the rationale for the:

- components tested
- loading mode
- testing configuration
- environment (if applicable).

Static and dynamic construct testing is most commonly performed in accordance with American Society for Testing and Materials (ASTM) F2077-03 *Test Methods For*

Intervertebral Body Fusion Devices.

We recommend ASTM F2077-03 to provide a standard comparison to predicate device testing and to allow a declaration of conformity to that standard for static and dynamic testing. ASTM F2077-03 is based on metallic implants and may not be applicable if your device is made out of other materials. Therefore, we may recommend additional testing and/or modifications to ASTM F2077-03, if your intervertebral body fusion device is manufactured out of a polymer or another material.

The dynamic testing should involve a minimum of six samples of the worst case construct to generate a semi-log plot of load versus cycles to failure. FDA defines the end of the test as functional failure of the construct or attainment of 5,000,000 cycles without functional failure. We recommend you compare the results to those obtained from an appropriate predicate intervertebral body fusion device. We recommend that you test a minimum of two samples at the lowest load level in order to establish a resulting endurance load limit.

Subsidence Testing

We recommend that you follow ASTM F2267-04 *Standard Test Method for Measuring Load Induced Subsidence of an Intervertebral Body Fusion Device Under Static Axial Compression,* or equivalent method. We recommend ASTM F2267 to provide a standard comparison to predicate device testing and to allow a declaration of conformity to that standard. ASTM F2267 is based on metallic implants and may not be applicable if your device is made out of other materials. Therefore, we may recommend additional testing and/or modifications to ASTM F2267 if your intervertebral body fusion device is manufactured out of a polymer or other materials.

Wear Testing

We recommend that you conduct wear testing for an intervertebral body fusion device that raises issues of particulate generation (e.g., manufactured from novel materials or those containing articulating device components). We recommend that you compare the wear testing of your device to wear testing of a legally marketed device with the same technological features and indications for use. You may be able to generate and evaluate wear debris as part of the dynamic testing or as part of a functional animal model. We also recommend that the intervertebral body fusion device be weighed before and after testing to evaluate mass loss during testing. We also recommend that you characterize all wear particulates (e.g., particle size and shape distribution, number of particles, and chemistry of particles) and analyze the articulating surfaces for scratches, burnishing, deformation, or any corrosion.

Test Report

We recommend that you provide a complete test report that includes:

- identification of the worst case intervertebral body fusion device tested
- the rationale for considering the intervertebral body fusion device worst case
- the rationale for the loading modes chosen (e.g., axial, bending, torsion)
- the results
- a discussion of the results in terms of the expected in vivo and clinical performance of the assembly.

In addition, we recommend you describe:

- the testing configuration
- testing environment
- a rationale for selecting that configuration and environment.

If there are differences between the device you intend to market and the device actually tested (e.g., tests were performed on a prototype), we recommend that you explain why the results are relevant to the device you intend to market.

9. Animal Testing

FDA may recommend that you provide a complete report of animal testing if the:

- device has new or different indications
- device has novel technological or design features
- device produces wear debris in differing amounts, size, or geometry during wear testing from the wear debris produced by the predicate device
- material has not been evaluated in the spine
- effects of the material on the spinal area and surrounding tissues and organs has not been evaluated
- mechanical testing results do not compare favorably to the predicate device
- mechanical testing alone cannot adequately characterize your device.

Common animal studies evaluate a biological response to a new material in the spine or evaluate the functional behavior of an intervertebral body fusion device. If an intervertebral body fusion device is manufactured from a material not currently used in the spine or contains a component manufactured from a material which raises concerns of local and/or systemic adverse effects, we recommend that you provide animal testing evaluating the biological effects of the material (e.g., rabbit study to examine spine and nerve root response to particulate wear debris). FDA also recommends a functional animal model to evaluate the actual use of the intervertebral body fusion device in situations where questions of device performance cannot be adequately answered by mechanical testing alone.

For functional animal testing, we recommend that you perform all testing on device components that are of the final, sterilized design. However, for animal testing evaluating only the biological response of a new material with no device design and function issues, testing on the final, sterilized material may be adequate. For both types of animal studies, FDA recommends that you evaluate a control group of animals at the same timepoints as the investigational animals.

We recommend that a complete report of animal testing contain:

- the rationale for why the animal model was chosen (e.g., relevance to human anatomy or disease)
- identification of the device components (i.e., what components were tested) or particles (i.e., size, quantity, and quality of particulates) used in the test
- the rationale for why those device components/particles were selected
- the evaluation timepoints of the study
- the number of animals (control and investigational) evaluated at each timepoint
- identification of the test control
- the results
- a discussion of the results in terms of the expected *in vivo* loads and clinical outcome, e.g., pain, function, neurological status.

For a functional animal study, we recommend that all testing involve the worst case intervertebral body fusion device, unless you provide an adequate rationale for not testing worst case. When there are differences between the intervertebral body fusion device you intend to market and the intervertebral body fusion device actually tested (e.g., tests were performed on a prototype), we recommend that you explain why the results are relevant to the device you intend to market.

10. Clinical Testing

In accordance with the Least Burdensome provisions of the Act, FDA will rely upon well-designed bench and/or animal testing rather than requiring clinical studies for an intervertebral body fusion device, unless there is a specific rationale for asking for clinical information to support a determination of substantial equivalence. For most intervertebral body fusion devices, a clinical study is generally not necessary to support a substantial equivalence determination. However, we may recommend that you conduct a supporting clinical study if there are new indications for use, novel technological or design features, or mechanical testing results that do not compare favorably to the predicate device testing.

If a clinical study is needed to demonstrate substantial equivalence (i.e., conducted prior to

obtaining 510(k) clearance of the device), the study must be conducted under the Investigational Device Exemptions (IDE) regulation, 21 CFR Part 812. FDA believes that the device addressed by this guidance document is a significant risk device as defined in 21 CFR § 812.3(m).[9] In addition to the requirement of having an FDA-approved IDE, sponsors of such trials must comply with the regulations governing institutional review boards (21 CFR Part 56) and informed consent (21 CFR Part 50).

For information regarding clinical studies for spinal systems, we recommend that you refer to **Guidance Document for the Preparation of IDEs for Spinal Systems**.[10] The Orthopedic Spinal Devices Branch is available to discuss your plans to conduct clinical studies.

11. Sterility

FDA recommends that you provide sterilization information described in the guidance entitled, **Updated 510(k) Sterility Review Guidance K90-1**.[11] The device should be sterile with a sterility assurance level (SAL) of 1 x 10^{-6} using a sterilization cycle that has been validated in accordance with the quality system regulation (21 CFR Part 820).

We encourage you to market your device in sterile form. However, if you intend to market your device in non-sterile form for subsequent sterilization in a healthcare facility, you should provide clear and adequate instructions for sterilization in your instructions for use. You should also prominently indicate in your package labeling and instructions for use that your device is provided non-sterile for subsequent sterilization in a healthcare facility.

12. Biocompatibility

FDA recommends that you conduct biocompatibility testing as described in the guidance, **Use of International Standard ISO-10993, Biological Evaluation of Medical Devices Part-1: Evaluation and Testing**[12] for blood-contacting, long-term implanted devices. We recommend that you select biocompatibility tests (i.e., Parts 5 and 10) appropriate for the duration and level of contact with your device. If your device is manufactured from a polymer, we recommend that you conduct biocompatibility testing to characterize the final sterilized material. However, if *identical* materials (polymer or non-polymer) are used in a predicate device with the same type and duration of patient contact, you may identify the predicate device in lieu of conducting biocompatibility testing. In this case, we recommend that you indicate they are identical materials with identical material processing and are intended for the same use.

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[9] See http://www.fda.gov/oc/ohrt/irbs/devrisk.pdf.
[10] http://www.fda/gov/cdrh/ode/87.pdf.
[11] http://www.fda.gov/cdrh/ode/guidance/361.html.
[12] http://www.fda.gov/cdrh/g951.html.

13. Labeling

Your 510(k) submission must include labeling in sufficient detail to satisfy the requirements of 21 CFR 807.87(e). The following suggestions are aimed at assisting you in preparing labeling that satisfies the requirements of 21 CFR Part 801.[13]

We recommend that your labeling include:

- specific indications for use, including levels of fixation
- brief device description identifying the component materials.
- clear identification of the trade name of any components from other spinal systems used with your device
- sterile or non-sterile notation
- recommended sterilization process parameters (if provided non-sterile or intended for resterilization).

Instructions for Use

As a prescription device, under 21 CFR 801.109, the intervertebral body fusion device is exempt from having adequate directions for lay use. Nevertheless, we recommend that you provide users clear and concise instructions that delineate the technological features of the device and how it is used on patients. Instructions should encourage local/institutional training programs designed to familiarize users with the features of the device and how to use it in a safe and effective manner.

The instructions for use should contain sufficient detail to enable a trained practitioner to achieve the desired results. This should include instructions for:

- surgical approach (i.e., site preparation, proper device placement, site closure)
- any device-specific instrumentation
- supporting magnified sketches of the major steps
- any supplemental fixation required to be used with and/or attached to the intervertebral body fusion device
- removal or revision procedures
- patient care following treatment.

[13] Although final labeling is not required for 510(k) clearance, final labeling must comply with the requirements of 21 CFR Part 801 before a medical device is introduced into interstate commerce. In addition, final labeling for prescription medical devices must comply with 21 CFR 801.109. Labeling recommendations in this guidance are consistent with the requirements of Part 801.

Precautions

Labeling should include any precautions specific to your device, for example:

> Based on the dynamic testing results, the physician should consider the levels of implantation, patient weight, patient activity level, other patient conditions, etc., which may impact on the performance of the intervertebral body fusion device.
>
> The implantation of the intervertebral body fusion device should be performed only by experienced spinal surgeons with specific training in the use of this device because this is a technically demanding procedure presenting a risk of serious injury to the patient.

Warnings

Labeling should include warnings against misuse of the device, as applicable to your device's design and intended use, for example:

> Do not use if package is opened or damaged or if expiration date has passed.

Labeling should also include warnings describing the risks and potential adverse outcomes, for example:

> Potential risks identified with the use of this intervertebral body fusion device, which may require additional surgery, include: device component fracture, loss of fixation, pseudoarthrosis (i.e., non-union), fracture of the vertebra, neurological injury, and vascular or visceral injury.