



Food and Drug Administration
10903 New Hampshire Avenue
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Silver Spring, MD 20993-0002

NuVasive[®], Incorporated
Ms. Cynthia Adams
Regulatory Affairs Specialist
7475 Lusk Boulevard
San Diego, California 92121

July 11, 2016

Re: K153105

Trade/Device Name: MLX[™]-Medial Lateral Expandable Lumbar Interbody System
Regulation Number: 21 CFR 888.3080
Regulation Name: Intervertebral body fusion device
Regulatory Class: Class II
Product Code: MAX
Dated: June 21, 2016
Received: June 22, 2016

Dear Ms. Adams:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set

forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to

<http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Industry and Consumer Education at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address

<http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

Mark N. Melkerson -S

Mark N. Melkerson
Director
Division of Orthopedic Devices
Office of Device Evaluation
Center for Devices and
Radiological Health

Enclosure

Indications for Use

510(k) Number (if known)

K153105

K153105

Page 1 of 1

Device Name

NuVasive® MLX™ – Medial Lateral Expandable Lumbar Interbody System

Indications for Use (Describe)

The NuVasive® MLX™ – Medial Lateral Expandable Lumbar Interbody System is indicated for intervertebral body fusion of the spine in skeletally mature patients. The System is designed for use with autogenous bone graft to facilitate fusion. The MLX – Medial Lateral Expandable Lumbar Interbody System is intended for use at either one level or two contiguous levels in the lumbar spine, from L2 to S1, for the treatment of degenerative disc disease (DDD) with up to Grade I spondylolisthesis. DDD is defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies. Patients must have undergone a regimen of at least six (6) months of non-operative treatment prior to being treated with the MLX – Medial Lateral Expandable Lumbar Interbody System. The MLX – Medial Lateral Expandable Lumbar Interbody System is intended to be used with supplemental internal spinal fixation systems that are cleared by the FDA for use in the lumbar spine.

Type of Use (Select one or both, as applicable)

Prescription Use (Part 21 CFR 801 Subpart D)

Over-The-Counter Use (21 CFR 801 Subpart C)

PLEASE DO NOT WRITE BELOW THIS LINE – CONTINUE ON A SEPARATE PAGE IF NEEDED.

FOR FDA USE ONLY

Concurrence of Center for Devices and Radiological Health (CDRH) (Signature)

This section applies only to requirements of the Paperwork Reduction Act of 1995.

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510(k) Summary

In accordance with Title 21 of the Code of Federal Regulations, Part 807, and in particular 21 CFR §807.92, the following summary of information is provided:

A. Submitted by:

Cynthia Adams
Specialist, Regulatory Affairs
NuVasive, Incorporated
7475 Lusk Blvd.
San Diego, California 92121
Telephone: (858) 909-1800

Date Prepared: June 21, 2016

B. Device Name

Trade or Proprietary Name: *NuVasive® MLX™ – Medial Lateral Expandable Lumbar Interbody System*

Common or Usual Name: Intervertebral Body Fusion Device

Classification Name: Spinal Intervertebral Body Fixation orthosis

Device Class: Class II
Classification: 21 CFR § 888.3080
Product Code: MAX

C. Predicate Devices

The subject *MLX – Medial Lateral Expandable Lumbar Interbody System* is substantially equivalent to the primary predicate device, *MLX – Medial Lateral Expandable Lumbar Interbody System* (K140770), and additional predicate devices, *NuVasive® Expandable Lumbar Interbody System* (K130820), *MLX – Medial Lateral Expandable Lumbar Interbody System* (K151374), and *NuVasive® CoRoent® Titanium System* (K120918).

D. Device Description

The *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* is manufactured from Ti-6Al-4V ELI conforming to ASTM F136 and ISO 5832-3, Ti-6Al-4V conforming to ASTM 1472, and Nitinol SE508 conforming to ASTM F2063. The implants are available in a variety of different shapes and sizes to suit the individual pathology and anatomical conditions of the patient. This 510(k) covers design changes to *MLX – Medial Lateral Expandable Lumbar Interbody System* (K140770).

E. Intended Use

The *NuVasive MLX™ – Medial Lateral Expandable Lumbar Interbody System* is indicated for intervertebral body fusion of the spine in skeletally mature patients. The system is designed for use with autogenous bone graft to facilitate fusion.

The *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* is intended for use at either one level or two contiguous levels in the lumbar spine, from L2 to S1, for the treatment of degenerative disc disease (DDD) with up to Grade I spondylolisthesis. DDD is defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies. Patients must have undergone a regimen of at least six (6) months of non-operative treatment prior to being treated with the *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System*. The *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* is intended to be used with supplemental internal spinal fixation systems that are cleared by the FDA for use in the lumbar spine.

F. Technological Characteristics

As was established in this submission, the subject *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* is substantially equivalent to other predicate devices cleared by the FDA for commercial distribution in the United States. The subject device was shown to be substantially equivalent and have the same technological characteristics to its predicate devices through comparison in areas including design, intended use, material composition, and function.

G. Performance Data

Nonclinical testing was performed to demonstrate that the subject *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* is substantially equivalent to the predicate device. The following testing was performed:

- Dynamic axial compression per ASTM F2077
- Dynamic torsion per ASTM F2077
- Static push-out per ASTM Draft Standard F-04.25.02.02 (work item Z8423Z)

Additionally, Finite Element Analysis (FEA) and engineering rationale were provided as the evidence that modified design of the *MLX System* device does not create new worst case for performance testing. The subject device was found to be substantially equivalent to the predicates.

H. Conclusions

Based on the indications for use, technological characteristics, performance data, and comparison to predicate devices, the subject *NuVasive MLX – Medial Lateral Expandable Lumbar Interbody System* has been shown to be substantially equivalent to legally marketed predicate devices.