August 28, 2020

Baxter Healthcare Corporation
Kristen Bozzelli
Manager, Regulatory Affairs
32650 North Wilson Road
Round Lake, IL 60073

Re: DEN190042
Trade/Device Name: Theranova Dialyzers (Theranova 400, Theranova 500)
Regulation Number: 21 CFR 876.5862
Regulation Name: Hemodialyzer with expanded solute removal profile
Regulatory Class: II
Product Code: QAX
Dated: September 12, 2019
Received: September 16, 2019

Dear Kristen Bozzelli:

The Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA) has completed its review of your De Novo request for classification of the Theranova Dialyzers (Theranova 400, Theranova 500), a prescription device under 21 CFR Part 801.109 with the following indications for use:

> Indications for Use: The Theranova Dialyzer is indicated for patients with chronic kidney failure who are prescribed intermittent hemodialysis. It provides an expanded solute removal profile with increased removal of various middle molecules (up to 45 kDa) that may play a pathologic role in the uremic clinical syndrome. The Theranova Dialyzer is not intended for hemofiltration or hemodiafiltration therapy. The total extracorporeal blood volume for the Theranova Dialyzer and the set should represent less than 10% of the patient's blood volume.

FDA concludes that this device should be classified into Class II. This order, therefore, classifies the Theranova Dialyzers (Theranova 400, Theranova 500), and substantially equivalent devices of this generic type, into Class II under the generic name hemodialyzer with expanded solute removal profile.

FDA identifies this generic type of device as:

> **Hemodialyzer with expanded solute removal profile**. A hemodialyzer with expanded solute removal profile is a device intended for use as part of an artificial kidney system for the treatment of patients with renal failure by performing such therapies as hemodialysis, hemofiltration, and hemodiafiltration. A hemodialyzer with expanded solute removal profile includes modifications to the semipermeable membrane that allows for increased removal of uremic retention solutes compared with standard high-flux hemodialyzers of the high permeability hemodialysis system classification

(21 CFR §876.5860), including solutes at the upper end of the “middle” molecular weight range (0.5 kDa to 60 kDa). This device is intended to be used with the extracorporeal hemodialysis delivery systems, blood tubing sets, blood access devices, and accessories regulated under 21 CFR §876.5820, 21 CFR §876.5860, 21 CFR §876.5540, and/or 21 CFR §876.5600.

Section 513(f)(2) of the Food, Drug and Cosmetic Act (the FD&C Act) was amended by section 607 of the Food and Drug Administration Safety and Innovation Act (FDASIA) on July 9, 2012. This law provides two options for De Novo classification. First, any person who receives a "not substantially equivalent" (NSE) determination in response to a 510(k) for a device that has not been previously classified under the Act may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act. On December 13, 2016, the 21st Century Cures Act removed a requirement that a De Novo request be submitted within 30 days of receiving an NSE determination. Alternatively, any person who determines that there is no legally marketed device upon which to base a determination of substantial equivalence may request FDA to make a risk-based classification of the device under section 513(a)(1) of the Act without first submitting a 510(k). FDA shall, within 120 days of receiving such a request, classify the device. This classification shall be the initial classification of the device. Within 30 days after the issuance of an order classifying the device, FDA must publish a notice in the Federal Register announcing the classification.

On September 16, 2019, FDA received your De Novo requesting classification of the Theranova Dialyzers (Theranova 400, Theranova 500). The request was submitted under section 513(f)(2) of the FD&C Act. To classify the Theranova Dialyzers into class I or II, it is necessary that the proposed class have sufficient regulatory controls to provide reasonable assurance of the safety and effectiveness of the device for its intended use. After review of the information submitted in the De Novo request, FDA has determined that, for the previously stated indications for use, the Theranova Dialyzers can be classified in class II with the establishment of special controls for class II. FDA believes that class II (special) controls provide reasonable assurance of the safety and effectiveness of the device type. The identified risks and mitigation measures associated with the device type are summarized in the following table:

Table 1 – Identified Risks to Health and Mitigation Measures

Identified Risks to Health	**Mitigation Measures**
Adverse tissue reaction	Biocompatibility evaluation Pyrogenicity testing Non-clinical performance testing
Infection or pyrogen reaction	Labeling Pyrogenicity testing Sterilization validation Non-clinical performance testing Shelf life testing
Inadequate or incomplete treatment	Non-clinical performance testing Labeling Shelf-life testing
Clearance of essential blood substances or medications	Non-clinical performance testing Clinical performance testing Labeling Shelf-life testing

Blood loss or blood cell destruction	Non-clinical performance testing Labeling Shelf-life testing
Blood leak into the dialysis fluid	Non-clinical performance testing Labeling Shelf-life testing
Air or particle embolism	Non-clinical performance testing Labeling Shelf-life testing
Fluid imbalance	Non-clinical performance testing Labeling
Acid-base imbalance	Non-clinical performance testing Labeling

In combination with the general controls of the FD&C Act, the hemodialyzer with expanded solute removal profile is subject to the following special controls:

1) Clinical performance testing under anticipated conditions of use must evaluate the solute removal profile and document all adverse events.

2) Non-clinical performance testing data must demonstrate that the device performs as intended under anticipated conditions of use. The following performance characteristics must be tested:
   (A) Ultrafiltration;
   (B) Blood and dialysate pressure drop;
   (C) Clearance rates;
   (D) Sieving coefficients;
   (E) Mechanical hemolysis;
   (F) Structural integrity;
   (G) Blood compartment integrity;
   (H) Volume of the blood compartment; and
   (I) Endotoxin retention of the dialyzer membrane.

3) The tissue-contacting components of the device must be demonstrated to be biocompatible. Biocompatibility evaluation must include a chemical analysis of the dialyzer membrane.

4) Performance data must demonstrate the sterility of the patient-contacting components of the device.

5) The patient-contacting components of the device must be demonstrated to be non-pyrogenic.

6) Performance data must support the shelf life of the device by demonstrating continued sterility, package integrity, and device functionality over the identified shelf life.

7) Device labeling must include:
   (A) Shelf life;
   (B) Storage conditions;

(C) Instructions for the preparation of the hemodialyzer, initiation of dialysis, troubleshooting, and discontinuance of dialysis;
(D) Membrane surface area, priming (blood) volume, maximum transmembrane pressure, maximum blood flow and maximum dialysate rate for each model;
(E) A non-pyrogenic statement;
(F) A summary of the *in vitro* performance data, provided in tabular form; and
(G) A summary of the clinical performance data.

In addition, this is a prescription device and must comply with 21 CFR 801.109.

Although this letter refers to your product as a device, please be aware that some granted products may instead be combination products. If you have questions on whether your product is a combination product, contact CDRHProductJurisdiction@fda.hhs.gov.

Section 510(m) of the FD&C Act provides that FDA may exempt a class II device from the premarket notification requirements under section 510(k) of the FD&C Act, if FDA determines that premarket notification is not necessary to provide reasonable assurance of the safety and effectiveness of the device type. FDA has determined premarket notification is necessary to provide reasonable assurance of the safety and effectiveness of the device type and, therefore, the device is not exempt from the premarket notification requirements of the FD&C Act. Thus, persons who intend to market this device type must submit a premarket notification containing information on the hemodialyzer with expanded solute removal profile they intend to market prior to marketing the device.

Please be advised that FDA's decision to grant this De Novo request does not mean that FDA has made a determination that your device complies with other requirements of the FD&C Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the FD&C Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and if applicable, the electronic product radiation control provisions (Sections 531-542 of the FD&C Act); 21 CFR 1000-1050.

A notice announcing this classification order will be published in the Federal Register. A copy of this order and supporting documentation are on file in the Dockets Management Branch (HFA-305), Food and Drug Administration, 5630 Fishers Lane, Room 1061, Rockville, MD 20852 and are available for inspection between 9 a.m. and 4 p.m., Monday through Friday.

As a result of this order, you may immediately market your device as described in the De Novo request, subject to the general control provisions of the FD&C Act and the special controls identified in this order.

For comprehensive regulatory information about medical devices and radiation-emitting products, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you

may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

If you have any questions concerning the contents of the letter, please contact Jade M. Noble, Ph.D., at 240-402-5077.

Sincerely,

Benjamin R. Fisher -S

Benjamin R. Fisher, Ph.D.
Director
OHT3: Office of GastroRenal, ObGyn,
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Center for Devices and Radiological Health