SUMMARY MINUTES

CENTER FOR DEVICES AND RADIOLOGICAL HEALTH

MEDICAL DEVICES ADVISORY COMMITTEE

GENERAL AND PLASTIC SURGERY DEVICES PANEL

October 27, 2022

9:00 a.m. EST

Attendees:

Chairperson

Hobart W. Harris, M.D., M.P.H.
Professor of Surgery
Division of General Surgery, UCSF — San Francisco, CA

Non-Voting Members

Karla V. Ballman, Ph.D.
Division Chief of Biostatistics & Epidemiology
Cornell Medicine — New York, NY

Mary H. McGrath, M.D., M.P.H.
Emeritus Professor of Surgery
Division of Plastic Surgery, UCSF — San Francisco, CA

Susan Galandiuk, M.D.
Professor of Surgery
Division of Colorectal Surgery, University of Louisville — Louisville, KY

Michael DeLong, M.D.
Assistant Professor-in-Residence, Division of Plastic Surgery, UCLA — Los Angeles, CA

Stephen Li, Ph.D.
Biomedical Scientist, Li Consulting — Palm Harbor, FL

Gordon H. Baltuch, M.D., Ph.D.
Neurosurgeon, Columbia Neurosurgery — New York, NY

Fernando Diaz, M.D., Ph.D.
Chair, Dept. of Neurological Surgery
Oakland University School of Medicine and William Beaumont Hospitals — Southfield, MI

Byron G. Thompson, Jr., M.D.
Professor, Department of Neurosurgery, University of Michigan School of Medicine — Ann Arbor, MI

Stavropoula Tjoumakaris, M.D.
Professor of Neurological Surgery and Radiology
Director, Endovascular Surgery & Cerebrovascular Neurosurgery Fellowship, Thomas Jefferson University Medical College — Philadelphia, PA

Jason L. Cormier, M.D.
Neurosurgeon, Acadiana Neurosurgery — Lafayette, LA

Mary Olivera, M.S., C.R.C.S.T
President & CEO, OSPECS Consulting, LLC — Newburgh, NY

Matthew Bloom, M.D., M.S., F.A.C.S.
Trauma and Emergency General Surgery, Critical Care, Cedars-Sinai Medical Center — Los Angeles, CA

Renata Block, M.M.S., PA-C
Physician Assistant, Advanced Dermatology & Aesthetic Medicine — Chicago, IL

Sandra Agazie, R.N., BSN, CMSRN
Chief Executive Officer, Sanzie Healthcare Services, Inc. — Fayetteville, GA

Temporary Non-Voting Members

Sonia Morris
Adult Cancer Patient Advocate (Mount Juliet, TN)

Industry Representative

P. LaMont Bryant, Ph.D.
Vice President of Regulatory Affairs
Ethicon, Inc.; Johnson & Johnson

Consumer Representative

Rachel S. Brummert
Founder, Quinolone Vigilance Foundation

Patient Representative

Sonia Morris
Adult Cancer Patient Advocate (Mount Juliet, TN)

Food and Drug Administration

Candace Nalls, Designated Federal Officer

Heather Dean, Ph.D.
U.S. Food & Drug Administration, CDRH — Silver Spring, MD

Binita Ashar, M.D.
U.S. Food & Drug Administration, CDRH — Silver Spring, MD

Long H. Chen, Ph.D.
U.S. Food & Drug Administration, CDRH — Silver Spring, MD

David Krause, Ph.D.
CDRH/OPEQ/OHT4, Deputy Office Director

Min Zhang, Ph.D.
General Engineer – Lead Reviewer, CDRH/OPEQ/OHTIV/DHTIVB

Cal Rabang, Ph.D.
Biomedical Engineer, CDRH/OPEQ/OHTIV/DHTIVA

Sergio de del Castillo
Associate Director for Policy, CDRH/OPEQ/OHTV

Food and Drug Administration Presenters

Frances Wilder, Ph.D.
Regulatory Advisor, Regulation, Policy, and Guidance (RPG)

Meixia Bi, Ph.D.
Biologist – Lead Reviewer, CDRH/OPEQ/OHTIV/DHTIVB

Rachel Thomas, Ph.D.
General Engineer, CDRH/OPEQ/OHTV/Division of Health Technology VA (DHTVA)

CALL TO ORDER
INTRODUCTIONS

Panel Chairperson **Dr. Hobart W. Harris** called the meeting of the General and Plastic Surgery Devices Panel to order at 9:00 a.m. He noted the presence of a quorum and stated that present members have received training in FDA device law and regulations. He stated the day's agenda: discuss and make recommendations on the classification proposals for nail prostheses, ultrasonic surgical instruments, single use reprocessed ultrasonic surgical instruments, and neurosurgical ultrasonic instruments.

Chairperson Harris reminded the attendees that this is a non-voting meeting and asked members of the Committee to introduce themselves.

CONFLICT OF INTEREST STATEMENT
TEMPORARY-NON-VOTING MEMBER STATUS STATEMENT
GENERAL ANNOUNCEMENTS

Candace Nalls, Designated Federal Officer, announced no Conflict-of-Interest Waivers were issued. She announced the participation of **Dr. P. LaMont Bryant** as the Industry Representative. She introduced **Ms. Sonia Morris** as temporary nonvoting members and Audra Harrison as the press contact.

FDA PRESENTATON — Medical Device Classification Process

Dr. Frances Wilder announced that for this meeting, the panel is to provide input on proper classification for 10 preamendments unclassified device types, emphasizing that devices should be placed in the lowest class whose level of control provides a reasonable assurance of safety and effectiveness. She detailed the criteria for Class I, Class II, and Class III and provided examples of devices in these categories. She discussed the classification process for pre-amendments unclassified device types. The panel is to consider:

- risks to health presented by each device type.
- whether the device is life supporting, life-sustaining, or of substantial importance in preventing impairment of human health.
- if the device presents a potential and reasonable risk of illness or injury.
- whether general controls alone are sufficient to provide reasonable assurance of safety and effectiveness for each device type.
- whether sufficient information exists to develop special controls.
- what those special controls should be to provide a reasonable assurance of safety and effectiveness for the device type.

Dr. Wilder noted that the FDA will consider all evidence presented from the public and panel, will publish a proposed rule in the Federal Register in their classification designation, and will finally issue a final rule identifying the appropriate class.

FDA PRESENTATION — Classifying nail prostheses under product code MQZ

Dr. Meixia Bi presented a detailed description of nail prostheses, including their indications for use, regulatory history, clinical background, results from an FDA literature review, a review of Medical Device Reports (MDRs), and recall history of the device type.

FDA identified three risks to health that can be mitigated appropriately with general controls:

- Adverse tissue reaction
- Discomfort/pain or nail breakage
- Nail infections

FDA recommended classification of nail prostheses as Class I exempt devices with general controls.

CLARIFYING QUESTIONS FROM THE PANEL

Ms. Block inquired if nail prostheses are supplied in the clinic or over the counter; **Dr. Dean** remarked that of the three identified, two were prescription and one was over the counter.

Dr. Li wondered if utilizing UV light to cure gel applied to nails is in the scope of the discussion; **Dr. Dean** replied that it is not. **Dr. Li** also wanted to know if a Class I device can have restrictions on materials used in the device; **Dr. Dea**n responded no, and **Dr. Krause** clarified that if there is a submission for a device with substantially different materials, FDA can require the manufacturer to submit a 510(k), de novo, or PMA request.

FDA QUESTIONS

Question One

The FDA has identified the following risks to health for nail prostheses. This includes adverse tissue reaction, discomfort, pain or nail breakage, and nail infection. Please comment on whether you agree with inclusion of all the risks in the overall risk assessment of nail prostheses under product corrode MQZ. In addition, please comment on whether you believe that any additional risks should be included in the overall risk assessment of nail prostheses.

Ms. Block expressed concerns about inadequate packaging/integrity/sterilization. **Dr. Dean** responded that their indications for use do not require sterilization. **Ms. Block** also inquired about adverse tissue reactions from device materials; **Dr. Dean** affirmed this is a risk.

With no other contributions made, **Dr. Harris** announced that the committee unanimously supports the proposed risks.

Question Two

Please discuss whether you agree with FDA's proposed classification of Class I for nail prosthesis. If you do not agree with FDA's proposed classification, please provide your rationale for recommending a different classification.

Dr. Li requested confirmation that, despite methods of attachment for temporary fixation, no serious discomfort occurs to patients from use of these devices. **Dr. Dean** reiterated that, from the analysis of MDRs, there are very few reports of patient injury and malfunction.

Ms. Agazie needed to know whether product K960843 is a brace or a splint; **Dr. Dean** replied that it functions as both.

Dr. Harris announced the unanimous consent of the panel to regulate nail prostheses as Class I devices.

FDA PRESENTATION — Classifying ultrasonic surgical devices regulated under products code LFL, NLQ and LBK.

Dr. Rachel Thomas presented a detailed description of ultrasonic surgical instruments, single use reprocessed ultrasonic surgical instruments, and neurosurgical ultrasonic instruments, including their indications for use, regulatory history, clinical background, results from an FDA literature review, a review of Medical Device Reports (MDRs), and recall history of the device type.

LFL and NLQ ultrasonic surgical devices are used in a wide variety of surgical procedures. The most common risks include pain, infection, tissue injury, and hematoma. LBK ultrasonic surgical devices are primarily used for the resection of brain and spinal tumors and are effective in the removal of soft and hard tissues in the brain and spine. Commonly reported risks include death, LMS, thermal injury, meningitis, bleeding, pneumonia, and neurological deterioration with transient or permanent deficits. It should be noted that there was limited data from well-designed clinical studies.

FDA believes special controls are necessary to ensure safety and efficacy. Identified risks to health and mitigation efforts are as follows:

Risk: infection. Mitigations: sterilization validation, reprocessing validation, pyrogenicity evaluation, shelf-life testing, packaging validation, and labeling.

Risk: adverse tissue reaction. Mitigations: biocompatibility evaluation and shelf life testing.

Risk: bleeding, hemorrhaging, and blood loss. Mitigations: Non-clinical performance testing, bench testing, and animal performance testing.

Risk: tissue injury. Mitigations: animal performance testing, non-clinical performance testing, bench testing, device reliability testing, electrical safety testing, software verification, validation and hazard analysis, electromagnetic compatibility, or EMC, testing, use life testing, shelf-life testing, and labeling.

Risk: interference with other devices. Mitigations: EMC testing and labeling.

FDA's proposed classification for these devices is Class II with special controls, listed as:

1) Non-clinical performance testing must demonstrate that the device performs as intended under anticipated conditions of use, including the following:
    a. Characterization of the ultrasonic and power parameters, e.g., sonication frequency and displacement, irrigation rate, suction (negative) pressure.
    b. Bench testing of material strength to demonstrate the device will withstand forces encountered during use and maintain device integrity over the labeled shelf life and use life, including repeated cleaning/use cycles if processed.
2) Software used to operate the device hardware must be described in detail in the software requirements specification, or SRS, and software design specification, or SDS. Software verification, validation and hazard analysis must be performed.
3) Electrical safety, thermal safety, mechanical safety and electromagnetic compatibility (EMC) testing must be performed.
4) Performance data must demonstrate the sterility of the tissue contacting components of the device and must evaluate pyrogenicity if intended for neurosurgical use.
5) Performance data must support the shelf life and use life of the device by demonstrating continued sterility, package integrity and device functionality over the intended shelf life and use life.
6) The tissue-contacting components of the device must be demonstrated to be biocompatible.
7) Animal performance data must demonstrate that the device performs as intended and will not result in unintended tissue injury, including mechanical and thermal damage to surrounding tissue structures.
8) The labeling must include:
    a. qualifications needed for the safe use of the device.
    b. a detailed summary of the device technical parameters.
    c. a detailed summary of the device and procedure related complications pertinent to use of the device.
    d. information on how the device operates.
    e. a shelf life for sterile components.
    f. the use life of the device for reusable components.
    g. validated methods and instructions for reprocessing of any reusable components.
    h. information on the electrical safety and electromagnetic compatibility of the device; and

i. prominent labeling adjacent to original equipment manufacturer identifying the reprocess or for single use reprocessed ultrasonic surgical instruments.

FDA QUESTIONS

Question One

Please comment on whether you agree with inclusion of all the risks in the overall risk assessment of ultrasonic surgical devices under product codes LFL, NLQ and LBK. In addition, please comment on whether you believe that any additional risks should be included in the overall risk assessment of these ultrasonic surgical devices.

Dr. Baltuch voiced a concern over aspirator malfunction.

Ms. Olivera believes that risks can be mitigated by those special controls, and she emphasized the need for performance testing for the devices prior to sterilization, as handling may affect device life/performance. **Dr. Harris** wondered if she has any suggestions for how devices should be resterilized. **Ms. Olivera** stated she is open to a variety of sterilization procedures, but it needs to be very clear in the instructions what procedure is to be used. **Dr. Chen** responded that this is currently the case when devices are reprocessed, as is the case with these devices.

Dr. Tjoumakaris wondered if mortality is considered an adverse event for these devices. **Dr. Chen** responded that this should have been included in the adverse event summary.

Dr. Cormier also commented that sterilization processes compromise device life and advocated for clearer labeling of mortality as a risk, as well. **Dr. Chen** added that manufacturers are required to account for changes to device life.

Dr. DeLong asked of the neurosurgeons on the panel if they have ever experienced moving parts break off or malfunction. **Dr. Baltuch** reported that this is not uncommon and often surgeons must request brand new equipment and have a plan B in place for nonoperational equipment.

Dr. Galandiuk considered whether increased operative time from device malfunction should be categorized as a distinctly separate risk, proposing that devices should be required to demonstrate repeated performance. **Dr. Chen** responded that this is, indeed, done in non-clinical performance testing currently.

Dr. Harris wondered why pyrogenicity was specific to neurosurgical devices and not all devices, and **Dr. Zhang** responded that this risk is especially pertinent to the brain because of the risk for bacterial endotoxins from reprocessed devices, but FDA will consider incorporating that risk for all potential uses.

Dr. McGrath suggested calling out damage to adjacent tissues specifically under the section about tissue damage and neurologic deterioration, asking for **Dr. Harris'**s opinion. **Dr. Harris** replied that this falls under the context of electromechanical dysfunction, but it is a good point.

Dr. Krause thanked the Panel for their contributions and **Dr. Harris** prompted the next question.

Question Two

Please discuss whether the identified special controls for ultrasonic surgical devices appropriately mitigate the identified risks to health and whether additional or different special controls are recommended.

Dr. Li asked if shelf-life/use-life testing includes the number of times the device has been reprocessed, and/or the amount of time the unit was used. **Dr. Zhang** responded that shelf-life testing is validated for sterile components. Use life testing is validated for reprocessed device components, such as number of times a device can be reprocessed during its clinical lifespan and how many times it can be used overall. **Dr. Li** reiterated his concern about material degradation over time, which **Dr. Zhang** said the FDA will consider.

Ms. Olivera wondered if cleaning tools are included in sterilization procedures.

Dr. Galandiuk asked for FDA comment on animal testing not necessarily relaying accurate biocompatibility information for use in humans. **Dr. Zhang** and **Dr. Krause** responded that they find the most similar animal model possible for the target organ and use.

Dr. Cormier questioned: should a physician be more cautious after using the device for 45 minutes versus 2 hours? **Dr. Bloom** found this point astute, suggesting limits on the amount of time a device spends active.

Dr. McGrath wondered if a detailed summary of procedure-related complications pertinent to the use of the device must be provided for each of many different procedure types. **Dr. Chen** answered yes.

Dr. DeLong inquired whether labeling is informed based on performance testing. **Dr. Chen** responded yes.

Dr. Chen took a moment to clarify that this discussion covers both single-use device and devices intended for multiple uses through resterilization. Reprocessed single-use devices are when a manufacturer recovers their single-use device and reprocesses it for redistribution.

Dr. Harris raised concerns about uncertainty of batch testing, inquiring whether manufacturers test reprocessed devices individually or in batches. **Dr. Chen** replied there is not a requirement to test every single device, but sampling procedures are firmly in place to ensure quality. **Dr. Harris** found this unsettling.

Dr. Galandiuk wondered if reprocessed devices are marketed as reprocessed devices, and **Dr. Chen** answered the indeed, the differentiation is made clear during marketing and sale. **Dr. Galandiuk** also asked if FDA knows the percentage of ultrasonic equipment like these are considered reprocessed, but **Dr. Chen** did not have that information.

Dr. Harris summarized the contributions of the committee: safety and efficacy for these devices can be mitigated with special controls. **Dr. Chen** thanked the panel and assured FDA will take into account the feedback in considerations for labeling.

Question Three

Please discuss whether you agree with FDA's proposed the classification of Class II with special controls for ultrasonic surgical devises under product codes LFL, NLQ and LBK. If you do not agree with FDA's proposed classification, please provide your rationale for recommending a different classification.

Dr. Baltuch requested clarification on classification designations III versus II, which **Dr. Krause** provided. **Dr. Baltuch** expressed concern that Class II designation might cause the devices to be of lower, "Walmart-like" quality. **Dr. Chen** stated that FDA only creates devices for prescription use. **Dr. Harris** hopes that materials specifications will be stringent enough to prevent cheap quality devices.

Dr. Cormier is comfortable with the proposed classification with special controls, provided extra consideration into device failure and time of usage.

Dr. Li asked for clarification on whether some device failures have been identified as being the cause of mortality. **Dr. Zhang** cited the MDRs and said yes, but **Dr. Bryant** requested more detail in this data, given that there are tens of millions of use cases, and **Dr. Galandiuk** recited the information from the panelists' report, citing 13 out of 56 reported deaths were attributed to device use. **Dr. Rabang** of FDA confirmed this data.

Dr. McGrath posed concerns about the ambiguity of the causes of death, especially pertaining to the involvement of the abdomen, and **Dr. Chen** clarified that these evaluations into deaths were made specifically for vessel sealing, which has stringent performance testing standards already in place. **Dr. McGrath** posed concerns about the ambiguity of postoperative bleeding, as well, and **Dr. Harris** agrees that there are many different types of bleeding that can occur, and they cannot all necessarily be considered the same for data representation purposes.

Dr. Harris summarized the panel's contributions by saying the committee supports the classification of these devices for their regulation as Class II. The committee posed additional concerns regarding:

- use-life
- ensuring appropriate animal models
- ensuring sufficiently specific labeling for individual procedures
- executing performance testing for each individual device prior to sale
- ensuring rigorous the performance testing

Dr. Harris confirmed the panel had no more comments. **Dr. Krause** thanked the participants for their discussion and ensured the neuro group was satisfied. **Mr. de del Castillo** confirmed the input is sufficient.

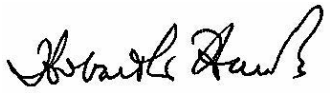
CONCLUDING REMARKS
ADJOURNMENT

Ms. Brummert, the consumer representative, **Dr. Bryant**, the industry representative, and **Ms. Morris,** the patient representative, thanked the FDA and panel for their inclusion in these deliberations.

Dr. Krause thanked **Dr. Harris**, the representatives, and the panel members for their contributions on behalf of the FDA, noting that the input will be taken to heart in developing the special controls for these devices.

Dr. Harris thanked all the participants and FDA for their contributions and adjourned the meeting.

I approve the minutes of this meeting as recorded in this summary.



Hobart W. Harris, M.D., M.P.H.
Chairperson

Summary Prepared By:

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November 8, 2022

I certify that I attended this meeting on October, 27, 2022 and that these minutes accurately reflect what transpired.

Candace J. Nalls -S

Digitally signed by Candace J. Nalls -S
Date: 2022.11.16 16:25:40 -05'00'

Candace Nalls
Designated Federal Officer