Overview of the 510(k) Process:
Guide for Third Party Reviewers

Slide 1
Hello! I'm Vesa Vuniqi, Office of Product Evaluation and Quality at FDA's Center for Devices and Radiological Health or CDRH. Welcome to CDRH Learn!

Slide 2
Before I begin, I would like to point you to another available CDRH Learn module titled "The 510k Program" which you may find useful before watching this one. A link to this module is listed on the slide.

Slide 3
In this module, I'll be providing an overview of the 510(k) Process.

Slide 4
With that in mind, let's review what we will be covering during this module. First we'll discuss the history of the 510(k)'s and the 3rd party review process. Next, we'll review the basic principles of the 510(k) program, and finally, we'll explain how to follow the 510(k) substantial equivalence Flow Chart.

Slide 5
Let's start our presentation by providing you with a brief background on the history of the 510(k) pathway.

Slide 6
FDA's authority to oversee medical devices was granted in 1976 with the passage of the Medical Device Amendments to the Food, Drug and Cosmetic Act. These amendments allowed for the creation of CDRH and established the classification of medical devices into Class I, II, or III. In 1990, the law was further modified by the Safe Medical Devices Act, which identified the "substantial equivalence" review standard, allowing FDA to adapt to the changing and evolving medical device landscape. We will cover this review practice in more detail during this educational module.

Slide 7
The third party 510(k) pathway for review of Class I and Class II devices was established by the FDA Modernization Act of 1997, and the use of the Third Party program was strengthened in the FDA Reauthorization Act of 2017.

Slide 8
Now that we gave you a bit of history on where FDA gets its authority, let's do a deeper dive on the principles of the 510(k) program.

Slide 9:
A 510(k) is a premarket notification submission to FDA. Through this process, an applicant demonstrates that their device is "substantially equivalent" to a legally marketed device, or predicate. In other words, they demonstrate that their device is as safe and effective as another device that is legally on the market through the 510(k) pathway. This pathway is the largest premarket program, with over 3,000 submissions a year. FDA has published a guidance document that describes the 510(k) process. A link to this guidance is listed on this slide.

Slide 10
So, what is a predicate? A predicate device must be a legally marketed device that falls under one of the following four categories: 1. A preAmendments device, that is a device on the market prior to 1976; 2. a device cleared through the 510(k) pathway; 3. a device reclassified from class III to class I or II; and 4., a device that reached the market through a granted De Novo.

Slide 11
To be substantially equivalent, a new device needs to have a couple of things. You need to identify a legally marketed predicate device. The new device must have the same intended use as the predicate. The new device also needs to have the same technological characteristics, or if there are differences, these differences should not raise different questions of safety and effectiveness. Different technological characteristics are then evaluated through testing methods and data to support substantial equivalence.

Slide 12
That being said, very few devices usually have the same technological characteristics as the predicate device. Changes in material, dimensions, or energy source may affect the risk of the device. FDA evaluates differences between the new device and predicate device to determine their effect on safety and effectiveness. For each difference, the applicant should provide an explanation or testing to demonstrate that the change does not adversely affect the safety and effectiveness of the device compared to the predicate.

Slide 13
All devices cleared through the 510(k) pathway are assigned a three-letter code called a "Product Code" by FDA. The Product Code is based on the classification of that medical device. This code allows for easy tracking of the device, as it points both to a specific classification regulation, when applicable, and specific sub-groups of devices which may fall under the same classification regulation or device type. This allows for ease in post-market tracking of similar devices and identification of safety signals.

Slide 14
These product codes are listed on the Substantial Equivalence, or SE letter sent to applicants and on the public 510(k) Summary. Additionally, this is a way to identify predicate devices, and devices eligible for Third Party review pathway. A product code is also required for device listing, importing and exporting of devices.

Slide 15
Information about specific medical devices may be found in the Product Classification Database. This database is public and can be accessed through the FDA website. This slide shows a screenshot of how it looks.
This database contains medical device names and associated information developed by CDRH. This site is a good resource to find classifications and product codes by name or review panel, as well as to find a list of product codes which may fall under a specific classification regulation. A link to the database is listed on the bottom of this slide.

Slide 16:
Let's illustrate this database with an example. Non-invasive blood-pressure devices.

Slide 17
Going back to that database, let's enter this term in the field titled Device, highlighted in red. Then hit the search button on the bottom right of the screen, which is highlighted in blue.

Slide 18
When you hit search, a page similar to this one opens up, displaying information such as product code, the device name and classification regulation number, device class, and recognized consensus standards associated with the device type. This page also includes information on whether a product code is eligible for third party review. All this information can be very useful in review of 510(k)s.

Slide 19
Medical device manufacturers must compare their new device to a similar, legally marketed device to support its Substantial Equivalence. So next, we will walk through the key elements of the 510(k) Flowchart, which serves as a decision-making tool that FDA utilizes to determine substantial equivalence.

Slide 20
The 510(k) flowchart is included in FDA's guidance document for Evaluating Substantial Equivalence in Premarket Notifications, which explains FDA's current review practices for 510(k) submissions. It should be noted that the 510(k) Decision Making Flowchart is meant to be used in conjunction with the guidance document and not as a stand-alone document. Although multiple predicates may be available, a single, primary predicate device should be used to navigate through the decision points on the Flowchart.

Slide 21
The first decision point of the flowchart asks, "Is the Predicate Device Legally Marketed?" We previously reviewed the definition of a predicate device as listed on the slide. If the answer to Decision 1 is No, the new device is not SE to the identified predicate and is immediately found NSE. When the predicate is legally marketed, FDA will also review all labeling and assure that it is consistent with the proposed Indications for Use statements and throughout the 510(k) submission.

Slide 22
If we proceed down the flowchart, Decision Point 2 asks "Do the devices have same Intended Use?" Before we jump to the available answers, it is worth noting that the term "intended use" means the general purpose of the device or its function, and it encompasses the indications for use, or IFU. In addition, the term "Indications for Use" describes a disease or condition the device will diagnose, treat, prevent, cure, or mitigate, including a description of the patient population for which the device is intended.

FDA may only determine that a device is substantially equivalent to a predicate device if the new device has the same intended use as the predicate device. Additionally, a change in indications for use of a device may create a new intended use, that leads to a Non-Substantial Equivalent determination, or NSE. Now, for the purposes of this module, I'll give you a couple of hypothetical examples related to these two different scenarios, so you can see what I mean.

Slide 23
Let's start with a Blood Pressure Cuff. We have a predicate with the indications for use of professional and home use, to manually measure systolic and diastolic pressure. In the submission under review, the

sponsor is proposing to change the indications to be home use for automated diagnosis of heart attack or stroke. In this case, the indications for use are different and raise a safety and effectiveness issue not raised by the predicate device. In this example, because there are different risks, the intended use is different, and the new device would be found NSE.

Slide 24

On the other hand, using a catheter as an example, we have a predicate that has an IFU to access the femoral artery, and the same type of device with a proposed IFU to access the subclavian artery. The intended use for both the predicate and new device is to access an artery. However, the location of access is different. That being said, although there is a different indications for use, this would not raise new risks or questions of safety or effectiveness. In this example, because there are no new risks, the intended use is determined to be the same, and therefore, we would continue down the decision-making process in the Flowchart.

Slide 25

So proceeding with Decision Point 3, we ask "Do the devices have the same technological characteristics?" "Yes" at this point in the flowchart indicates that review of the descriptive characteristics is enough to determine SE; however, this situation is not common. As we stated before, very few devices have the same technological characteristics as the predicate device. Changes in material, design, energy source or other features may affect the risk of the device and require additional information to determine substantial equivalence other than descriptive characteristics. So, you'll usually answer "No" to Decision 3.

Slide 26

Moving on to Decision Point 4, we now ask "Do the different Technological characteristics raise different questions of safety and effectiveness?"

This means that there is a question raised by the Technological characteristics of the new device that is not applicable to the predicate. This poses a different safety or effectiveness concern for the new device. If the answer is "no," we proceed with a scientific review of the performance data as part of our decision-making process.

An answer of "Yes" leads to a determination of Not Substantially Equivalent. For the purpose of this module, we will provide a couple of hypothetical examples to demonstrate how to answer this question.

Slide 27

Let's use a syringe as an example. We have a device with a new plastic material as compared to the predicate device. The new device material is considered a different technological characteristic and raises questions related to biocompatibility and material properties. However, these questions are not different from the predicate device.

In this scenario, the answer to Decision point 3 and Decision point 4 are "no" and we would complete an evaluation of the subject device to determine whether it is SE to the predicate device.

Slide 28

On the other hand, let's take the example of an electrosurgical device. We have a predicate device that uses radiofrequency energy, whereas the new device uses ultrasound.

This change in energy source would raise a safety concern on how the frequency of ultrasound can be controlled to avoid cavitation of cells that was not applicable for the predicate device. This is a different question and would result in an answer of "Yes" at Decision point 4.

Slide 29

If there are no different questions of safety and effectiveness, we would evaluate whether there are methods acceptable and data that demonstrate substantial equivalence. Once you are past Decision Point 4 on the flowchart, the manufacturer may bring in a “reference device”, where applicable. A reference device is a legally marketed device that is used to provide scientific or technical information to help address the safety and effectiveness of a new technological characteristic.
For example, a “reference device” may be used to support that the scientific methods of the performance testing are appropriate. It is very rare that an NSE determination is reached because the methods are found not acceptable. To answer question 5B, we have to review the performance data to determine if it demonstrates SE.

Slide 30

After a determination is made, FDA sends the sponsor an SE or NSE letter informing them of the decision made. When a determination of SE has been made, FDA puts some useful information on the public FDA 510(k) Database, which may be useful as a resource in the future. This includes the indications for use form, the 510(k) summary, if one has been provided, the actual SE letter, and the decision summary, if the device is an in vitro diagnostic. A link to the database is included on this slide.

Slide 31

Let’s recap what we have covered in this module. First, the 510(k) Program allows for a comparison of a new device to a predicate device, following the tenets outlined in the 510(k) Program guidance. We also learned how to walk through the decision points on the 510(k) Flowchart to determine conceptually whether a device is substantially equivalent or not substantially equivalent.

Slide 32

Let's conclude with your call to action. First, incorporate the basic principles of the 510(k) Program as you conduct your review. And second, view other available resources on CDRH Learn to stay on top of updates and changes to the 510(k) Program. Thank you for watching this program.

****