

From: Hageman, Jeff (CDC/OID/NCPDCID)
Sent: Thursday, September 30, 2010 4:39 PM
To: Hageman, Jeff (CDC/OID/NCPDCID)
Cc: King, Michelle W. (CDC/OID/OD)
Subject: FYI: FDA activities related to Blood Glucose monitoring systems and infection prevention

Dear HICPAC,
FYI: Further efforts by FDA to improve infection prevention related to blood glucose monitoring systems.

Below is the link and text to an OIVD, FDA letter posted today that was sent to manufacturers with blood glucose monitoring systems (BGMS) listed with the FDA. The letter outlines recent changes in the review of BGMS submissions. These review changes were instituted in response to a critical public safety risk concerning the risk of transmission of disease from shared use of fingerstick (lancing) devices and point of care blood testing devices.

<http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/InVitroDiagnostics/ucm227935.htm>

[Manufacturer Address]

Dear [Contact Name],

Your company has been identified as having listed blood glucose monitoring systems (BGMS) with the Food and Drug Administration [product code NBW]. The review of BGMS was recently changed in response to a critical public safety risk. The regulatory changes outlined in this letter are effective immediately and will apply to all new BGMS submissions to be submitted to OIVD. Please read the following in its entirety and include information on how you have addressed the following issues when preparing a BGMS pre-market submission for OIVD review.

During the week of August 23, 2010, the FDA, CDC, and CMS issued clinical reminders and public health notifications highlighting the risk of transmission of disease from shared use of fingerstick (lancing) devices and point of care blood testing devices. The posting of these notifications was in response to recent outbreaks of viral hepatitis among patients where these devices were shared between users. The CDC and the FDA currently recommend the following:

- Lancing devices should never be used for more than one person. Only auto-disabling, single use lancing devices should be used for assisted blood glucose monitoring in multiple patients.
- Point of care blood testing devices such as blood glucose meters should be used only on one patient and not shared. If dedicating blood glucose meters to a single patient is not possible, the meters must be properly cleaned and disinfected after every use following the guidelines provided in device labeling.
- Healthcare personnel should change gloves between patients, even if patient dedicated testing devices and single-use, self-disabling lancing devices are used.

The FDA, CDC, and CMS are committed to protecting public health and ensuring that bloodborne pathogen outbreaks are prevented. Accordingly, the FDA has modified its regulatory review for all blood glucose monitoring systems to ensure that adequate labeling and instructions for use are provided to healthcare workers so that they may adequately respond to these recommendations. The following information should be submitted for all pre-market submissions for blood glucose monitoring system (BGMS) submitted to OIVD to mitigate the risk of bloodborne pathogen transmission:

1. Intended Use:

Blood glucose meters are reviewed as part of a system that includes the meter, test strips, lancing devices, and control solutions. These systems are currently cleared for professional use only, home use only, or for both

professional and home use as indicated in the Indications for Use Statement. However, BGMS are generally packaged with multiple use lancing devices (e.g., lancets with re-useable holders, etc.) regardless of whether they are intended for single patient or multiple patient use. An important step in preventing bloodborne pathogen outbreaks is to distinguish single patient use devices from multiple patient use devices. Therefore, all BGMS sponsors should provide the following:

- a. Sponsors should decide whether their device is intended for single patient use, for multiple patient use, or both. If only for one use (single patient use or multiple patient use) the sponsor should follow the recommendations below for the use they choose. The “single patient-home use” IFU statement should clearly state that the BGMS is intended for use by lay users and should only be used by a single patient. The “multiple patient, professional use” IFU statement should clearly state that the BGMS may be used for multiple patients in a professional healthcare setting (ie. hospitals, doctor’s offices, etc.). At the current time, we will continue to allow sponsors to check “OTC” on the Indications for use form even for the “multiple patient, professional use” device.
- b. Sponsors who wish to sell their device for both uses should create distinct products. These products may have the same technical components (e.g., same meter and test strips and same performance data), but they will be considered separate devices. The two device systems (meter and test strips) will have separate names (e.g., “ABC blood glucose test system” and “ABCmulti blood glucose test system”), separate Indications for Use (IFU) statements (submitted on separate forms), and separate product labeling. Please note that though these will be considered separate device systems, we will currently allow both uses to be bundled in a single 510(k) submission and we will accept one set of performance data for both products (provided the only difference is the name and labeling). The devices will be categorized for CLIA separately under the two distinct names.
- c. Distinct BGMS starter kits should be provided for each intended use. The single patient BGMS kit may contain either an auto-disabling, single use lancing device or a multiple use lancing device. However, the multiple patient BGMS kit can only contain auto-disabling, single use lancing devices. The labeling for BGMS intended for multiple patient use should clearly state that only auto-disabling, single use lancing devices should be used with this system and instructions on how these auto-disabling lancing devices can be obtained should be provided.

2. Validated cleaning and disinfection procedures:

Please provide validated cleaning and disinfecting procedures for your BGMS (regardless of its intended use) for our review. Your cleaning and disinfecting validation study should include the following:

- a. Selection of cleaning and disinfection solvents and procedures that do not result in physical deterioration of the device overall, or deterioration of any device component such as the housing or touch pad or buttons. Please make note of these physical indicators during your study and provide this information for our review. The disinfection solvent you choose should be effective against HIV, Hepatitis C, and Hepatitis B virus. Outbreak episodes have been largely due to transmission of Hepatitis B and C viruses. However, of the two, Hepatitis B virus is the most difficult to kill. Please note that 70% ethanol solutions are not effective against viral bloodborne pathogens and the use of 10% bleach solutions may lead to physical degradation of your device. A list of Environmental Protection Agency (EPA) registered disinfectants effective against Hepatitis B can be found at the following website: http://www.epa.gov/oppad001/list_d_hepatitisbhiv.pdf □
- b. Demonstration that your disinfection protocol is effective against Hepatitis B virus. We recommend demonstration of disinfection effectiveness through viral challenge of the material used to manufacture the housing of the meter. It is not necessary to do viral challenge studies with the actual meter. Please note that your disinfection protocol should contain solvent appropriate contact times. Please see Attachment 1 for more information on disinfection protocols.
- c. Demonstration through bench studies that your BGMS is robust to cleaning and disinfection procedures after multiple cleaning and disinfection cycles. Please use worst case scenarios with regards to cleaning and disinfection frequency and end user environment. For example, the number of times you clean/disinfect the meter should be representative of the cleaning/disinfection that the meter will be exposed to in its 3-5 year

life. To determine the appropriate number of cleanings/disinfections for the study we suggest considering the number of times a meter will likely be cleaned/disinfected per day in its end user environment and extrapolating that number to the life of the meter. Please note that for single patient BGMS kits, you should also demonstrate that lifetime cleaning of any re-useable lancing devices packaged with your meter does not affect its performance. Accelerated testing would be appropriate here to simulate the cleanings/disinfections over the life of the meter and lancing device. These studies should demonstrate that the analytical performance of the blood glucose monitoring system is not impacted by the cleaning and disinfection procedures.

- d. Please provide a description of how the cleaning and disinfection procedures affect the port of your meter. If you determine that your meter port can not withstand your cleaning and/or disinfection procedures, you should work to ensure that future designs of your meter can withstand cleaning and disinfection at the port and other openings. The meter port is highly susceptible to blood contamination, therefore it is important to be able to clean and disinfect this portion of your meter to reduce the risk of bloodborne pathogen transmission.
- e. When you evaluate your device after the disinfection phase please keep in mind that the disinfectant should not cloud the face/display of the meter and should not corrode or erode the plastic housing or buttons. Please make note of these physical indicators during your study.
- f. Please include infection control in your risk analysis studies and incorporate these validated cleaning and disinfecting procedures into your risk assessment.
- g. Please provide a description of the protocols and acceptance criteria for all studies.
- h. To assist sponsors, FDA is working on more specific recommendations for cleaning and validation studies and will provide these in the near future.

3. Separate labeling for each BGMS kit:

Please submit separate labeling (user manual, quick guide, test strip labeling, and box labeling) for each BGMS for our review. The user manual should contain instructions for how and when users should perform cleaning and disinfection procedures for the meter and/or lancing devices, based on the studies performed (note that both the single and multiple use devices should contain thorough instructions on cleaning and disinfection). Also, lancing labeling should contain appropriate warnings on lancing device use. For example, for single patient BGMS kits, the lancing device labeling warning should state that the lancing device is only intended for a single user and should not be shared between users. In addition, the labeling should provide specific information on the appropriate use of the device (e.g., single or multiple patients, proper limitations and warnings, etc.). Please see Attachment 2 for initial specific labeling recommendations.

4. System accuracy and user performance studies:

System accuracy and user performance studies for blood glucose monitoring systems include multiple users and multiple blood glucose monitoring devices. Please note that from this point forward, only auto-disabling, single use lancing devices should be used in these studies. The protocol for these studies should include detailed cleaning and disinfection procedures that were followed and what additional measures were in place to mitigate the risk of potentially transmitting disease between healthcare providers, subjects and users (for example use of disposable gloves or other physical barriers). The user performance study protocol should also include details on how often gloves of the trained health professionals were changed between users. Glucose meters should be cleaned and disinfected between subjects in all validation studies performed by the sponsor.

5. Special 510(k)s:

If you are planning to submit a new BGMS Special 510(k), the intended use, validated cleaning and disinfection procedures, and labeling considerations discussed above in Items 1 to 3 apply. However, these Special 510(k) submissions will not generally require conversion to Traditional 510(k)s to address the considerations discussed in this letter.

Please note that these measures are only one step in the path forward to reduce the incidence of bloodborne pathogen transmission by BGMS and to protect public health. The FDA is continually evaluating the regulatory actions necessary to address the safe use of BGMS devices. Additional requirements may be necessary in the future to ensure patient safety. FDA is committed to being as transparent as possible in this endeavor.

References:

- “FDA Public Health Notification: Use of Fingertick Devices on More than One Person Poses Risk for Transmitting Bloodborne Pathogens: Initial Communication” (2010)
<http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm224025.htm>
- “CDC Clinical Reminder: Use of Fingertick Devices on More than One Person Poses Risk or Transmitting Bloodborne Pathogens” (2010) <http://www.cdc.gov/injectionsafety/Fingertick-DevicesBGM.html> □

Sincerely yours,

Courtney C. Harper, Ph.D.
Director
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Office of In Vitro Diagnostic Device Evaluation and Safety
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Attachment 1: Disinfection Procedure Guidance

For blood glucose meters, the primary viruses of concern for bloodborne pathogen transmission between multiple patients are human Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV). However, due to its robust nature, HBV is the most common virus in the observed outbreaks to date. Therefore, BGMS sponsors should demonstrate that their disinfection protocol is effective against human Hepatitis B Virus.

Studies have demonstrated that viruses can remain infective on surfaces for different time periods. Viral survival may increase or decrease with the number of microbes present on a surface. Increasing amounts of microbes can protect viruses from disinfection, but damaging effects may also result from microbial proteases and fungal enzymes. Factors which influence survival on surfaces include fomite properties, initial viral titer, virus strain, temperature, humidity and suspending media.

The technical challenges for the development of blood glucose meter cleaning and disinfection procedures are:

- to develop an effective disinfection method which can be easily employed in a health care setting, as complex cleaning methods will lead to lack of compliance
- to develop a cleaning and disinfection method which will not destroy the device after frequent cleaning and disinfection
- to develop a cleaning and disinfection method which will not affect glucose meter readings
- to develop a testing protocol that will be least burdensome for the sponsor

The following is provided to assist the sponsor in the design and validation of BGMS disinfection procedures:

1. Appropriate virucidal agents for Hepatitis B and HIV:

For a list of the ‘[EPA’s Registered Antimicrobial Products Effective Against Mycobacterium tuberculosis, Human HIV-1 and Hepatitis B Virus \(January 9, 2009\)](#)’ please see

http://www.epa.gov/oppad001/list_d_hepatitisbhiv.pdf. □

The simplest disinfection method would be the use of towelettes pre-saturated with a selected disinfectant. Towelette disinfection will reduce the risk of liquid getting into the meter device, therefore minimizing the chance of affecting the glucose meter reading. However, the sponsor must choose a solvent and disinfection method that is effective (against Hepatitis B Virus) and compatible with their BGMS.

2. Guidance Documents:

- a. ASTM standard E1053-97(Reapproved 2002), *Standard Test Method for Efficacy of Virucidal Agents Intended for Inanimate Environmental Surfaces*
- b. ASTM standard E23620-09, *Standard Practice for Evaluation of Pre-saturated or Impregnated Towelettes for Hard Surface Disinfection*.

3. Virucidal Disinfection Test Method:

Tests should be carried out on the device itself (glucose meter) or on coupons (test samples) of device housing material. The sponsor should include appropriate controls and follow replicate testing parameters as listed in the referenced ASTM standards above.

FDA approved tests should be used for the detection of either hepatitis B surface antigen (HBsAg) or hepatitis B e antigen (HBeAg) as an indication of viability after disinfection.

A model virucidal disinfection test method would be as follows: Coupons (1 cm in diameter) would be used as carriers. Each coupon would be inoculated with 10 μ L of Hepatitis B virus in a 5% serum solution. After the inoculum had been allowed to dry, it would be exposed to the control or the test product for the required contact time at the specified temperature and using the recommended exposure method (e.g., wiping as recommended for the meter rather than soaking the coupon). Each coupon would then be placed aseptically in a vial containing 990 μ L of an eluent/diluent and vortexed to recover the inoculum. Inoculum would be tested for either HBsAg or HBeAg using a FDA approved assay.

Please note that none of the FDA approved assays to date are indicated for testing environmental swab samples, therefore the Limit of Detection for the HBV marker of infection being tested should be determined by the sponsor. For limit of detection studies, dilutions can be made from viral seed stocks. We recommend starting with a 10⁶ viral seed stock and making serial 10-fold dilutions from this stock. Please reference CLSI EP17-A, *Protocols for Determination of Limits of Detections and Limits of Quantitation*.

Analytical validations of the assays found in the package inserts of FDA approved tests for detection of either HBsAg or HBeAg provide reasonable analytical sensitivity and specificity performance information.

For laboratory safety considerations, the sponsor should consult the 5th edition of the *Biosafety in Microbiological and Biomedical Laboratories (BMBL)* found at <http://www.cdc.gov/biosafety/publications/bmbl5/>. □

Attachment 2: Labeling

Distinct labeling (user manual, quick guide, test strip labeling, and box labeling) needs to be provided for single patient use and multi-patient use devices so that the information is appropriate for the intended user of the BGMS. Regardless of the intended use, all labeling for the test system components should have the same name (ABC blood glucose test system, ABC blood glucose meter, ABC blood glucose test strips, etc.).

Our specific recommendations are outlined below.

Single Patient User Manual

The introduction should contain the **intended use statement** of the proposed device in addition to any descriptive information about your device.

You should clearly **and prominently** state the important warnings in the front of the User's Manual, in a section containing **Important Safety Instructions**. You should stress the risk of disease transmission when using BGMS and reference any relevant public health notifications, standard practice guidelines, or other resources available to users. At a minimum, the following warnings should be included:

- The meter and lancing device are for single patient use. Do not share them with anyone including other family members! Do not use on multiple patients!
- All parts of the kit are considered biohazardous and can potentially transmit infectious diseases, even after you have performed cleaning and disinfection.

You should include these references:

"FDA Public Health Notification: Use of Fingerstick Devices on More than One Person Poses Risk for Transmitting Bloodborne Pathogens: Initial Communication" (2010)

<http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm224025.htm>

"CDC Clinical Reminder: Use of Fingerstick Devices on More than One Person Poses Risk for Transmitting Bloodborne Pathogens" (2010) <http://www.cdc.gov/injectionsafety/Fingerstick-DevicesBGM.html> □

In the section(s) describing **how to obtain a blood sample**, you should re-iterate the risk of blood borne pathogen transmission. You should stress that a lancing device is intended only for a single user and should not be shared.

You should stress that users should wash hands thoroughly with soap and water after handling the meter, lancing device, or test strips.

You should reference the sections on Cleaning and Disinfection.

The user manual should contain detailed instructions for how and when users should perform **cleaning and disinfection procedures** for the meter and/or lancing devices, based on the studies performed in item c. of our letter.

Specifically the instructions should include the following:

- a. An explanation of why the cleaning and disinfection should be performed in language that is appropriate for the intended use audience. You should explain the difference between "cleaning" and "disinfection."
- b. The recommended frequency. For example, the meter should be cleaned whenever it is visibly dirty. It should be disinfected periodically, such as once per month.
- c. If the meter is being operated by a second person who is providing testing assistance to the user, the meter and lancing device should be decontaminated prior to use by the second person.
- d. A list of the materials needed for cleaning and disinfection should be provided. Instructions on how these products can be purchased or prepared need to be clearly outlined.
- e. A detailed procedure describing what parts of the device should be cleaned/disinfected, what should not be

cleaned (avoided), the amount of time the cleaner or disinfectant needs to remain on the meter or lancing device (contact time), etc. You should include graphics/photographs to assist the user.

- f. A statement that users should wash hands thoroughly with soap and water after handling the meter, lancing device, or test strips.
- g. A contact telephone number for technical assistance or questions should be prominently listed in the cleaning and disinfection section.

Test strip labeling

You should include the information specified above, including the intended use statement, and warnings and precautions relating the risk of blood borne pathogen transmission for both single user and multiple patient BGMS as appropriate. You should reference the user manual for cleaning and disinfection procedures.

We suggest performing a user study in the intended use populations to determine the effectiveness of all of your labeling including cleaning and disinfection procedures.

Multiple Patient User Manual

The introduction should contain the **intended use statement** of the proposed device in addition to any descriptive information about your device. See Item 1, Intended Use in the attached letter.

You should clearly state the following warnings prominently in the front of the User's Manual, in a section named **Important Safety Instructions**:

- Users need to adhere to Standard Precautions when handling or using this device. All parts of the glucose monitoring system should be considered potentially infectious and are capable of transmitting blood-borne pathogens between patients and healthcare professionals. For more information, refer to "Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007", <http://www.cdc.gov/hicpac/2007ip/2007isolationprecautions.html> □
- The meter should be disinfected after use on each patient. This Blood Glucose Monitoring System may only be used for testing multiple patients when Standard Precautions and the manufacturer's disinfection procedures are followed.
- Only auto-disabling, single use lancing devices may be used with this device.

In the section describing **how to obtain a blood sample**, you should re-iterate the risk of blood borne pathogen transmission and state that only an auto-disabling, single use lancing device should be used. We recommend that you incorporate Standard Precautions and practices in your instructions. Include any graphics demonstrating correct blood draw procedures and ensure that the pictures show users wearing gloves. In addition, we recommend referring the users to the following practice guidelines:

Biosafety in Microbiological and Biomedical Laboratories (BMBL) found at
<http://www.cdc.gov/biosafety/publications/bmbl5/> □

"Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline-Third Edition" Clinical and Laboratory Standards Institute (CLSI) M29-A3.

Please state that a new pair of clean gloves should be worn by the user before testing each patient.

The user manual should also contain detailed instructions for how users are to perform **disinfection procedures** for the meter between patients. This information should be based on the studies performed in item 1.c. of the

attached letter.

Please include the references below:

“FDA Public Health Notification: Use of Fingerstick Devices on More than One Person Poses Risk for Transmitting Bloodborne Pathogens: Initial Communication” (2010)

<http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm224025.htm>

“CDC Clinical Reminder: Use of Fingerstick Devices on More than One Person Poses Risk for Transmitting Bloodborne Pathogens” (2010) <http://www.cdc.gov/injectionsafety/Fingerstick-DevicesBGM.html> □

The instructions should include:

- An explanation of why the disinfection should be performed.
- The recommended frequency of disinfection e.g. between each patient.
- The materials needed for disinfection and how they can be purchased or prepared.
- A detailed procedure describing what parts of the device should be disinfected, what should not be disinfected (avoided), the amount of time the disinfectant needs to remain on the meter (contact time), etc. You should include graphics/photographs to assist the user. Again, be sure that all graphics show the user wearing gloves.
- A statement that after disinfection, users’ gloves should be removed and hands washed before proceeding to the next patient.
- A contact telephone number for technical assistance or questions should be prominently listed in the cleaning and disinfection section.

Test strip labeling

You should include the information specified above, including the intended use statement, and warnings and precautions relating the risk of blood borne pathogen transmission for both single user and multiple patient BGMS as appropriate. You should reference the user manual for cleaning and disinfection procedures.

We suggest performing a user study in the intended use populations to determine the effectiveness of all of your labeling including cleaning and disinfection procedures

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