510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY TEMPLATE

A. 510(k) Number:

K112048

B. Purpose for Submission:

To obtain a substantial equivalent determination for the ImmunoCard™ *C. difficile* GDH Assay

C. Measurand:

Clostridium difficile antigen, glutamate dehydrogenase (GDH)

D. Type of Test:

Qualitative enzyme immunoassay

E. Applicant:

Meridian Bioscience, Inc.

F. Proprietary and Established Names:

ImmunoCard™ *C. difficile* GDH Assay

G. Regulatory Information:

Product Code	Classification	Regulation Section	Panel
MCB, Antigen, *C. difficile*	Class I	21 CFR § 866.2660 - Microorganism Differentiation and Identification Device	Microbiology (83)

H. Intended Use:

1. Intended use(s):

   ImmunoCard™ *C. difficile* GDH is a rapid qualitative enzyme immunoassay screening test to detect *Clostridium difficile* antigen, glutamate dehydrogenase, in fecal specimens from persons suspected of having *C. difficile* infection (CDI). This test does not distinguish between toxigenic and non-toxigenic strains of *C. difficile*. Samples from patients that produce positive results with this test must be further tested with an assay designed to detect toxigenic
   C. difficile strains and assist with the diagnosis of CDI.

2. Indication(s) for use:

   ImmunoCard™ *C. difficile* GDH is a rapid qualitative enzyme immunoassay screening test to detect *Clostridium difficile* antigen, glutamate dehydrogenase, in fecal specimens from persons suspected of having *C. difficile* infection (CDI). This test does not distinguish between toxigenic and non-toxigenic strains of *C. difficile*. Samples from patients that produce positive results with this test must be further tested with an assay designed to detect toxigenic
   C. difficile strains and assist with the diagnosis of CDI.

3. Special conditions for use statement(s):

   For prescription use only

4. Special instrument requirements:

   Not Applicable

I. Device Description:

ImmunoCard™ *C. difficile* GDH is a rapid qualitative enzyme immunoassay screening test to detect *Clostridium difficile* antigen, glutamate dehydrogenase (GDH), in fecal specimens from persons suspected of having *C. difficile* infection. The assay consists of ImmunoCard™ *C. difficile* GDH Test Cards containing immobilized polyclonal anti-*C. difficile* GDH antibodies, ImmunoCard™ *C. difficile* GDH Positive Control, ImmunoCard™ *C. difficile* GDH Sample Diluent/Negative Control, ImmunoCard™ *C. difficile* GDH Enzyme Conjugate, ImmunoCard™ Wash Buffer I, and ImmunoCard™ Substrate I.

Reagents/Materials Provided:

1. ImmunoCard™ *C. difficile* GDH Test Cards: A membrane pad housed in a plastic frame and enclosed in a foil pouch with a desiccant The pad carries immobilized polyclonal anti·GDH antibodies at the TEST reaction port and Goat anti·mouse antibodies at the CONTROL reaction port.

2. ImmunoCard™ *C. difficile* GDH Positive Control: *C. difficile* GDH in a buffered

protein solution containing 0.1% ProClin6 and 0.03% gentamicin as preservatives.

3. ImmunoCard™ *C. difficile* GDH Sample Diluent/Negative Control: A buffered protein solution containing 0.03% gentamicin and 0.02% thimerosal as preservatives.

4. ImmunoCard™ *C. difficile* GDH Enzyme Conjugate: Monoclonal anti-GDH antibody conjugated to horseradish peroxidase and suspended in a buffered protein solution containing gentamicin and thimerosal (0.02%).

5. ImmunoCard™ Wash Buffer 1: A buffered solution containing thimerosal (0.01%) as a preservative.

6. ImmunoCard™ Substrate 1: A buffered solution containing tetramethylbenzidine and peroxide.

7. Plastic transfer pipettes with measuring marks for 25 µL and 150 µL
In a plastic dropper vial

J. Substantial Equivalence Information:

1. Predicate device name:

TECHLAB C DIFF QUIK CHEK™

2. Predicate 510(k) number:

K053572

3. Comparison with predicate:

Similarities		
Item	**Device**	**Predicate**
	K112048	**K053572**
Intended Use	Rapid qualitative enzyme immunoassay screening test to detect *Clostridium difficile* antigen, glutamate dehydrogenase, in fecal specimens from persons suspected of having *C. difficile* infection (CDI). This test does not distinguish between toxigenic and non-toxigenic strains of *C. difficile*. Samples from patients that produce positive results with this test must be further tested with an assay designed to detect toxigenic *C. difficile* strains and assist	Same

Similarities		
Item	**Device**	**Predicate**
	K112048	**K053572**
	with the diagnosis of CDI.	
Materials Provided	Positive Control, sample Diluent/Negative control, Enzyme Conjugate, Wash Buffer, Substrate and plastic transfer pipetted	Same
Target Antigen	*C. difficile* glutamate dehydrogenase	Same
Specimen Type	Human Stool (unpreserved)	Same
Capture Antibodies	Polyclonal antibody	Same
Detection Antibodies	Mouse monoclonal antibody	Same
Interpretation of Results	Positive - Blue color or line present in Test area Negative - Blue color present in Control area	Same
Reading Method	Visual	Same

Differences		
Item	**Device**	**Predicate**
	K112048	**K053572**
Specimen Type	Human Stool (unpreserved)	Human Stool (preserved in Cary Blair or C&S transport media)
Test Procedure	Separate 15 minute sample-conjugate incubation step before sample is loaded on the test device	Sample is diluted with conjugate, loaded onto the device and then incubated for 15 minutes
Limit of Detection	1.0 ng/mL	0.8 ng/mL

Differences		
Item	**Device**	**Predicate**
	K112048	**K053572**
Clinical Sensitivity	97.6% (95% CI: 93.3-99.2%)	92.8% (95% CI: 88.3% -95.7%)
Clinical Specificity	87.0% (95% CI: 84.6 – 90.1%)	92.6% (95% CI: 90.4% -94.3%)

K. Standard/Guidance Document Referenced (if applicable):

- Clinical and Laboratory Standards Institute (2008). User Protocol for Evaluation of Qualitative Test Performance; Approved Guideline— Second Edition (EP12-A2)

- Clinical and Laboratory Standards Institute (2005). User Verification of Performance for Precision and Trueness; Approved Guideline—Second Edition (EP15-A2)

- Guidance on Informed Consent for In Vitro Diagnostic Device Studies Using Leftover Human Specimens that are Not Individually Identifiable - Guidance for Sponsors, Institutional Review Boards, Clinical Investigators and FDA Staff (2006)

- Guidance for Industry and FDA Staff - Statistical Guidance on Reporting Results from Studies Evaluating Diagnostic Tests (2007)

L Test Principle:

ImmunoCard™ *C. difficile* GDH consists of a membrane held in a plastic frame with two sample ports and two reaction ports. The membrane carries immobilized antibodies to glutamate dehydrogenase. The Enzyme Conjugate Reagent consists of antibodies to glutamate dehydrogenase coupled to horseradish peroxidase. To perform the test, patient stool sample is diluted with Sample Diluent and Enzyme Conjugate and the mixture is incubated for 15 minutes. During the incubation, GDH antigen, if present, is bound to the anti-GDH antibodies of the conjugate. Following incubation, an aliquot of the mixture is added to each of the two sample ports and the test is incubated for an additional five minutes at 20-26^0 C. During the second incubation, the GDH-conjugate complex is separated from particulate matter as the fluid portion of the sample flows through the membrane to the TEST and CONTROL reaction ports. The GDH-conjugate complexes are then captured at the TEST reaction port by immobilized antibodies in the reaction membrane. (The second of the two reaction ports serves as an internal control).

Both reaction ports are subsequently washed with Wash Reagent to reduce interference by contaminating proteins before Substrate Reagent is added. The reaction ports are incubated for an additional five minutes during which time the Enzyme Conjugate modifies the Substrate Reagent. The result is the appearance of a blue color. Reactions are read visually. Development of a blue color in the TEST reaction port indicates a positive test. In the CONTROL port, the anti-GDH antibodies of the conjugate bind directly to the immobilized antibodies. The appearance of blue in the CONTROL reaction port indicates that sample was added, that reagents were active at the time of use and that proper sample migration occurred.

M. Performance Characteristics (if/when applicable):

1. <u>Analytical performance:</u>

   a. Reproducibility:

Reproducibility studies were performed at three clinical laboratories using blinded coded panels. Samples were randomly sorted within each panel to mask identities. Each panel consisted of three contrived moderately positive specimens (60 ng/mL), three contrived low positive samples (10 ng/mL), three contrived high negative specimens
(0.625 ng/mL) and one natural negative specimen (0 ng/mL). The moderately positive, low positive, and high negative samples were prepared from negative stool spiked with
C. difficile GDH antigen. The low positive and high negative samples were spiked with *C. difficile* GDH antigen to just above the assay LoD (10 ng/mL) and just below the assay limit of blank (high negative).

Three lots of ImmunoCard™ *C. difficile* GDH were used in the reproducibility studies. Positive and Negative Controls were tested with each panel. Each site tested two panels each day for five days. Two operators each day, at each laboratory, performed the testing to demonstrate inter and intra assay variability. The overall correlation for the ImmunoCard™ *C. difficile* GDH reproducibility study was 99.7% (98.1 – 99.9%). The correlation between expected and achieved results for the moderate positive, low positive and negative specimens was 100.0% (98.2 – 100.0%). The correlation for the high negative specimen was 98.9% (94.0 – 99.8%). Positive and negative controls were included in the study.

Reproducibility studies are acceptable.

b. Linearity/assay reportable range:

Not applicable

c. Traceability, Stability, Expected values (controls, calibrators, or methods):

Stability:

A Specimen Freeze/Thaw study was conducted to verify that frozen samples can be thawed multiple times without affecting the detection of the measurand. A total of 10 samples were tested, with the Limit of Detect (LoD) and High Negative (HN) samples consisting of manufactured specimens. Results showed that natural specimens may be frozen and thawed twice when stored at -16 to -28^0 C and -66 to -84^0 C.

Stability studies are acceptable.

Storage:

A Sample Storage study was designed to verify the adequacy of the sample age, preservation, handling, and storage criteria. Aliquots of unpreserved positive and

negative samples were stored at the following temperatures to determine the worst case storage time for each temperature range: room (20-26^0 C), refrigerated (2-8^0 C), conventional freezer (-16 to -28^0 C), and ultralow freezer (-66 to -84^0 C). A total of 10 samples were tested, with the Limit of Detect (LoD) and High Negative (HN) samples consisting of manufactured specimens. Results showed that natural (unpreserved) specimens may be held for up to 5 days at 2-8^0 C, for up to one day at 20-26^0 C, and/or stored frozen at
$\leq$ -16^0 C for up to 30 days.

Sample storage studies are acceptable.

Diluted Specimen Hold Time:

A Diluted Sample Hold Time study was designed to verify that diluted specimens can be held for a specific period of time before testing without loss of reactivity. The protocol was executed as a time study of the performance of specimens that have been diluted in ImmunoCard™ *C. difficile* GDH Sample Diluent Buffer and then stored at 2-8^0 C and
20-26^0 C. A total of 10 samples were tested, with the Limit of Detect (LoD), Low Positive (LP), and High Negative (HN) samples consisting of manufactured specimens. Results showed that natural (unpreserved) samples diluted in Sample Diluent can be held at 2-8^0 C for up to 4 hours or at 20-26^0 C for up to 4 hours before testing. Testing of the samples held in the diluted form for 8 hours confirms that samples in the clinical setting may be diluted and held for up to 4 hours.

Calibrators: No calibrators are used with this assay.

External Controls: Two External Control reagents are included with the ImmunoCard™ *C. difficile* GDH assay. External Controls aid the user in detection of reagent deterioration, adverse environmental or test conditions, washing failures, or variance in operator performance that can cause test errors. External Controls are required for routine Quality Control and should be included with each test batch.

Positive Control: *C. difficile* GDH antigen in a buffered protein solution containing 0.1% ProClin and 0.03% gentamicin as preservatives. Non-toxigenic *C. difficile* 11186 is grown in liquid media, harvested, and filtered to remove organisms. Bulk manufacture of Positive Control includes dilution of *C. difficile* antigen in a buffered protein solution containing gentamicin and ProClin® as preservatives.

Negative Control: Buffered protein solution containing 0.03% gentamicin and 0.02% thimerosal as preservatives

Internal Control: An Internal Control is included with each test device. Goat anti-mouse antibody is used as the Internal Control. The appearance of color in the Control Reaction port confirms the adequate flow of fluid through the test device and that reagents were active at the time of use. Absence of color in the Control Reaction port can indicate improper sample flow, improper assay performance, or deterioration of a reagent.

Acceptance Criteria:

Internal Control: The Control Reaction port must produce a blue color when a device is tested. Failure of the blue color to appear invalidates any Test Reaction port color.

External Controls: The Positive Control must produce a blue color in the Test and Control Reaction ports. The Negative Control must produce a blue color in the Control Reaction port only.

Value Assignment: There are no numerical values assigned to the reactions produced with the internal and external controls. Results are either positive or negative.

Validation: The performance of the Positive and Negative Controls was validated as part of clinical trials.

d. Detection limit:

Sensitivity studies were designed to determine with 95% confidence the analytical limit of detection (LoD) of *C. difficile* GDH antigen diluted in a human stool matrix. Purified GDH antigen was spiked into negative stool matrix and diluted serially two-fold. A minimum of 45 replicates of each dilution were tested to determine the LoD. The analytical sensitivity of the ImmunoCard™ *C. difficile* GDH assay is 10 ng/mL with a 95% probability of obtaining a positive result for a test sample containing 10 ng/mL of *C. difficile* antigen.

LoD studies were also performed to determine with 95% confidence the analytical limit LoD of *C. difficile* GDH antigen diluted in a non-matrix system. This study augments the original study which determined the LoD in the sample matrix. Purified GDH antigen was spiked into diluent phosphate buffered saline and diluted to the target dilution of
0.8 ng/mL. Concentration was adjusted as needed to determine the LoD. A minimum of 45 replicates of each dilution were tested to determine the LoD and Limit of the Blank (LoB). The analytical sensitivity of the ImmunoCard™ *C. difficile* GDH assay when diluted in a non-matrix system is 1.0 ng/mL with a 95% probability of obtaining a positive result for a test sample containing 1.0 ng/mL of *C. difficile* antigen.

LoD studies are acceptable.

e. Analytical specificity:

Interference Studies:

In the interference study, potentially interfering substances were added at final concentrations of 5% V/V or greater to a natural negative and a contrived positive sample. The contrived positive sample was prepared by spiking a confirmed negative sample with *C. difficile* GDH at10 ng/mL, the limit of detection for this assay. Dilution Controls for each sample were prepared by adding a phosphate-buffered saline solution in place of the potentially interfering substance. Each sample was tested in triplicate. The failure of all three replicates to produce the expected results

(positive or negative) was the indicator of interference. Results showed no demonstrable effects on the positive or negative results of ImmunoCard™ *C. difficile* GDH. Substances tested were as follows:

Barium Sulfate (5 mg/mL), Fecal Fat, (2.65 mg/mL stearic acid and 1.3 mg/mL palmitic acid), Hemoglobin (5.2 mg/mL), Imodium AD (6.67×10^{-6} mg/mL), Kaopectate (0.87 mg/mL), Metronidazole (12.5 mg/mL), Mucin (3.33 mg/mL), Mylanta (4.2 mg/mL), Peptobismol (0.87 mg/mL), Polyethylene glycol (79.05 mg/mL), Prilosec (0.5 mg/mL), Simethicone (0.625 mg/mL), Tagamet (0.5 mg/mL), Tums (5 mg/mL), Vancomycin hydrochloride (2.5 mg/mL), Whole Blood (40 %), and White blood cells (5 %).

Whole blood tested at 40% V/V produced acceptable results with both the LoD positive sample and the negative sample. False negative results occurred when whole blood was tested at 45% V/V. Whole blood as a potentially interfering substance was tested to failure per the test protocol; this is not considered to be an unexpected result.

Positive and negative control samples that served as references in interference studies were dilution controls prepared by adding a saline solution in place of the microorganism inoculates or interfering substances. Controls were run with each set of samples.

Interference studies are acceptable.

Cross-reactivity Studies:

Microorganisms that could potentially cross-react were added at a final concentration of 1.2×10^8 CFU/mL (bacteria or fungi) or a final concentration greater than 1×10^5 TCID50 /mL (viruses) to a pooled negative and a contrived positive sample. The negative specimen was prepared from a pool of donor stools that was confirmed negative. The contrived positive sample was prepared by spiking a confirmed negative sample with *C. difficile* GDH at
10 ng/mL, the limit of detection for this assay. Dilution controls for each sample were prepared by adding a saline solution in place of the potentially cross-reactive organisms. Each inoculated sample was tested in triplicate. *Staphylococcus aureus* (Cowan strain I) demonstrated cross-reactivity with the negative sample. All other microorganisms tested did not react with the assay.

The following microorganisms, at the indicated concentrations, do not interfere with Premier *C. difficile* GDH test results:

Aeromonas hydrophila, Bacillus cereus, Bacillus subtilis, Bacteroides fragilis, Campylobacter coli, Campylobacter fetus, Campylobacter jejuni, Candida albicans, Citrobacter freundii, Clostridium bifermentans. Clostridium butyricum, Clostridium haemolyticum, Clostridium histolyticum, Clostridium novyi, Clostridium perfringens, Clostridium septicum, Clostridium sordellii, Clostridium sporogenes, Clostridium tetani, Enterobacter aerogenes, Enterobacler cloacae,

Enterococcus faecalis, Escherichia coli, Escherichia coli 0157:H7, Escherichia hermannii, Escherichia fergusonii, Helicobacter pylori, Klebsiella pneumomae. Lactococcus lactis, Listeria monocytogenes, Peptostreptococcus anaerobius, Plesiomonas shigelloides, Porphyromonas asaccharolytica, Proteus vulgaris, Pseudomonas aeruginosa, Pseudomonas fluorescens, Salmonella Group B, Salmonella Group C, Salmonella Group D, Salmonella Group E, *Serratia liquifaciens, Serratia marcescens, Shigella boydii, Shigella flexneri, Shigella sonnei, Staphylococcus aureus, Staphylococcus epidermidis, Vibrio parahaemolyticus, Yersinia enterocolitica,* Adenovirus Type 40, Adenovirus Type 41, Coxsackievirus Strain B4, Echovirus Strain 30, Rotavirus Strain WA.

Positive and negative samples negative control samples that served as references in crossreactivity studies were dilution controls prepared by adding a saline solution in place of the microorganism inoculates or interfering substances. Controls were run with each set of samples.

Crossreactivity studies are acceptable.

Strain Reactivity Studies:

The following C. *difficile* stock cultures from different sources were tested and produced positive reactions at a concentration of 1.2×10^7 CFU/mL with the ImmunoCard™
C. *difficile* GDH assay:

Toxigenic C. *difficile* strains: 8864, 10463,43598, 2004052, 2004111, 2004118, 2004205, 2004206,2005070,2005257,2005325, 2006240, 2007431,2007435, 2007858, 2008016, 2008029,2008162,2008188,2008341, 2008351, 2009018,2009065, 2009066, 2009099, 2009132,2009155,2009277, B1, B117, B18, BK6, CF1, G1, J7, K12, Y1

Non-toxigenic C. *difficile* strains: 11186, 234, 586, 611, 620, 2C62, 2C165, C122, UNC19904.

Strain reactivity studies are acceptable.

f. Assay cut-off:

Not applicable. This is a qualitative test.

2. Comparison studies:

a. Method comparison with predicate device:

Not applicable

b. Matrix comparison:

Not applicable

3. Clinical studies:

a. Clinical Sensitivity:

Three ImmunoCard™ *C. difficile* GDH lots were used in clinical trial testing (716050B001, 716050B002, and 716050B003). Performance characteristics of the ImmunoCard™ *C. difficile* GDH assay were determined by comparison to bacterial *C. difficile* culture. Independent clinical test sites located in the Midwestern, Southeastern, Southwestern, and Western regions of the United States participated in the device evaluation. All samples utilized in the study were leftover human specimens, not individually identifiable. The sample population used in the clinical trial included stool samples from pediatric, adult, and geriatric patients on whom *C. difficile* testing had been ordered and/or who demonstrated signs and symptoms of *C. difficile* infection. All samples included in the study were submitted to the testing laboratory by an ordering physician for *C. difficile* testing and are presumed to be from symptomatic patients. Samples from asymptomatic patients were excluded from the trial. Stool samples were prospectively collected as part of the ImmunoCard™ *C. difficile* GDH clinical trial. One thousand forty-five stool samples from pediatric, adult, and geriatric patients with a solid, semi-solid, bloody, or watery consistency were tested for *C. difficile* by ImmunoCard™ *C. difficile* GDH. Eight hundred sixty-eight of the 1,045 (83.1%) samples were liquid/semi-solid and 177 of the 1,045 (16.9%) samples were solid stools. The results for 61 samples were excluded from the data calculations due to violations of patient or specimen acceptance criteria. Nine samples were excluded as they did not undergo reference method testing. A total of 70 samples were excluded from the data calculations. Due to the afore-mentioned exclusions, the ImmunoCard™ *C. difficile* GDH data set used in all calculations presented in this report includes 975 samples.

Performance Characteristics by Patient Age

Patient Age	ImmunoCard™ *C. difficile* GDH/Culture	Sensitivity	95% CI	ImmunoCard™ *C. difficile* GDH/Culture	Specificity	95% CI
0-28 days	0/0	0.00%	0.0 - 0.0%	1/1	100.00%	20.7 - 100.0%
29 days to 2 years	22/22	100.00%	85.1 - 100.0%	72/98	73.50%	64.0 – 81.2%
>2 years to <12 years	30/30	100.00%	88.6 - 100.0%	130/160	81.30%	74.5 – 86.5%
12 years to <18 years	14/15	93.30%	70.2 – 98.8%	80/88	90.90%	83.1 – 95.3%
18 years to 21 years	5/5	100.00%	56.6 - 100.0%	25/29	86.20%	69.4 – 94.5%
>21 years	53/55	96.40%	87.7 – 99.0%	430/472	91.10%	88.2 – 93.3%

Patient age does not appear to influence test results.

Gender	ImmunoCard™ *C. difficile* GDH/Culture	Sensitivity	95% CI	ImmunoCard™ *C. difficile* GDH/Culture	% Specificity	95% CI
Male	52/53	98.10%	90.1 – 99.7%	339/393	86.30%	82.5 – 89.3%
Female	72/74	97.30%	90.7 - 99.3%	399/455	87.70%	84.4 – 90.4%

Performance Characteristics by Patient Gender

Gender does not appear to influence test results.

Clinical Trial Site	ImmunoCard™ *C. difficile* GDH/Culture	Sensitivity	95% CI	ImmunoCard™ *C. difficile* GDH/Culture	Specificity	95% CI
Site 1	32/32	100.00%	89.3 - 100.0%	165/205	80.50%	74.5 – 85.3%
Site 2	39/41	95.10%	83.9 – 98.7%	257/290	88.60%	84.4 – 91.8%
Site 3	35/36	97.20%	85.8 - 99.5%	140/168	83.30%	77.0 – 88.2%
Site 4	8/8	100.00%	67.6 - 100.0%	76/80	95.00%	87.8 - 98.0%
Site 5	10/10	100.00%	72.2 - 100.0%	100/105	95.20%	89.3 – 97.9%

Performance Characteristics by Site

Overall Performance Characteristics

Culture	ImmunoCard™ *C. difficile* GDH		
	Positive	**Negative**	**Total**
Positive	124	3	127
Negative	110	738	848
Total	234	741	975
			95% CI

Sensitivity	124/127	97.60%	93.3 - 99.2%
Specificity	738/848	87.00%	84.6 - 90.1%
Correlation	862/975	88.40%	86.2 - 90.3%

Sensitivity and specificity of the ImmunoCard™ *C. difficile* GDH assay are 97.6% and 87.0%, respectively.

Specimens that generated a discrepant result were further analyzed by the TECHLAB C DIFF QUIK™ CHEK COMPLETE assay. Seventy-four of 110 false positive results were also positive by TECHLAB C DIFF QUIK™ CHEK COMPLETE. Three of the three false negatives were negative by TECHLAB C DIFF QUIK™ CHEK COMPLETE. Performance data was not recalculated or altered based on discrepant analysis.

b. *Clinical specificity**:***

See 3a) above

c. *Other clinical supportive data (when a. and b. are not applicable):*

Not applicable

4. Clinical cut-off**:**

Not applicable

5. Expected values/Reference range:

The frequency of antibiotic-associated diarrhea caused by C. *difficile* is dependent on several factors including: patient population, type of institution and epidemiology. The reported incidence of C. *difficile* infection in patients suspected of having antibiotic-associated diarrhea is 15-25% although different facilities may find positivity rates outside this range. In clinical trials conducted for this assay, samples were collected from 975 male (45.7%) and female (54.3) patients. Pediatric patients ranged from 29 days to 21 years. The Negative Predictive Value was calculated at 99.6% and the Positive Predictive Value was 53.0% and the prevalence in the populations we tested was 13.6%.

N. Proposed Labeling:

The labeling is sufficient and it satisfies the requirements of 21 CFR Part 809.10.

O. Conclusion:

The submitted information in this premarket notification is complete and supports a substantial equivalence decision.