CLIA Waiver by Application Approval Determination
Decision Summary

I. Document Number

CW250015

II. Parent Document Number

K260787

III. CLIA Waiver Type

Dual 510(k) and CLIA Waiver by Application (Dual Submission)

IV. Applicant

Lumos Diagnostics, Inc.

V. Proprietary and Established Names

FebriDx Bacterial/Non-Bacterial Assay

VI. Measurand (analyte)

Myxovirus resistance protein A (MxA) and C-reactive protein (CRP)

VII. Sample Type(s)

Fingerstick whole blood

VIII. Type of Test

Lateral flow qualitative test

IX. Test System Description

A Overview

The FebriDx Bacterial/Non-Bacterial Assay (FebriDx test) is a rapid test that detects Myxovirus resistance protein A (MxA) and C-reactive protein (CRP) in patient fingerstick whole blood samples to aid in the evaluation of an infection in patients presenting with acute respiratory symptoms.

The single-use, disposable FebriDx test includes a lateral flow test strip, a built-in retractable safety lancet, blood collection and transfer tube, and buffer delivery system.

The device was cleared previously in 510(k) K230917. The current CLIA waiver application is to expand the intended use settings to include CLIA-waived environments.

B Test System Components

25 individually packaged, single-use, FebriDx test devices
1 Package insert (Instructions for Use)
1 Quick Reference Instructions (QRI)

Additional materials required, but not provided include:

1. Timer
2. Gauze
3. Alcohol
4. Sterile Dressing
5. Gloves

X. Specific Contents for CLIA Waiver

A Demonstrating "Simple":

- The FebriDx test is an all-in-one, self-contained test.
- The FebriDx test uses direct unprocessed capillary blood specimens from a fingerstick which is added directly to the Blood Collection Tube on the device.
- The FebriDx test requires only basic, non-technique-dependent specimen manipulation. FebriDx test operators conduct the test by performing the following steps:
    - Lance finger with integrated lancet,
    - Through capillary action, fill the integrated blood collection tube with capillary blood and transfer the blood to the test strip.
    - Press the buffer release button.

  The blood collection tube has a fixed volume. Therefore, the operator does not need to measure the specimen to fill the tube or perform the test.
- No reagent handling is required; all reagents are contained with the single-use integrated device.
- There is no operator intervention required during the analysis steps, as the test develops without operator intervention for the minimum 10-minute run time. Upon completion of the run time, the operator interprets the test results by visual interpretation.
- The result interpretation for the FebriDx test is a simple visual readout. To obtain this simple readout, no calibration or calculation by the operator is required. The readout is for the presence or absence of control and test lines, indicating a bacterial infection, non-bacterial infection, or invalid result. If the result is Invalid, the Quick Reference Guide indicates that

the test should be repeated. No technical or specialized operator training, and minimal interpretation and judgment are needed to understand results from the FebriDx test.

- There are no electrical or mechanical components in the device. The test is single use only with no service or maintenance required.
- No operator calibration or calculation is required to interpret test results.
- The test provides a binary result via the presence or absence of colored test lines on the "test" and "control" region of the results window. Results are visually interpreted as bacterial, non-bacterial, or invalid by following the QRI or IFU, which include descriptions and visual examples of result interpretation.
- Quick Reference Instructions (QRI) are illustrative easy-to-follow instructions written in simple language at a 7th grade reading level.

B Demonstrating "Insignificant Risk of an Erroneous Result"- Failure Alerts and Fail-Safe Mechanisms

1. Risk Analysis:

   A risk analysis to identify potential hazards, and the product failure modes that may lead to the identified hazards, associated with use of the FebriDx test was performed in accordance with ISO 14971:2019 *Medical Devices - Application of Risk Management to Medical Devices*. The elements considered included:

   - Human Factors,
   - Sample and Reagent Integrity and Handling,
   - Stability of Device and Controls, and
   - Environmental Factors.

   Potential sources of errors that could adversely affect FebriDx test performance were identified and mitigated first through system design verification and validation studies and then through additional precautions in the labeling. The identified risks which could result in erroneous test results were evaluated in flex studies that stressed the functional limits of the test system

2. Fail-Safe and Failure Alert Mechanisms:

   The FebriDx test was designed to include fail-safe and failure-alert mechanisms to reduce risks for identified sources of error.

   Design Features

   - All-in-one integrated cassette design to prevent steps from being undertaken unless the prerequisite prior step has also been taken (i.e., buffer cannot be released before blood collection tube (BCT) activation).
   - Each strip is individually packaged in a foil pouch to maintain the integrity of the test device.

- The foil pouch and kit packaging are printed with the assay name, lot number, and expiration date to ensure clarity and appropriate use.
- Adding the specimen directly to the blood collection tube eliminates the need for the operator to transfer the specimen.
- The test cassette was designed to contain distinct position marks to facilitate clear and accurate result interpretation. The control line is denoted as "C" and the CRP/MxA lines are denoted as "T".

Fail-safe Features

- *Integrated Device Design* (Fail Safe) – The device is designed to work only if the correct workflow is used. Lancet must be actuated before the BCT is released to transfer blood, and the BCT must be properly oriented before the buffer release button can be depressed.
- *Internal Procedural Control* (Failure Alert) – FebriDx contains a built-in internal procedural control that presents visually as the blue control line in the results window of the FebriDx test. The control line is designed as a failure alert to mitigate false results and ensure that the test has run properly. The test is invalid in the absence of a blue control line, and operators are instructed to discard the test and repeat with a new FebriDx test. A limitation in the labeling has been added to inform the user that the internal procedural control confirms the liquid buffer has been delivered to the test strip. Blood must also be present in the blood clearance window before interpretation.
- *Blood Clearance Window* (Failure Alert) – The device includes a blood clearance window that is designed to ensure the user can visibly see the blood has transferred and cleared the result window before reading results. Operators are instructed to interpret results once the result window is clear of blood and the blood has transferred to the blood clearance window.
- *Retractable Lancet* (Fail Safe) – The device is designed to include a retractable safety lancet that prevents injury and reuse.
- *Fixed Volume Buffer Pack* (Fail Safe) – The device contains a fixed volume buffer blister pack that is actuated by a button on the test cassette. The design prevents the test from being reused and prevents the operator from adding too much/little of the buffer to the test.
- *Fixed Volume Blood Collection/Delivery* (Fail Safe) – The device includes a blood collection tube (BCT) that is designed to collect and deliver an adequate volume of sample without additional measurements by the user. Using the BCT design also prevents the operator from delivering the sample to the incorrect location on the test.
- *External Controls* (Failure Alert) – FebriDx External Controls are not required for the end users to obtain a valid FebriDx test result. External controls are not provided with the FebriDx test and are available separately from the manufacturer. Specifically, the following external controls have been validated for use with the FebriDx test:
    - External Positive Control: C95 concentrations of MxA and CRP
    - External Negative Control: C5 concentrations of MxA and CRP

It is recommended that external controls be used with every new lot, every new shipment, and every new operator. External controls are used to ensure the test is working properly prior to testing patients, and therefore, can provide a failure alert to users to mitigate the risk of false results.

3. Flex Studies:

The operational limits of the FebriDx test were evaluated in a series of experiments of "stress", including conditions outside of those recommended in the instructions for use. The following flex studies were conducted using five replicates of true negative samples (no analyte) and five replicates each of high negative samples (~C5) and low positive samples (~C95), each prepared in whole blood (Table 1). Flex studies were conducted in-house by trained operators. The study samples were blinded to all operators and un-blinded at the conclusion of the study by the study coordinator, an individual not involved in execution of the study protocol. The studies and data to support the CLIA Waiver Application for the FebriDx test are listed in Table 2 followed by a summary of the flex studies and their respective mitigations in Table 3 below.

Table 1: MxA and CRP Concentrations used in Flex Studies

Sample	MxA Conc. (ng/mL)	CRP Conc. (µg/mL)
Low Positive (~C95)	56	22
High Negative (~C5)	10	7
True Negative	0	0

Table 2: Summary Results of Flex Studies

Condition		Sample	Positive Replicates/Total Replicates
Operational Temperature and Humidity	Control - 23°C / 50% Relative Humidity (RH)	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	4°C / Ambient RH	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
	42°C / 50% RH	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	23°C / 5% RH	Low Positive	15/15
		High Negative	1/15
		Negative	0/15
	23°C / 90% RH	Low Positive	13/15
		High Negative	0/15
		Negative	0/15
	23°C / 85% RH	Low Positive	15/15
		High Negative	0/15
		Negative	0/15

Direct Sunlight	Control - Normal Lighting Conditions	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Direct Sunlight	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
Sub-optimal Lighting	Control - Normal Lighting Conditions (400 - 1000 lux)	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Dim Indoor Lighting (201-400 lux)	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Bright Indoor Lighting (1001-5000 lux)	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
Altitude[a]	Sea Level	Low Positive	5/5
		High Negative	0/5
		Negative	0/5
	Altitude of 2000 meters	Low Positive	5/5
		High Negative	0/5
		Negative	0/5
Contamination During Handling	Control - Test Strip Untouched	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
	Gloved Hand	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Clean Bare Hand	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Hand Lotion	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Hand Sanitizer	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Powder	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
Drop Testing	Control - Not Subjected to Dropping	Low Positive	15/15
		High Negative	0/15
		Negative	1/15
		Low Positive	14/15

	Un-pouched Drop from 3 ft. onto Solid Floor	High Negative	1/15
		Negative	0/15
	Pouched Drop from 8 ft. onto Solid Floor	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
Effect of Vibration	Control - No Nearby Vibrations	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Testing of FebriDx on same bench as centrifuge, plate shaker, and a vortex	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
Operator Timings[b]	Control - BCT rotated immediately after filling, buffer release activated 5 - 10 seconds after blood transfer	Low Positive	30/30
		High Negative	2/30
		Negative	0/30
	15 second delay between filling BCT and rotation	Low Positive	15/15
		High Negative	1/15
		Negative	0/15
	30 second delay between filling BCT and rotation	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
	60 second delay between filling BCT and rotation	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	Immediately activating buffer button after rotating BCT	Low Positive	30/30
		High Negative	2/30
		Negative	1/30
	Activate buffer release button 20 seconds after rotating BCT	Low Positive	29/30
		High Negative	3/30
		Negative	0/30
	Activate buffer release button 40 seconds after rotating BCT	Low Positive	27/30
		High Negative	0/30
		Negative	0/30
	Activate buffer release button 60 seconds after rotating BCT	Low Positive	29/30
		High Negative	0/30
		Negative	0/30
Incorrect Blood Delivery	Control - BCT is filled entirely and	Low Positive	15/15
		High Negative	0/15

	transferred to test strip	Negative	0/15
	BCT is half-filled and rotated to test strip	Low Positive	0/15
		High Negative	0/15
		Negative	0/15
	BCT is bypassed and blood delivered directly to test strip	Low Positive	2/15
		High Negative	0/15
		Negative	0/15
	BCT is rotated over test strip and then filled with blood	Low Positive	14/15
		High Negative	1/15
		Negative	0/15
Read Time[b]	5 minutes	Low Positive	10/15
		High Negative	0/15
		Negative	4/15
	10 minutes	Low Positive	24/30
		High Negative	5/30
		Negative	0/30
	12 minutes	Low Positive	11/15
		High Negative	0/15
		Negative	0/15
	14-15 minutes	Low Positive	28/30
		High Negative	0/30
		Negative	0/30
	16 minutes	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
	18 minutes	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	20 minutes	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	30 minutes	Low Positive	30/30
		High Negative	2/30
		Negative	0/30
	60 minutes	Low Positive	30/30
		High Negative	2/30
		Negative	0/30
	90 minutes	Low Positive	15/15
		High Negative	2/15
		Negative	0/15
Surface Slope	Control - Flat Surface	Low Positive	15/15
		High Negative	0/15

		Negative	1/15
	30º Angle Fore	Low Positive	14/15
		High Negative	1/15
		Negative	0/15
	30º Angle Aft	Low Positive	15/15
		High Negative	1/15
		Negative	0/15
	30º Angle Right	Low Positive	15/15
		High Negative	0/15
		Negative	0/15
	30º Angle Left	Low Positive	14/15
		High Negative	1/15
		Negative	0/15
Vertical Movement	Control - Flat Surface	Low Positive	15/15
		High Negative	0/15
		Negative	1/15
	90º Angle 1 Minute	Low Positive	15/15
		High Negative	1/15
		Negative	0/15
	90º Angle 2 Minutes	Low Positive	13/15
		High Negative	1/15
		Negative	0/15
	90º Angle 3 Minutes	Low Positive	14/15
		High Negative	0/15
		Negative	0/15
Intermittent Sampling	Control – No Intermittent Sampling	Low Positive	15/15
		Negative	0/15
	30 Second Re-sample	Low Positive	15/15
		Negative	0/15
	60 Second Re-sample	Low Positive	15/15
		Negative	0/15
	120 Second Re-sample	Low Positive	15/15
		Negative	0/15
	30 Minute Re-sample	Low Positive	6/15
		Negative	0/15

[a] One operator ran and interpreted blinded samples at each condition with the FebriDx test.
[b]Results for a number of test conditions evaluated in this flex study were obtained across two independent experiments which resulted in 30 result interpretations reported.

Table 3: Summary of Flex Studies Performed and Risk Mitigations

Condition	Results and Conclusion	Risk Control Measure

Operational Temperature and Humidity	Acceptable performance was demonstrated across the temperature range of 4 to 42°C and when humidity conditions ranged between 5% RH and 85% RH.	Labeling specifies unopened tests should be stored between 4-25°C, and that acceptable performance was demonstrated between 5 – 85% RH.
Direct Sunlight	Acceptable performance was observed when FebriDx testing was performed, read, and interpreted in direct sunlight.	N/A
Sub-Optimal Lighting	Acceptable performance was observed when FebriDx testing occurred between indoor lighting intensities of 201-5000 lux.	Labeling includes a statement that a brightly lit environment is recommended for interpreting the test results.
Altitude	Acceptable performance was observed when FebriDx testing occurred at sea level and in high-altitude conditions (2000 meters elevation).	Labeling specifies FebriDx exhibited acceptable performance at altitudes between 0-2000 meters.
Contamination During Handling	Acceptable performance was observed under all conditions.	As a precaution labeling instructs users to wash hands and put on gloves before testing.
Drop Testing	Acceptable performance was observed under all conditions.	Labeling includes a precaution that FebriDx tests from damaged foil pouches should not be used.
Effect of Vibration	Acceptable performance was observed under both conditions.	N/A
Operator Timings	Acceptable performance was observed under all test conditions.	Labeling instructs the user to press the buffer release button once the blood transfers to the test strip.
Incorrect Blood Delivery	Acceptable performance was observed when the BCT was in the rotated position and then filled with blood and when the BCT was filled entirely and transferred to the test strip. Results failed when	Labeling instructs the user on the appropriate steps to perform if the BCT is not filled in its entirety. Labeling also instructs the user to follow all steps in order. Additionally, the all-in-one integrated

	the BCT was half-filled before being rotated onto the test strip and when the BCT was bypassed to add blood directly from the finger to the test strip.	cassette design, which is designed to work only if the correct workflow is used, reduces the risk of an operator delivering the sample to the incorrect location on the test.
Read Time	Acceptable performance was observed when FebriDx test results are read between 10 minutes up to 60 minutes. Of note, the false negatives that were observed at 10 and 12 minutes were due to incomplete blood clearance from the result window.	Labeling instructs the user to ensure the result window is clear of blood and the blood clearance window is pink/red prior to reading and interpreting results. Users are additionally informed that reading results before the blood has cleared the result window or without blood in the blood clearance window may lead to erroneous test results.
Surface Slope	Acceptable performance was observed under all test conditions.	N/A
Vertical Movement	Acceptable performance was observed at all test conditions except for the Low Positive sample at 90° for 2 min. Although this condition was below the acceptance criteria, the same sample under a more stressed condition (90° for 3 min), passed the acceptance criteria. Since there was not a trend in the data, it was concluded that the effect was not due to the test condition but rather some other factor, indicating no significant effect of vertical movement on test performance.	N/A
Intermittent Sampling	Acceptable performance was observed for resampling attempts at 30-,	Labeling instructs the user to immediately reverse the BCT back to its original

	60-, and 120-seconds after blood transfer to the test strip was attempted. Resampling after 30 minutes failed the acceptance criteria and resulted in invalid results.	position and repeat steps 5-8 (adding blood to the BCT) within two minutes.

The flex studies support that the test is robust in for the claimed intended use conditions with an insignificant risk of erroneous results.

4. Usability Studies

The sponsor conducted a usability study to demonstrate that untrained users, representative of the intended use population, can perform the assay without serious use errors in CLIA-waived settings. A Use-Related Risk Analysis (URRA) was used to identify user tasks, potential use errors, associated harms, categorization of tasks as critical or non-critical, risk controls, and evaluation methods, for human factors assessment.

The study included fifteen untrained users, representative of the intended user population. The study design replicated real-world conditions by having participants perform the FebriDx test on actual patients at CLIA-waived clinical sites i.e., physician offices, urgent care clinics, and outpatient facilities, while relying solely on the Quick Reference Instructions without any training or guidance. Human factors moderators observed and documented participant performance throughout the testing process to assess comprehension of instructions and identify any areas where the instructional materials may require clarification or improvement.

User Comprehension:

Participants were provided with a series of knowledge-based questions designed to measure participants' understanding of the key procedures and requirements encountered during the testing phase. The knowledge-based assessments showed a 94.5% correct response rate (156/165 questions; 95% CI 90.0% - 97.5%).

Readability:

Participants were provided with a mock set of contrived test results to focus on the practical application of data analysis skills. Participants correctly interpreted 97.3% (73/75 questions; 95% CI 90.7% - 99.7%) of mock test results.

Results from the initial user comprehension and readability assessments suggested that the usability of the FebriDx test could be improved with labeling revisions designed to increase clarity. Following revisions to the Result Interpretation section of the QRI designed to simplify result interpretation, a subsequent usability study was conducted to validate the revised QRI. The subsequent usability study was designed to demonstrate that untrained users could interpret mock test results using the simplified results interpretation section of the QRI. Six untrained user participants who had no experience using FebriDx nor experience

with moderate-high complexity lab testing, representative of the intended user, each interpreted 15 test results. Untrained users interpreted all 90 mock test results correctly with 100% accuracy (90/90; 95% CI: 96.0 – 100%).

Overall, the usability study results indicate minimal difficulty in test execution, support the effectiveness of incorporated warnings and revised operator instructions, and support the use of the FebriDx test by the intended user population in the CLIA-waived environment.

C Demonstrating "Insignificant Risk of an Erroneous Result" - Accuracy

1. User Comparison Study

   a. *Study Design:*

      i. FebriDx performance with trained users:

      The FebriDx test was previously cleared (K230917) based on results from a prospective, multi-center, blinded clinical study. The clinical performance of the FebriDx test was determined in patients presenting to a primary care provider, urgent care clinic, or the Emergency Department with signs/symptoms of acute respiratory infection and a recent fever. FebriDx clinical performance was evaluated against results of a clinical reference algorithm in conjunction with adjudication by two independent expert reviewers.

      ii. FebriDx performance with untrained users:

      To support a CLIA Waiver application, a user comparison study was conducted to show that FebriDx has comparable performance in the hands of untrained operators in waived settings. The clinical performance of the FebriDx test in waived settings was evaluated in a multi-center, prospective clinical study between December 2024 and July 2025. Nine clinical sites in geographically distinct regions of the U.S. (Southeast, Midwest, and West) representative of CLIA-waived intended use sites, including physician offices, primary care/outpatient clinics, and urgent care centers participated in the study. At each site, both trained and untrained operators collected a paired fingerstick sample from the same subject, with operators blinded to each other's results. FebriDx performance in the hands of untrained operators was compared to device performance with trained operator results and Positive Percent Agreement (PPA), Negative Percent Agreement (NPA) and confidence intervals were calculated.

      iii. Operators:

      Sixteen untrained operators (1-3 per site) and 16 trained operators (1-2 per site) collected paired fingerstick samples from the same study subject. To avoid bias, the trained and untrained operators performed the FebriDx testing and result interpretation during the same visit but in separate spaces where they could not see the other operator. The untrained operators were representative of the CLIA-waived intended user population. The education level of the untrained operators

included high school diploma, associate degree, or university education, and included clinical and administrative staff who performed various tasks in the CLIA waived setting (medical and research assistants, nurses, and phlebotomists). Information on the operators' current job title, education level and any laboratory or relevant work experience was provided. The untrained operators did not receive any training on the use of the FebriDx test and had no hands-on experience with conducting diagnostic testing in a clinical laboratory. Trained operators met the qualifications to perform CLIA moderate to high complexity testing. FebriDx performance in the hands of untrained operators was compared to performance of the trained operators.

iv. Subjects:

A total of 610 subjects were enrolled initially, of which 595 met the inclusion criteria summarized below:

Inclusion Criteria:
- Subject is willing to provide written informed consent.
- Subject is 12-64 years of age.
- Subject exhibits or reports a new onset measured temperature (oral or tympanic) of greater than or equal to 100.5°F/38°C within 3 days (72 hours) of enrollment or at the visit.
- Subject has clinical suspicion for Acute Respiratory Infection and presents with at least one (1) of the following new onset symptoms beginning ≤ 7 days of enrollment - runny nose, nasal congestion, sore throat, cough, hoarse voice or shortness of breath.

Exclusion Criteria:
- Subject is unable or unwilling to provide signed informed consent.
- Subject is less than 12 years old or over 64 years old.
- Subject has a fever that started more than 3 days prior to enrollment.
- Subject has symptoms of Acute Respiratory Infection that started > 7 days of enrollment.
- Subject is receiving interferon therapy in the last 30 days.
- Subject is in an immunocompromised state or taking immunosuppressive or chemotherapeutic medications in the last 30 days.
- Subject has taken antibiotics or antiviral therapy in the last 14 days.
- Subject received a live viral immunization in the last 14 days.
- Subject has significant trauma or burns (> 5% total body surface area or full thickness (3rd°)) in the last 30 days.
- Subject has had major surgery in the last 30 days.
- Subject has a history of a myocardial infarction or stroke in the last 30 days.

The clinical study protocol included an enriched enrollment phase if the minimum number of positive samples were not obtained during all-comer enrollment. Sites that participated in enriched enrollment screened patients for all-comer inclusion/exclusion criteria as well as the enriched criteria: fever of 100.5ºF (either within the last 72 hours or at the study visit) AND a bacterial-positive test result, OR a negative respiratory viral test result, OR antibiotics prescribed to the

subject on the day of enrollment by the treating clinician at the standard of care visit, OR a bacterial positive FebriDx test interpreted by a trained operator. To mitigate potential interpretation bias and maintain operator blinding, every third subject with a negative FebriDx test result was asked to participate in the enrichment phase.

The demographic summary of the clinical subjects is shown in Table 4 below.

Table 4: Demographic Information for Study Subjects

Study Participants (N = 554)	
Gender	
Female	326 (58.4%)
Male	228 (41.2%)
Age Group (Years)	
12-17 years	16 (2.9%)
18-25 years	66 (11.9%)
26-45 years	242 (43.7%)
46-64 years	230 (41.5%)
Race	
Asian	7 (1.3%)
Black/African American	69 (12.5%)
White	462 (83.4%)
Other	16 (2.89%)
Ethnicity	
Hispanic	263 (47.5%)
Non-Hispanic	2912.5%)

b. *Results:*

i. Of the 610 subjects initially enrolled, 595 met the inclusion criteria. There were 41 patients re-enrolled for the enrichment phase, yielding 554 unique subjects. A total of 1216 FebriDx tests were performed (608 tests from untrained users and 608 tests from trained users). There was a total of 26 (2.1%, 95% CI 1.5-3.1%) invalid test results (13 (50%) from untrained users and 13 (50%) from trained users). All operators correctly identified the invalid test and re-ran the test as per the instructions in the QRI. Upon re-testing, all 26 tests were valid, resulting in a final invalid rate of 0% (0/1216) with 95% CI (0-0.3%).

ii. The clinical performance of the FebriDx test with fingerstick specimens, when used by untrained operators in CLIA-waived settings, is shown in Table 5 and presented as positive and negative percent agreement compared to the trained operator. The results from the user comparison study support acceptable FebriDx test performance in the hands of untrained users in CLIA-waived environments and an insignificant risk of erroneous results.

Table 5. FebriDx Clinical Performance with Untrained Users

	FebriDx Test Result (Trained Operator)		
FebriDx Test Result (Untrained Operator)	**Bacterial**	**Non-Bacterial**	**Total**
Bacterial	106	8	114
Non-Bacterial	1	480	481
Total	107	488	595
Positive Percent Agreement	99.1% (95% CI 94.4% - 99.8%)		
Negative Percent Agreement	98.4% (95% CI 96.8% - 99.2%)		

2. Device Performance with Analyte Concentrations Near the Cutoff

A Precision and Reproducibility study with untrained users was provided in K230917. In this study, FebriDx device performance was assessed with analyte concentrations around the device cutoff and at high negative and low positive concentrations. The agreement with the expected final result interpretation is presented in Table 6.

Table 6. Reproducibility Study Results Final Interpretation by Sample

Sample			Agreement with Expected Final Result
#	[CRP]	[MxA]	
P1	C5	C95	96.7% (87/90)
P2	C95	C5	87.8% (79/90)
P3	C95	C95	96.7% (87/90)
P4	C95	[High]	100% (90/90)
P5	[High]	C95	94.4% (85/90)
P6	0 µg/mL	0 µg/mL	100% (90/90)

Lower than expected FebriDx test performance was observed for the P2 panel member. Further analysis of study results indicated the majority of discrepant results were obtained from two users. Results from the initial usability study suggested that some users may have difficulty interpreting FebriDx results, and thusly discrepant results observed in the reproducibility study maybe the result of incorrect result interpretation by the user rather than assay imprecision. The QRI result interpretation section was revised to provide a more simplified stepwise approach to interpreting FebriDx results and the effectiveness of these changes were evaluated in a supplemental usability study. See section B.(4.) above for more information on the usability studies. Overall, results from the reproducibility study inconsideration with both the user comparison study results and usability study results do not indicate widespread operator-specific performance issues nor a significant likelihood of erroneous results that could change the final result interpretation.

3. Operator Questionnaire

At the completion of the user comparison study, the participating untrained operators completed an operator questionnaire to provide feedback on the ease of use of the FebriDx test. The questionnaire had 8 questions that evaluated the following general topics:

- Ease of use of the test
- Ability to follow the test instructions
- Ability to properly interpret test results

Each question had five possible answers rated on a scale from very difficult to very easy. Fifteen of the sixteen untrained operators provided responses (one untrained operator was lost to follow up) to the questionnaire. Based on the study operator responses, the FebriDx test was easy to use by following the instructions in the QRI.

D Labeling for Waived Devices

The labeling consists of:

1. FebriDx Bacterial/Non-Bacterial Assay Package Insert (Instructions for Use)
2. FebriDx Bacterial/Non-Bacterial Assay Quick Reference Instructions (QRI)
3. External Controls Package Insert (Instructions for Use) and QRI

The following elements are appropriately present:

- The test procedure within the QRI is written at 7th grade comprehension level.
- The QRI and the IFU identify the test as CLIA waived.
- The IFU contains a statement that a Certificate of Waiver is required to perform the test in a waived setting.
- The QRI and the IFU contain a statement that laboratories with a Certificate of Waiver must follow the manufacturer's instructions for performing the test.
- The IFU contains a statement that any modification to the test or the manufacturer's instructions will result in the test being classified as high complexity.
- The IFU and QRI provide instructions for conducting quality control procedures.
- The labeling is sufficient and satisfies the requirements of 21 CFR Part 809.10.

XI. Benefit-Risk Considerations

Not applicable.

XII. Conclusion

The submitted information in this CLIA waiver application supports a CLIA waiver approval decision.