July 14, 2023

Abbott Laboratories
Melissa Tristani
Senior Regulatory Affairs Specialist
400 College Road East
Princeton, New Jersey 08540

Re: K220282
Trade/Device Name: i-STAT PTplus Cartridge with the i-STAT I System
Regulation Number: 21 CFR 864.7750
Regulation Name: Prothrombin Time Test
Regulatory Class: Class II
Product Code: GJS
Dated: January 31, 2022
Received: February 1, 2022

Dear Melissa Tristani:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. Although this letter refers to your product as a device, please be aware that some cleared products may instead be combination products. The 510(k) Premarket Notification Database located at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfpmn/pmn.cfm identifies combination product submissions. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

Please note that if you modify your IVD in the future to exceed any of the limitations to the exemption found in 21 CFR 864.9(c), your device will require a new 510(k) prior to marketing this device in the United States and will not be exempt from the premarket notification requirements so long as it exceeds the limitations to the exemption found in 21 CFR 864.9.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of

Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801 and Part 809); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803) for devices or postmarketing safety reporting (21 CFR 4, Subpart B) for combination products (see https://www.fda.gov/combination-products/guidance-regulatory-information/postmarketing-safety-reporting-combination-products); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820) for devices or current good manufacturing practices (21 CFR 4, Subpart A) for combination products; and, if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21 CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to https://www.fda.gov/medical-devices/medical-device-safety/medical-device-reporting-mdr-how-report-medical-device-problems.

For comprehensive regulatory information about medical devices and radiation-emitting products, including information about labeling regulations, please see Device Advice (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance) and CDRH Learn (https://www.fda.gov/training-and-continuing-education/cdrh-learn). Additionally, you may contact the Division of Industry and Consumer Education (DICE) to ask a question about a specific regulatory topic. See the DICE website (https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/contact-us-division-industry-and-consumer-education-dice) for more information or contact DICE by email (DICE@fda.hhs.gov) or phone (1-800-638-2041 or 301-796-7100).

Sincerely,

Takeesha Taylor-bell -S

Takeesha Taylor-Bell
Deputy Director
Division of Immunology and Hematology Devices
OHT7: Office of In Vitro Diagnostics
Office of Product Evaluation and Quality
Center for Devices and Radiological Health

Enclosure

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Indications for Use

Form Approved: OMB No. 0910-0120
Expiration Date: 06/30/2023
See PRA Statement below.

510(k) Number *(if known)*

Device Name
i-STAT PT*plus* cartridge with the i-STAT 1 System

Indications for Use *(Describe)*
The i-STAT PT*plus* cartridge is intended for use in the in vitro quantitative measurement of the clot time of the extrinsic coagulation pathway when activated by thromboplastin in non-anticoagulated whole blood (venous or capillary), using the i-STAT 1 System. Measurements of prothrombin time are used to aid in the monitoring of patients receiving anticoagulant therapy with coumarin derivatives. The i-STAT PT*plus* Prothrombin Time test result is reported in seconds and as an International Normalized Ratio (INR). The test is intended for point of care use and is for prescription use only.

Type of Use *(Select one or both, as applicable)*

☒ Prescription Use (Part 21 CFR 801 Subpart D) ☐ Over-The-Counter Use (21 CFR 801 Subpart C)

CONTINUE ON A SEPARATE PAGE IF NEEDED.

510(k) Summary

The information in this 510(k) summary is being submitted in accordance with the requirements of 21 CFR 807.92.

1. Submitter Information

Owner	Abbott Point of Care Inc. 400 College Road East Princeton, NJ 08540
Contact	Primary: Melissa Tristani Senior Regulatory Affairs Specialist Phone: 613-688-5949 Secondary contact person for all communications: Maria L Figueroa Associate Director Regulatory Affairs Phone: 609-454-9271
Date Prepared	January 28, 2022

2. Device Information

Proprietary Name	i-STAT PT*plus* cartridge with the i-STAT 1 System
Common Name	Prothrombin time, PT, analyzer, handheld

Product code	Device Classification name	Regulation Number	Class	Panel
GJS	Test, Time, Prothrombin	864.7750	II	Hematology

3. Predicate Device

Proprietary Name CoaguChek® XS Plus System

510(k) Number K071041

Product code	Device Classification name	Regulation Number	Class	Panel
GJS	Test, Time, Prothrombin	864.7750	II	Hematology

4. Device Description

The i-STAT 1 System consists of the i-STAT 1 analyzer and the i-STAT cartridges. Other components of the i-STAT 1 System are the Electronic Simulator, the i-STAT 1 Downloader/Recharger and the i-STAT Printer. The i-STAT 1 analyzer is a handheld, *in vitro* diagnostic analytical device designed to run only i-STAT test cartridges. The system is designed for use by trained medical professionals at the patient point of care or in the clinical laboratory and is for prescription use only.

The i-STAT PT*plus* cartridge is a coagulation cartridge for determining the time required for complete activation of the extrinsic coagulation cascade. The cartridge contains electrochemical sensors and test reagents that must be mixed with the sample. The reagents include the reactive ingredient to activate the coagulation cascade as well as electrochemical markers that generate a sensor signal when the cascade is fully activated.

The analysis time of the i-STAT PT*plus* cartridge is up to 300 seconds (5 minutes). The sample volume required for the i-STAT PT*plus* cartridge is approximately 20 µl of whole blood (venous or capillary) without added anticoagulant. The i-STAT PT*plus* cartridge is a single-use disposable unit that is self-contained. The test reagents and sample fluids do not contact the instrument or user. All the test steps and fluid movements occur within the cartridge.

The i-STAT 1 System has an internal quality control (internal simulator) and an external quality control (Electronic Simulator). The internal and external simulators are used to check the instrument signal-reading function. In addition to the quality controls within the i-STAT 1 System, liquid quality controls are available as an optional quality control methodology to meet the regulatory compliance requirements applicable to the facility where they are to be used.

The liquid quality controls are the i-STAT PT*plus* Control Levels 1 and 2 and can be used for the quality control of the i-STAT PT*plus* cartridge. The coagulation controls

consist of lyophilized citrated human plasma and calcium chloride fluid for reconstitution.

i-STAT PT*plus* Control Level 1 has been formulated to produce a normal prothrombin time. Level 2 has been formulated to produce an extended prothrombin time.

Each level of control is packaged as a box of 5 vials containing 1 mL of lyophilized citrated human plasma and 5 vials of 1.5 mL of calcium chloride diluent.

The i-STAT PT*plus* controls are intended for use with the i-STAT PT*plus* cartridge on the i-STAT System, and values assigned to these controls may not be commutable with other commercial methods.

5. Intended Use Statement

The i-STAT PT*plus* cartridge is intended for use in the *in vitro* quantitative measurement of the clot time of the extrinsic coagulation pathway when activated by thromboplastin in non-anticoagulated whole blood (venous or capillary), using the i-STAT 1 System. Measurements of prothrombin time are used to aid in the monitoring of patients receiving anticoagulant therapy with coumarin derivatives. The i-STAT PT*plus* Prothrombin Time test result is reported in seconds and as an International Normalized Ratio (INR). The test is intended for point of care use and is for prescription use only.

6. Summary Comparison of Technological Characteristics

Table 1: Summary Comparison

Feature or Characteristic	Candidate: i-STAT PT*plus* cartridge with the i-STAT 1 System	Predicate: CoaguChek® XS Plus System (K071041)
Intended Use	The i-STAT PT*plus* cartridge is intended for use in the *in vitro* quantitative measurement of the clot time of the extrinsic coagulation pathway when activated by thromboplastin in non-anticoagulated whole blood (venous or capillary), using the i-STAT 1 System. Measurements of prothrombin time are used to aid in the monitoring of patients receiving anticoagulant therapy with coumarin derivatives. The i-STAT PT*plus* Prothrombin Time test result is reported in seconds and as an International Normalized Ratio (INR). The test is intended for point of care use and is for prescription use only.	Intended for use by professional healthcare providers for quantitative prothrombin time testing for the monitoring of warfarin therapy. The system uses fresh capillary or non-anticoagulated venous whole blood.
Reportable Range	0.8-8.0 INR 8.1-80.8 seconds	0.8-8.0 INR
Sample Type	Fresh whole blood from venous or capillary samples	Same

Table 1: Summary Comparison		
Feature or Characteristic	**Candidate: i-STAT PT*plus* cartridge with the i-STAT 1 System**	**Predicate: CoaguChek® XS Plus System (K071041)**
Sample Volume	Approximately 20 µL	Minimum of 10 µL
Sample Preparation	Ready to Use. No sample preparation required.	Same
Traceability	Traceable to the WHO international reference method.	Same
Reagent	Human recombinant thromboplastin.	Same
Electronic Quality Controls	On-board quality control built into the analyzer and external Electronic Simulator.	On-board quality control which uses electrochemical signal to detect test strip integrity.
Liquid Quality Controls	Two levels of liquid controls	Same
Principle of Measurement	Electrochemical technology with amperometric (electric current) detection of thrombin activity	Same
Analyzer Type	Handheld	Same

7. Performance Characteristics

A. Analytical Performance

a. Precision/Reproducibility:

i. Precision 20 days (Liquid Controls)

The precision of the prothrombin time test in the i-STAT PT*plus* cartridge was evaluated using three (3) lots of i-STAT PT*plus* cartridges and three (3) fluid levels. The fluids included the i-STAT PT*plus* Controls (Levels 1 and 2) as well as an internal fluid level (Level 3). The study was performed based on CLSI document EP05-A3: *Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline-Third Edition.* Each cartridge and fluid level was tested over 20 days by two operators running two test events per day at one site. The results of the 20-day precision study are shown in **Table 2** (seconds) and **Table 3** (INR).

Table 2: 20 Day Precision Results (seconds)											
Cartridge Lot	**Fluid Level**	**N**	**Mean (sec)**	**Within-run**		**Between-run**		**Between-day**		**Within-laboratory**	
				SD (sec)	**%CV**	**SD (sec)**	**%CV**	**SD (sec)**	**%CV**	**SD (sec)**	**%CV**
A	L1	119	10.38	0.279	2.7	0.019	0.2	0.134	1.3	0.310	3.0
	L2	116	24.51	0.881	3.6	0.227	0.9	0.075	0.3	0.912	3.7
	L3	104	53.95	3.488	6.5	0.986	1.8	0.709	1.3	3.693	6.8

Table 2: 20 Day Precision Results (seconds)											
Cartridge Lot	Fluid Level	N	Mean (sec)	Within-run		Between-run		Between-day		Within-laboratory	
				SD (sec)	%CV	SD (sec)	%CV	SD (sec)	%CV	SD (sec)	%CV
B	L1	120	10.36	0.279	2.7	0.065	0.6	0.186	1.8	0.342	3.3
	L2	119	22.82	0.812	3.6	0.272	1.2	0.298	1.3	0.906	4.0
	L3	118	49.54	1.884	3.8	0.734	1.5	0.568	1.1	2.099	4.2
C	L1	120	10.58	0.266	2.5	0.128	1.2	0.004	0.0	0.295	2.8
	L2	120	23.62	0.540	2.3	0.139	0.6	0.189	0.8	0.589	2.5
	L3	117	52.07	0.818	1.6	0.332	0.6	0.211	0.4	0.907	1.7

Table 3: 20-day Precision Results (INR)											
Cartridge Lot	Fluid Level	N	Mean (INR)	Within-run		Between-run		Between-day		Within-laboratory	
				SD (INR)	%CV	SD (INR)	%CV	SD (INR)	%CV	SD (INR)	%CV
A	L1	119	1.03	0.028	2.7	0.002	0.2	0.013	1.3	0.031	3.0
	L2	116	2.43	0.087	3.6	0.022	0.9	0.007	0.3	0.090	3.7
	L3	104	5.34	0.345	6.5	0.098	1.8	0.070	1.3	0.366	6.8
B	L1	120	1.03	0.028	2.7	0.006	0.6	0.018	1.8	0.034	3.3
	L2	119	2.26	0.080	3.6	0.027	1.2	0.029	1.3	0.090	4.0
	L3	118	4.91	0.186	3.8	0.073	1.5	0.056	1.1	0.208	4.2
C	L1	120	1.05	0.026	2.5	0.013	1.2	0.000	0.0	0.029	2.8
	L2	120	2.34	0.053	2.3	0.014	0.6	0.019	0.8	0.058	2.5
	L3	117	5.16	0.081	1.6	0.033	0.6	0.021	0.4	0.090	1.7

ii. Precision (Whole Blood)

Whole blood precision (repeatability) was evaluated using venous and capillary specimens at three (3) ranges: non-therapeutic (INR 0.8 – 1.9), therapeutic (INR 2.0 - 4.5), and very high therapeutic (INR 4.6 - 8.0). The repeatability analysis was conducted using the data collected across three (3) point of care sites. Data from duplicate testing in both the capillary method comparison study and the venous method comparison study were used to evaluate whole blood precision. The whole blood precision results for all three (3) sites combined are summarized for capillary whole blood in **Table 4** (seconds) and **Table 5** (INR) and for venous whole blood are summarized in **Table 6** (seconds) and **Table 7** (INR).

Table 4: Capillary Whole Blood PT (seconds) Precision								
Site	Interval	N	Mean		Standard Deviation		%CV	
			Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
	Non-therapeutic	58*	14.89	14.06 to 15.73	1.414	1.197 to 1.727	9.5	8.0 to 11.6

Table 4: Capillary Whole Blood PT (seconds) Precision								
Site	Interval	N	Mean		Standard Deviation		%CV	
			Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
All Sites	Therapeutic	119*	28.51	27.73 to 29.30	1.495	1.327 to 1.713	5.2	4.7 to 6.0
	Very High Therapeutic	9	50.71	42.88 to 58.54	2.109	1.451 to 3.851	4.2	2.9 to 7.6

*Results with outliers included

Table 5: Capillary Whole Blood PT INR Precision								
Site	Interval	N	Mean		Standard Deviation		%CV	
			Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
All Sites	Non-therapeutic	58*	1.48	1.39 to 1.56	0.143	0.121 to 0.174	9.7	8.2 to 11.8
	Therapeutic	119*	2.82	2.74 to 2.90	0.148	0.131 to 0.169	5.2	4.6 to 6.0
	Very High Therapeutic	9	5.02	4.24 to 5.80	0.201	0.139 to 0.368	4.0	2.8 to 7.3

*Results with outliers included

Table 6: Venous Whole Blood PT (seconds) Precision								
Site	Interval	N	Mean		Standard Deviation		%CV	
			Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
All Sites	Non-therapeutic	65*	14.69	13.95 to 15.43	1.047	0.894 to 1.263	7.1	6.1 to 8.6
	Therapeutic	131	28.78	27.97 to 29.59	0.660	0.589 to 0.751	2.3	2.0 to 2.6
	Very High Therapeutic	13*	54.37	48.44 to 60.31	0.785	0.569 to 1.264	1.4	1.0 to 2.3

*Results with outliers included

Table 7: Venous Whole Blood PT INR Precision								
Site	Interval	N	Mean		Standard Deviation		%CV	
			Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
All Sites	Non-therapeutic	65*	1.45	1.38 to 1.53	0.109	0.093 to 0.131	7.5	6.4 to 9.0
	Therapeutic	131	2.85	2.77 to 2.93	0.069	0.061 to 0.078	2.4	2.1 to 2.7
	Very High Therapeutic	13*	5.38	3.80 to 5.97	0.088	0.064 to 0.141	1.6	1.2 to 2.6

*Results with outliers included

b. Linearity/assay reportable range:

i. *Linearity*

Not applicable.

ii. *Reportable range*

The reportable range of the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System was determined through a method comparison study by using venous and capillary whole blood specimens from subjects undergoing anticoagulant therapy with coumarin derivatives and from subjects who were not on anticoagulant therapy. The result of the reportable range is shown in

Table 8.

Table 8: Reportable Range		
Test / Abbreviation	**Units**	**ReportableRange**
Prothrombin Time (PT^{plus})	INR	0.8 – 8.0
	seconds	8.1 – 80.8

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

i. *Traceability*

i-STAT prothrombin time values are traceable to the World Health Organization (WHO) international reference measurement procedures using an International Reference Preparation (IRP) recommended by the WHO.

d. Detection Limit

i. *Limit of Quantitation (LoQ)*

Not applicable

ii. *Limit of Blank and Detection (LoB/LoD)*

Not applicable.

iii. *Other*

1) *Factor Sensitivity*

The factor sensitivity for factors FII, FV, FVII and FX was determined using samples prepared by proportionately combining pooled normal plasma, red blood cells and factor-deficient plasma with various percent (%) factor activity ranging from 20%-100%. The factor sensitivity for the i-STAT PT^{plus} test was estimated to be FII – 39.5%; FV – 42.0%; FVII – 21.5%; FX – 22.0%.

e. Analytical Specificity

i. *Interference*

The interference performance of the prothrombin time test in the i-STAT PT^{plus} cartridge with the i-STAT 1 System was evaluated in the presence of potentially interfering endogenous or exogenous substances based on CLSI EP07-A2: I*nterference Testing in Clinical Chemistry, 2nd Edition,* CLSI EP07-ED3, and supplement document EP37-ED1. The effect of each substance at each prothrombin time level (normal and therapeutic) was evaluated by comparing the performance of a test sample spiked to a high concentration of the substance and a control sample spiked with an equal volume of solvent. For an identified interferent, a dose-response was performed to determine the degree of interference as a function of the substance concentration. **Table 9** contains the list of substances tested and the interference results.

Table 9: Potentially Interfering Substances and Test Concentration				
Substance	**Test Concentration**	**Test Concentration (mg/dL)**	**Interference (Yes/No)**	**Interference Result**
Acetaminophen	1324 µmol/L	$2.0x10^{1}$	No	
Acetylsalicylic Acid	3.62 mmol/L	$6.5x10^{1}$	No	
Ascorbic Acid	342 µmol/L	6.0	No	
Atorvastatin	750 µg/L	$7.5x10^{-2}$	No	
Unconjugated Bilirubin	684 µmol/L	$4.0x10^{1}$	No	
Conjugated Bilirubin	475 µmol/L	$4.0x10^{1}$	No	
Chlorhexidine digluconate	0.1%*	$1.0x10^{-3}$	Yes	Increased results ≥ $9.58x10^{-4}$ %
Daptomycin	0.55 mg/mL	$5.5x10^{1}$	Yes	Increased results ≥ 0.22 mg/mL
Enoxaparin	2.0 IU/mL*	2.0	No	
Epsilon-aminocaproic acid	0.39 mg/mL	$3.9x10^{1}$	No	
Fondaparinux	3.78 mg/L*	$3.8x10^{-1}$	No	
Hemoglobin	10 g/L	$1.0x10^{3}$	No	
Ibuprofen	2425 µmol/L	$5.0x10^{1}$	No	
Oritavancin	414 mg/L*	$4.1x10^{1}$	Yes	Increased results ≥ 104 mg/L
Prasugrel	265.5 ng/mL*	$2.7x10^{-2}$	No	
Tranexamic Acid	45 µg/mL*	$4.5x10^{6}$	No	
Triglycerides	37 mmol/L	$3.2x10^{3}$	No	
Uric Acid	1.4 mmol/L	$2.4x10^{1}$	No	

* No CLSI EP07-A2, EP07-ED3, or EP37-ED1 recommended test concentration available.

ii. Other sensitivity studies

1) Fibrinogen Sensitivity

Fibrinogen sensitivity was evaluated across five (5) fibrinogen levels. The study demonstrated that the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System is insensitive to fibrinogen across a concentration range of 63 – 702 mg/dL. In addition, results from the clinical method comparison study (including subjects receiving coumarin therapy as well as subjects not receiving coumarin therapy) supports insensitivity to fibrinogen in the range of 63 – 702 mg/dL.

2) Platelet Sensitivity

Platelet sensitivity was evaluated at three (3) platelet levels (low, nominal, and high). The study demonstrated that the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System is insensitive to platelets in the range of 70,000 – 670,000/mm^3. In addition, results from the clinical method comparison study (including subjects receiving coumarin therapy as well as subjects not receiving coumarin therapy) supports insensitivity to platelets in the range of 70,000 – 670,000/mm^3.

3) Hematocrit Sensitivity

Hematocrit sensitivity was evaluated at three (3) hematocrit levels (low, nominal, and high). The study demonstrated that the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System is insensitive to hematocrit in the range of 24 to 54% packed cell volume (PCV). In addition, results from the clinical method comparison study (including subjects receiving coumarin therapy as well as subjects not receiving coumarin therapy) supports insensitivity to hematocrit in the range of 24 to 54% PCV.

4) Heparin Sensitivity

Sensitivity to unfractionated heparin was evaluated at two (2) heparin levels. The study demonstrated that the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System is insensitive to unfractionated heparin concentrations up to 1.0 IU/mL.

5) Sensitivity for Lupus Anticoagulant

Sensitivity to lupus anticoagulant antibodies (LA) was evaluated using two (2) levels (low and high) of positive LA and one (1) level of negative LA (control). The study demonstrated that the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System is sensitive to both low and high levels of lupus anticoagulant antibodies.

f. Assay cut-off

Not applicable.

B. Comparison Studies

a. Method Comparison with predicate device

Venous and capillary whole blood specimens were prospectively collected from subjects undergoing anticoagulant therapy with coumarin derivates and from subjects who were not on anticoagulant therapy at three (3) clinical sites. Both venous and capillary specimens were tested in duplicate on the i-STAT 1 Analyzer and were tested in singlicate on the Roche CoaguChek predicate device. The study design and analysis

method were based on recommendations from CLSI EP09c *Measurement Procedure Comparison and Bias Estimation Using Patient Samples*, 3rd ed. Passing-Bablok regression analysis was performed for the first replicate of the i-STAT prothrombin time result versus the singlicate result from the CoaguChek. The results of the method comparison of venous whole blood and capillary whole blood samples are presented in **Table 10** (seconds) and **Table 11** (INR).

Table 10: Method Comparison Results for i-STAT PT*plus* Cartridge with i-STAT 1 System vs. CoaguChek® XS System (Seconds)

Matrix	N	i-STAT 1 PT (sec) Range	CoaguChek PT (sec) Range	Correlatioon coefficient (R)		Slope		Intercept	
				Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Venous	191*	8.5 – 67.9	10.8 – 84.6	0.98	0.97 to 0.98	0.736	0.715 to 0.757	1.352	0.708 to 1.920
Capillary	153*	8.6 – 61.9	11.1 – 83.7	0.97	0.96 to 0.98	0.743	0.711 to 0.776	1.051	0.309 to 1.892

*Results with outliers included

Table 11: Method Comparison Results for i-STAT PT*plus* Cartridge with i-STAT 1 System vs. CoaguChek® XS System (INR)

Matrix	N	i-STAT 1 INR Range	CoaguChek INR Range	Correlation coefficient (R)		Slope		Intercept	
				Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Venous	191*	0.8 – 6.7	0.9 – 7.0	0.98	0.97 to 0.98	0.875	0.857 to 0.906	0.113	0.045 to 0.157
Capillary	153*	0.8 – 6.1	0.8 – 7.0	0.97	0.96 to 0.98	0.885	0.846 to 0.923	0.104	0.009 to 0.171

*Results with outliers included

b. Method comparison with reference device

Venous and capillary whole blood specimens were prospectively collected from subjects undergoing anticoagulant therapy with coumarin derivates and from subjects who were not on anticoagulant therapy at three (3) clinical sites. Both venous and capillary specimens were tested in duplicate on the i-STAT 1 Analyzer and citrated plasma from the venous whole blood specimens was tested in duplicate on the Sysmex CS-2500 reference instrument using Dade Innovin reagent. The study design and analysis method were based on recommendations from CLSI EP09c *Measurement Procedure Comparison and Bias Estimation Using Patient Samples,* 3rd ed. Passing-Bablok regression analysis was performed for the first replicate of the i-STAT prothrombin time result versus the first replicate result from the Sysmex CS-2500. The results of the method comparison of venous whole blood and capillary whole blood samples is presented in **Table 12** (seconds) and **Table 13** (INR).

Table 12: Method Comparison Results for i-STAT PT*plus* Cartridge with i-STAT 1 System vs. Sysmex CS-2500 (seconds)

Matrix	N	i-STAT 1 PT (sec) Range	Sysmex PT (sec) Range	Correlation coefficient (R)		Slope		Intercept	
				Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Venous	211*	8.5 – 80.5	9.7 – 83.1	0.92	0.90 to 0.94	1.037	0.994 to 1.082	-0.591	-1.500 to 0.151
Capillary	203*	8.6 – 80.5	9.7 – 83.1	0.91	0.88 to 0.93	1.023	0.979 to 1.070	-0.189	-1.052 to 0.641

*Results with outliers included

Table 13: Method Comparison Results for i-STAT PT*plus* Cartridge with i-STAT 1 System vs. Sysmex CS-2500 (INR)									
Matrix	N	i-STAT 1 INR Range	Sysmex INR Range	Correlation coefficient (R)/		Slope		Intercept	
				Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Venous	211*	0.8 – 8.0	0.9 – 8.1	0.92	0.90 to 0.94	1.037	1.000 to 1.078	0.004	-0.079 to 0.075
Capillary	203*	0.8 – 8.0	0.9 – 8.1	0.91	0.89 to 0.93	1.022	0.984 to 1.061	0.047	-0.029 to 0.127

*Results with outliers included

C. Expected Values/Reference range

a. Reference range

A reference interval study was conducted with venous and capillary samples from apparently healthy adult subjects. Venous specimens were tested in singlicate and after testing venous blood, a capillary specimen from the subject was collected via fingerstick. Testing was performed with three cartridges lots on the i-STAT 1 System at three (3) clinical sites. Reference intervals for INR and seconds in venous and capillary samples were determined according to the CLSI Guideline EP28-A3c *Defining, Establishing, and Verifying, Reference Intervals in the Clinical Laboratory: Approved Guideline -Third Edition*. The reference intervals established for each capillary and venous sample type are summarized in **Table 14**.

Table 14: Reference Range for i-STAT PT*plus* Cartridge with i-STAT 1 System				
Specimen Type	N	Unit	Mean	Range
Capillary	146	INR*	1.1	0.9 - 1.3
		Seconds**	10.6	9.0 - 13.8
Venous	154	INR*	1.1	0.9 - 1.3
		Seconds**	10.6	9.2 - 13.0

*Pooled by sample type across all sites.

**Due to the rounding of parameters in the equation to convert INR to seconds, small differences in seconds can be observed.

8. Conclusion

The results of these studies demonstrate that performance of the prothrombin time test in the i-STAT PT*plus* cartridge with the i-STAT 1 System are substantially equivalent to the predicate device.