510(k) SUBSTANTIAL EQUIVALENCE DETERMINATION
DECISION SUMMARY
ASSAY ONLY

I Background Information:

A 510(k) Number

K261109

B Applicant

Beckman Coulter, Inc.

C Proprietary and Established Names

Access MeMed BV

D Regulatory Information

Product Code(s)	Classification	Regulation Section	Panel
QPS	II	866.3215	Device To Detect And Measure Non-Microbial Analyte(s) In Human Clinical Specimens To Aid In Assessment Of Patients With Suspected Sepsis

II Submission/Device Overview:

A Purpose for Submission:

To obtain a substantial equivalence determination for the Access MeMed BV device

B Measurand:

TNF-related apoptosis inducing ligand (TRAIL), Interferon gamma-inducible protein 10 (IP-10), and C-reactive protein (CRP).

C Type of Test:

Chemiluminescent immunoassay

III Intended Use/Indications for Use:

A Intended Use(s):

See Indications for Use below.

B Indication(s) for Use:

The Access MeMed BV test is an automated semi-quantitative immunoassay that measures three non-microbial (host) proteins, (TRAIL, IP-10, and CRP) in adult and pediatric serum and plasma samples and is intended for use in conjunction with clinical assessments and other laboratory findings as an aid to differentiate bacterial from viral infection. Access MeMed BV is indicated for use in patients presenting to the emergency department or urgent care center and with samples collected at hospital admission from patients with suspected acute bacterial or viral infection, who have had symptoms for less than seven days. The Access MeMed BV test generates a numeric score that falls within discrete interpretation bins based on the increasing likelihood of bacterial infection.

C Special Conditions for Use Statement(s):

Rx Only - For Prescription Use Only

D Special Instrument Requirements:

Access 2 Immunoassay System

DxI 9000 Access Immunoassay Analyzer

IV Device/System Characteristics:

A Device Description:

The Access MeMed BV is an automated, semi-quantitative immunoassay reagent kit intended to aid clinicians in differentiating bacterial from viral infection in adult and pediatric patients. It is indicated for use in patients presenting to emergency departments or urgent care centers, and with samples collected at hospital admission in individuals with suspected acute bacterial or viral infection. The test is intended to be used in conjunction with clinical assessments and other laboratory findings.

The device measures three host (non-microbial) proteins simultaneously from a single human serum or plasma specimen: TRAIL (TNF-related apoptosis-inducing ligand), IP-10 (Interferon gamma-induced protein 10), and CRP (C-reactive protein). Each analyte is detected using a sequential two-step immunoenzymatic assay run on the automated Access 2 Immunoassay System or DxI 9000 Access Immunoassay Analyzer.

The three analyte concentrations are processed by a proprietary algorithm embedded in the analyzer software, which generates a single numeric BV Score ranging from 0 to 100 (Table 1)

Table 1. Score Bin Ranges and Result Interpretations

Score Bin	Clinical Interpretation
$0 \leq \text{score} \leq 10$	High likelihood of viral infection (or other non-bacterial etiology)
$10 < \text{score} < 35$	Moderate likelihood of viral infection (or other non-bacterial etiology)

35 ≤ score ≤ 65	Equivocal
65 < score < 90	Moderate likelihood of bacterial infection (or co-infection)
90 ≤ score ≤ 100	High likelihood of bacterial infection (or co-infection)

Access MeMed BV reagent kit consists of three sub-kits (TRAIL, IP-10, and CRP), each containing two reagent packs of 50 tests per pack, for a total of 100 determinations per kit. Each reagent pack contains four reagent wells with paramagnetic particles, enzyme-labeled antibody conjugates, ancillary buffers, and sodium hydroxide.

B Principle of Operation:

The Access MeMed BV test comprises three immunoenzymatic assays that simultaneously measure three non-microbial host proteins, TRAIL, IP-10, and CRP from a single human serum or plasma specimen. Each assay employs a sequential two-step format in which an alkaline phosphatase-labeled antibody conjugate and paramagnetic particles coated with a capture antibody work together to bind the target analyte at two distinct antigenic sites, forming a sandwich immune complex on the solid phase. A magnetic field is then applied to retain the particle-bound complexes while unbound materials are washed away. A chemiluminescent substrate is subsequently added, and the resulting light emission, measured in relative light units (RLU) by a luminometer, is directly proportional to the concentration of the analyte in the sample. Analyte concentrations are automatically determined by comparing the light output to a stored calibration curve. Once all three analyte concentrations are determined within a single analyzer run, a proprietary algorithm embedded in the instrument software calculates and reports the MeMed BV Score, a numeric value between 0 and 100. The score is assigned to one of five discrete interpretation bins that reflect the increasing likelihood of bacterial infection, from high likelihood of viral infection (or other non-bacterial etiology) at the low end of the scale to high likelihood of bacterial infection or co-infection at the high end.

V Substantial Equivalence Information:

A Predicate Device Name(s):
MeMed BV

B Predicate 510(k) Number(s):
K210254

C Comparison with Predicate(s):

Device & Predicate Device(s):	K261109	K210254
Device Trade Name	Access MeMed BV	MeMed BV
General Device Characteristic Similarities		
	The Access MeMed BV test is an automated semi-quantitative immunoassay that measures three non-microbial (host) proteins (TRAIL, IP-10,	The MeMed BV test is an automated semi-quantitative immunoassay that measures three non-microbial (host) proteins (TRAIL, IP-10, and

Intended Use/ Indications for Use	and CRP) in adult and pediatric serum and plasma samples and is intended for use in conjunction with clinical assessments and other laboratory findings as an aid to differentiate bacterial from viral infection. Access MeMed BV is indicated for use in patients presenting to the emergency department or urgent care center and with samples collected at hospital admission from patients with suspected acute bacterial or viral infection, who have had symptoms for less than seven days. The Access MeMed BV test generates a numeric score that falls within discrete interpretation bins based on the increasing likelihood of bacterial infection.	CRP) in adult and pediatric serum samples and is intended for use in conjunction with clinical assessments and other laboratory findings as an aid to differentiate bacterial from viral infection. The MeMed BV is indicated for use in patients presenting to the emergency department or urgent care center and with samples collected at hospital admission from patients with suspected acute bacterial or viral infection, who have had symptoms for less than seven days. The MeMed BV test generates a numeric score that falls within discrete interpretation bins based on the increasing likelihood of bacterial infection.
Assay Principle	Same	Sandwich Immunoassay
Method	Same	Automated Semi-Quantitative
Format	Same	Chemiluminescent Immunoassay
Analyte or Marker	Same	Three non-microbial (host) proteins: • TNF-related apoptosis inducing ligand (TRAIL), • Interferon gamma-inducible protein 10 (IP-10), and • C-reactive protein (CRP)
Output	Same	Score results with risk bins: • $0 \leq$ Score ≤ 10: High likelihood of viral infection (or other non-bacterial etiology) • $10 <$ Score < 35: Moderate likelihood of viral infection (or other non-bacterial etiology) • $35 \leq$ Score ≤ 65: Equivocal • $65 <$ Score < 90: Moderate

		likelihood of bacterial infection (or co-infection) • 90 ≤ Score ≤ 100: High likelihood of bacterial infection (or co-infection)
Score Algorithm	Same	Uses MeMed Diagnostics, Ltd.'s proprietary algorithm
General Device Characteristic Differences		
Sample Type	Serum or Lithium Heparin Plasma	Serum
Measuring Range	TRAIL: 15 - 300 pg/mL IP-10: 100 - 2000 pg/mL CRP: 1.0 - 250 mg/L	TRAIL: 15 – 290 pg/mL IP-10: 96 -1930 pg/mL CRP: 1.0 – 289 µg/mL
Duration	Approximately 20 minutes	Approximately 15 minutes
Sample Volume	180 µL for Access 2 Immunoassay System 170 µL for Dxl 9000 Immunoassay Analyzer	100 µL
Instrument	Access 2 Immunoassay System DxI 9000 Access Immunoassay Analyzer	MeMed Key Analyzer

VI Standards/Guidance Documents Referenced:

CLSI Consensus Standards:

- CLSI EP05-A3 (Reaffirmed September 2019) – Evaluation of Precision of Quantitative Measurement Procedures; Approved Guideline – Third Edition
- CLSI EP06, 2nd Edition – Evaluation of the Linearity of Quantitative Measurement Procedures
- CLSI EP07, 3rd Edition – Interference Testing in Clinical Chemistry
- CLSI EP09c, 3rd Edition – Measurement Procedure Comparison and Bias Estimation Using Patient Samples
- CLSI EP17-A2 – Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – Second Edition
- CLSI EP25, 2nd Edition – Evaluation of Stability of In Vitro Medical Laboratory Test Reagents
- CLSI EP28-A3c *(formerly C28-A3c)* – Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory; Approved Guideline – Third Edition
- CLSI EP35, 1st Edition – Assessment of Equivalence or Suitability of Specimen Types for Medical Laboratory Measurement Procedures
- CLSI EP37, 1st Edition – Supplemental Tables for Interference Testing in Clinical Chemistry

FDA Guidance Documents:

- Cybersecurity in Medical Devices: Quality Management System Considerations and Content of Premarket Submissions (February 2026)
- Postmarket Management of Cybersecurity in Medical Devices (December 2016)
- Convenience Kits Interim Regulatory Guidance (May 1997)

VII Performance Characteristics (if/when applicable):

A Analytical Performance:

i. Precision/Reproducibility:

A multi-site reproducibility study was conducted to evaluate the performance of the Access MeMed BV assay. Testing was performed at three sites using both instrument platforms: the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. At each site, five samples were tested in triplicate over five days, with two runs per day separated by a minimum of two hours between runs. This design yielded a maximum of 30 measurements per sample per site and 90 measurements per sample across all sites. A single reagent lot for reagent packs, quality controls, and calibrators was used at each testing site. Five samples were evaluated, as described in Table 2. Four samples (1-4) were native serum pools supplemented with recombinant antigen; one sample (5) was native serum pool comprised of individual samples at similar concentrations. Reproducibility results are reported separately below in Table 3 and Table 4 for each platform, combining data from all three sites.

Table 2. Reproducibility Study Sample Concentrations

Sample ID	MeMed BV Score	Screened Concentration		
		CRP (mg/L)	IP-10 (pg/mL)	TRAIL (pg/mL)
Sample 1	0	4.5	674	227
Sample 2	17	49.0	187	105
Sample 3	75	93.1	1939	49
Sample 4	100	199.6	1146	27
Sample 5	84	10.6	32	23

For each platform, results are reported across four analytes: TRAIL (pg/mL), IP-10 (pg/mL), and CRP (mg/L), expressed as percent coefficient of variation (%CV) and the BV Score, expressed as standard deviation (SD)

Table 3. Access MeMed BV Reproducibility Results for All Sites Combined on Access 2 Immunoassay System

ACCESS 2			Repeatability		Between Day		Between Run		Within Laboratory		Between Site		Reproducibility	
Panel	N	Mean	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV	SD	%CV
TRAIL (pg/mL)														
AS1	90	203	5.3	3%	0.0	0%	2.4	1%	5.8	3%	2.9	1%	6.5	3%
AS2	90	86	2.0	2%	0.0	0%	0.0	0%	2.0	2%	0.3	0%	2.0	2%
AS3	90	43	1.9	4%	0.0	0%	0.0	0%	1.9	4%	0.0	0%	1.9	4%
AS4	90	24	0.6	2%	0.0	0%	0.2	1%	0.6	3%	0.2	1%	0.7	3%

AS5	90	21	0.7	3%	0.0	0%	0.0	0%	0.7	3%	0.0	0%	0.7	3%
IP10 (pg/mL)														
AS1	90	698	27.9	4%	0.0	0%	2.3	0%	28.0	4%	24.5	4%	37.2	5%
AS2	90	181	6.6	4%	0.8	0%	0.0	0%	6.7	4%	2.0	1%	7.0	4%
AS3	90	1810	92.2	5%	0.0	0%	0.0	0%	92.2	5%	30.6	2%	97.2	5%
AS4	90	1043	26.2	3%	12.5	1%	0.0	0%	29.0	3%	34.7	3%	45.3	4%
AS5*	90	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CRP (mg/L)														
AS1	90	4.6	0.2	4%	0.1	2%	0.1	3%	0.2	5%	0.2	5%	0.3	7%
AS2	90	46.9	1.9	4%	0.8	2%	0.0	0%	2.0	4%	3.8	8%	4.3	9%
AS3	90	91.8	6.5	7%	3.2	3%	0.0	0%	7.2	8%	7.4	8%	10.3	11%
AS4	90	195.1	10.5	5%	4.3	2%	5.6	3%	12.7	6%	19.9	10%	23.6	12%
AS5	90	11.5	0.6	6%	0.2	2%	0.2	2%	0.7	6%	0.9	8%	1.2	10%
BV Score			**SD**		**SD**		**SD**		**SD**		**SD**		**SD**	
AS1	90	0	0.2		0.0		0.1		0.3		0.0		0.3	
AS2	90	29	1.9		0.0		0.0		1.9		1.8		2.7	
AS3	90	81	1.6		0.9		0.2		1.8		2.4		3.1	
AS4	90	100	0.3		0.1		0.1		0.4		0.1		0.4	
AS5	90	89	0.7		0.0		0.0		0.7		0.6		0.9	

*IP-10 in this sample is dosed below analytical measuring range

Table 4. Access MeMed BV Reproducibility Results for All Sites Combined on DxI 9000 Access Analyzer

DxI 9000			**Repeatability**		**Between Day**		**Between Run**		**Within Laboratory**		**Between Site**		**Reproducibility**	
Panel	**N**	**Mean**	**SD**	**%CV**	**SD**	**%CV**	**SD**	**%CV**	**SD**	**%CV**	**SD**	**%CV**	**SD**	**%CV**
TRAIL (pg/mL)														
AS1	90	214	4.6	2%	0.0	0%	2.2	1%	5.1	2%	4.4	2%	6.7	3%
AS2	90	85	2.6	3%	0.5	1%	0.0	0%	2.6	3%	2.8	3%	3.9	5%
AS3	90	41	0.8	2%	0.1	0%	0.6	1%	1.0	2%	0.6	2%	1.2	3%
AS4	90	25	0.6	2%	0.0	0%	0.2	1%	0.6	3%	0.5	2%	0.8	3%
AS5	90	21	0.4	2%	0.1	0%	0.1	1%	0.4	2%	0.5	2%	0.7	3%
IP10 (pg/mL)														
AS1	90	819	22.8	3%	0.0	0%	4.8	1%	23.3	3%	36.6	4%	43.4	5%
AS2	90	195	4.2	2%	1.6	1%	0.7	0%	4.6	2%	7.6	4%	8.9	5%
AS3	90	1854	52.6	3%	6.9	0%	17.1	1%	55.7	3%	55.8	3%	78.9	4%
AS4	90	1140	15.6	1%	0.0	0%	10.7	1%	19.0	2%	30.2	3%	35.7	3%
AS5*	90	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CRP (mg/L)														
AS1	90	4.5	0.1	3%	0.0	0%	0.0	0%	0.1	3%	0.2	4%	0.2	5%

AS2	90	47.1	1.8	4%	0.3	1%	0.0	0%	1.8	4%	1.0	2%	2.1	4%
AS3	90	93.2	3.6	4%	0.0	0%	2.0	2%	4.1	4%	3.2	3%	5.2	6%
AS4	90	199.2	9.1	5%	3.5	2%	4.9	2%	10.9	5%	6.3	3%	12.6	6%
AS5	90	11.0	0.3	3%	0.1	1%	0.1	1%	0.4	3%	0.2	2%	0.4	4%
BV Score			**SD**		**SD**		**SD**		**SD**		**SD**		**SD**	
AS1	90	0	0.0		0.0		0.0		0.0		0.0		0.0	
AS2	90	30	2.3		0.6		0.0		2.4		2.0		3.1	
AS3	90	84	1.3		0.0		0.4		1.3		0.0		1.3	
AS4	90	100	0.2		0.1		0.0		0.2		0.0		0.2	
AS5	90	89	0.5		0.0		0.2		0.5		0.4		0.6	

*IP-10 in this sample is dosed below analytical measuring range

Results from the reproducibility study demonstrate acceptable reproducibility of the Access MeMed BV assay.

ii. Within-laboratory Precision

A within-laboratory precision study was conducted on three Access 2 Immunoassay Systems and three DxI 9000 Access Immunoassay Analyzers. For each analyte, three reagent lots were evaluated, with each lot assigned to a single instrument, while one common calibrator lot was used across both platforms. Serum served as the primary specimen type, as established in the matrix equivalency study, which also demonstrated that lithium heparin plasma is equivalent to serum. Five samples spanning the measuring range of each assay were tested over 20 or more days with two runs per day, yielding a minimum of 80 replicates per sample per instrument and reagent lot combination. Commercial quality controls were run in duplicate each day to confirm system functionality. Within-laboratory Precision was characterized by using four variance components: repeatability (within-run), between-run, between-day, and within-laboratory (total). For the three analytes (IP-10 (pg/mL), TRAIL (pg/mL), and CRP (mg/L), imprecision is expressed as SD and percent coefficient of variation (%CV). For the BV Score, within-laboratory precision is expressed as standard deviation (SD). Representative data from one reagent lot on the Access 2 Immunoassay System and DxI 9000 are presented in Table 5 and Table 6, respectively.

Table 5. Within-laboratory Precision Study Results on the Access 2 Immunoassay System,

Analyte	**Sample (Mean Concentration)**	**Repeatability**		**Between-Run**		**Between-Day**		**Within-Laboratory (Total)**	
		SD	**%CV**	**SD**	**%CV**	**SD**	**%CV**	**SD**	**%CV**
TRAIL	Sample 1 (200 pg/mL)	3.5	2%	3.8	2%	0.0	0.002%	5.1	3%
	Sample 2 (83 pg/mL)	1.8	2%	1.4	2%	0.0	0.003%	2.3	3%
	Sample 3 (42 pg/mL)	1.1	3%	0.8	3%	0.9	2%	1.7	4%
	Sample 4 (24 pg/mL)	0.8	3%	0.0	3%	0.3	1%	0.8	3%

	Sample 5 (21 pg/mL)	0.6	3%	0.0	3%	0.2	1%	0.6	3%
IP-10	Sample 1 (720 pg/mL)	25.9	4%	0.0	0%	24.0	3%	35.4	5%
	Sample 2(181 pg/mL)	4.2	2%	2.8	2%	7.0	4%	8.6	5%
	Sample 3 (1874 pg/mL)	45.0	2%	59.8	3%	80.4	4%	109.8	6%
	Sample 4 (1066 pg/mL)	30.6	3%	13.0	1%	29.6	3%	44.5	4%
	Sample 5 (32 pg/mL)	0.7	2%	0.8	2%	1.0	3%	1.5	5%
CRP	Sample 1 (4.6 mg/L)	0.1	3%	0.2	4%	0.0	0%	0.3	5%
	Sample 2 (48.8 mg/L)	2.2	5%	2.4	5%	0.0	0%	3.2	7%
	Sample 3 (96.9 mg/L)	3.6	4%	5.7	6%	3.7	4%	7.7	8%
	Sample 4 (207.7 mg/L)	12.9	6%	10.9	5%	0.0	0%	16.9	8%
	Sample 5 (11.7 mg/L)	0.4	4%	0.5	4%	0.3	2%	0.7	6%
BV Score	Sample 1 (Score: 0)	0.1	N/A	0.0	N/A	0.0	N/A	0.1	N/A
	Sample 2 (Score: 33)	1.7	N/A	1.7	N/A	0.0	N/A	2.4	N/A
	Sample 3 (Score: 84)	1.2	N/A	1.4	N/A	0.0	N/A	1.9	N/A
	Sample 4 (Score: 100)	0.2	N/A	0.0	N/A	0.0	N/A	0.2	N/A
	Sample 5 (Score: 90)	0.7	N/A	0.0	N/A	0.1	N/A	0.7	N/A

Table 6. Within-laboratory Precision Study Results, DxI 9000 Immunoassay Analyzer

Analyte	Sample (Mean Concentration)	Repeatability		Between-Run		Between-Day		Within-Laboratory (Total)	
		SD	%CV	SD	%CV	SD	%CV	SD	%CV
TRAIL	Sample 1 (213 pg/mL)	3.7	2%	2.8	1%	0.0	0.002%	4.7	2%
	Sample 2 (83 pg/mL)	1.3	2%	3.5	4%	1.4	2%	4.0	5%
	Sample 3 (41 pg/mL)	0.7	2%	1.5	4%	0.0	0.003%	1.7	4%

	Sample 4 (25 pg/mL)	0.4	1%	0.4	2%	0.3	1%	0.6	3%
	Sample 5 (21 pg/mL)	0.3	1%	0.9	4%	0.0	0.01%	0.9	4%
IP-10	Sample 1 (787 pg/mL)	14.3	2%	12.6	2%	14.8	2%	24.1	3%
	Sample 2 (193 pg/mL)	4.1	2%	7.6	4%	6.4	3%	10.7	6%
	Sample 3 (1806 pg/mL)	36.1	2%	110.8	6%	0.1	0.01%	116.6	6%
	Sample 4 (1105 pg/mL)	15.6	1%	10.5	1%	16.0	1%	24.7	2%
	Sample 5 (35 pg/mL)	0.6	2%	1.4	4%	0.8	2%	1.7	5%
CRP	Sample 1 (4.5 mg/L)	0.1	3%	0.0	0%	0.1	1%	0.1	3%
	Sample 2 (45.8 mg/L)	1.7	4%	2.9	6%	0.0	0%	3.3	7%
	Sample 3 (90.5 mg/L)	4.6	5%	5.4	6%	0.0	0%	7.1	8%
	Sample 4 (195.1 mg/L)	8.6	4%	5.7	3%	0.0	0%	10.3	5%
	Sample 5 (10.8 mg/L)	0.3	3%	0.6	5%	0.3	3%	0.7	7%
BV Score	Sample 1 (Score: 0)	0.0	N/A	0.0	N/A	0.0	N/A	0.0	N/A
	Sample 2 (Score: 31)	1.2	N/A	2.5	N/A	0.2	N/A	2.8	N/A
	Sample 3 (Score: 84)	1.5	N/A	0.0	N/A	0.6	N/A	2.2	N/A
	Sample 4 (Score: 100)	0.1	N/A	0.0	N/A	0.0	N/A	0.1	N/A
	Sample 5 (Score: 89)	0.5	N/A	0.6	N/A	0.1	N/A	0.7	N/A

iii. Linearity:

A linearity study was conducted for the Access MeMed BV. Testing evaluated all three analytes (TRAIL, IP-10, and CRP) on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. The study was performed using serum and lithium heparin plasma samples, with an acceptance criterion of ±10% deviation from linearity. For each analyte, high and low samples were prepared to bracket the full analytical measuring range. Intermediate mixtures (six to seven depending on the analyte) were then generated by combining incrementally increasing proportions of the high sample with the low sample,

producing a series of concentrations spanning the entire assay range. Sample preparation and study designs varied by analyte, as described below.

All three analytes met the ±10% acceptance criterion on both platforms, demonstrating that the Access MeMed BV assay is linear across the full analytical measuring range for TRAIL (15–300 pg/mL), IP-10 (100–2,000 pg/mL), and CRP (1.0–250 mg/L) on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer.

iv. Analytical Specificity

a. Interference:

An interference study was conducted to evaluate the potential impact of endogenous and exogenous substances on the Access MeMed BV assay. The interferents evaluated and their tested concentrations are listed in Table 7. Testing was performed on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. For each interferent, a test sample containing the substance of interest was compared against a matched control sample without the interferent. When an interferent required dissolution in a solvent prior to spiking, an equivalent volume of solvent was added to the corresponding control sample to account for any solvent effect. Two serum samples were used in the study, one with a bacterial-score profile supplemented with CRP antigen, and one with a viral-score profile supplemented with TRAIL antigen. Five replicates of each test and control sample were analyzed per condition across six DxI 9000 Access Immunoassay Analyzers and seven Access 2 Immunoassay Systems, using three reagent pack lots per analyte and two calibrator sets. The acceptance criterion for all interferents was a bias of no more than ±12.5 BV Score units. The BV Score for each replicate was calculated from the corresponding CRP, IP-10, and TRAIL concentrations, and the difference in mean scores between the test and control samples was used to assess whether the acceptance criterion was met (Table 8 and Table 9).

Rheumatoid factor (RF) interference was evaluated using an additional approach. RF results from the Access MeMed BV assay on both platforms were compared against those from the MeMed Key device since no RF interference at the tested concentration was observed in the original clearance of the device. One native low-score serum sample and one native high-score serum sample were evaluated across all platforms to determine whether RF produced a differential effect. Results demonstrate that none of the evaluated endogenous or exogenous substances produced a clinically significant impact on Access MeMed BV assay BV Score values.

Table 7. Interfering Substances Evaluated

Substance	Highest Concentration Added
Acetaminophen (paracetamol)	0.156 mg/mL
Acetylsalicylic acid (aspirin)	0.03 mg/mL
Alcohol (ethanol)	0.5% V/V
Amoxicillin	54 µg/mL
Ampicillin	75 µg/mL

Azithromycin	11.1 µg/mL
Bilirubin (conjugated)	0.4 mg/ml
Bilirubin (unconjugated)	0.4 mg/ml
Biotin	3,510 ng/mL
Caffeine	108 µg/mL
Cetirizine HCL	4.35 µg/mL
Dextromethorphan	15.6 ng/ml
Doxycycline	18 µg/mL
HAMA (human anti-mouse Ab)	360 ng/ml
Hemoglobin	10 mg/mL
Heparin	3,300 U/L
Human serum albumin (HSA)	60 mg/ml
Ibuprofen	219 µg/mL
Levofloxacin	36 µg/mL
Loratadine	87 ng/mL
Nicotine	969 ng/mL
Oxymetazoline HCl	0.0006 µg/mL
Phenylephrine	30 ng/mL
Prednisolone	1,200 ng/mL
Rheumatoid Factor (RF)	500 IU/mL
Triglycerides (Triolein)	15 mg/mL

Table 8. Access 2 Immunoassay System Interfering Substance Bias Summary

Interferent	Concentration	Bias Range (3 lots)	
		Low-Score	High-Score
Acetaminophen	0.156 mg/mL	−0.6 to 0.0	−0.4 to 0.0
Acetyl Salicylic Acid	0.03 mg/mL	−0.6 to 0.2	0.0 to 0.6
Alcohol	0.5% V/V	−0.6 to 0.0	0.0 to 0.2
Amoxicillin	54 µg/mL	−0.2 to 0.2	0.2 to 0.4
Ampicillin	75 µg/mL	0.0 to 0.2	−0.4 to 0.6
Azithromycin	11.1 µg/mL	0.4 to 0.6	−0.2 to 0.6
Bilirubin (conjugated)	0.4 mg/mL	−0.4 to 2.8	−1.6 to 0.0
Bilirubin (unconjugated)	0.4 mg/mL	−7.4 to −3.8	−1.0 to −0.4
Biotin	3510 ng/mL	0.0 to 1.0	−0.2 to 0.0
Caffeine	108 µg/mL	−1.0 to 0.8	−0.4 to 0.0
Cetirizine HCl	4.35 µg/mL	1.0 to 1.6	0.0 to 0.2
Dextromethorphan	15.6 ng/mL	−0.4 to 0.6	−0.2 to 0.2
Doxycycline	18 µg/mL	0.8 to 1.4	0.2 to 0.8

HAMA	360 ng/mL	−0.2 to 0.8	−0.4 to 0.0
Hemoglobin	10 mg/mL	0.2 to 1.2	0.0 to 0.2
Heparin	3300 U/L	−0.8 to 0.4	−0.6 to 0.0
Human Serum Albumin	60 mg/mL	−0.6 to 0.6	0.0 to 0.8
Ibuprofen	219 µg/mL	−1.2 to −0.4	−0.6 to 0.0
Levofloxacin	36 µg/mL	−0.2 to 0.0	0.0 to 0.2
Loratadine	87 ng/mL	−0.8 to 0.4	−1.0 to 0.2
Nicotine	969 ng/mL	−0.6 to 0.0	−0.2 to 0.0
Oxymetazoline HCl	0.0006 µg/mL	−0.6 to 0.0	−0.4 to 0.0
Phenylephrine	30 ng/mL	−1.2 to −0.2	−0.8 to 0.0
Prednisolone	1200 ng/mL	−0.2 to 0.0	0.0 to 0.2
Rheumatoid Factor	500 IU/mL	−0.6 to 0.0	−1.0 to −0.4
Triglycerides/Triolein	15 mg/mL	−0.8 to −0.4	−0.8 to 0.0

Table 9. DxI 9000 Access Immunoassay Analyzer Interfering Substance Bias Summary

Interferent	Concentration	Bias Range (3 lots)	
		Low-Score	High-Score
Acetaminophen	0.156 mg/mL	0.2 to 1.0	0.0 to 0.4
Acetyl Salicylic Acid	0.03 mg/mL	−0.4 to 1.0	−0.2 to 0.0
Alcohol	0.5% V/V	0.0 to 0.6	−0.2 to 0.0
Amoxicillin	54 µg/mL	0.2 to 0.8	0.0 to 0.4
Ampicillin	75 µg/mL	−0.2 to 0.2	0.0 to 0.4
Azithromycin	11.1 µg/mL	0.4 to 0.6	0
Bilirubin (conjugated)	0.4 mg/mL	0.6 to 0.8	−0.2 to 0.0
Bilirubin (unconjugated)	0.4 mg/mL	−1.8 to 1.8	−0.2 to 0.8
Biotin	3510 ng/mL	0.2 to 0.4	0.2 to 0.4
Caffeine	108 µg/mL	1.2 to 1.4	−0.2 to 0.2
Cetirizine HCl	4.35 µg/mL	−0.4 to 0.6	−0.2 to 0.6
Dextromethorphan	15.6 ng/mL	0.0 to 0.8	0.0 to 0.2
Doxycycline	18 µg/mL	1.2 to 2.2	0.2 to 0.8
HAMA	360 ng/mL	−0.4 to 0.6	−0.4 to 0.4
Hemoglobin	10 mg/mL	0.0 to 1.4	0.0 to 0.2
Heparin	3300 U/L	−0.2 to 0.4	−0.2 to 0.0
Human Serum Albumin	60 mg/mL	−0.6 to −0.2	0.0 to 0.4
Ibuprofen	219 µg/mL	0.0 to 1.2	0.0 to 0.4
Levofloxacin	36 µg/mL	0.2 to 1.4	0.0 to 0.2
Loratadine	87 ng/mL	−0.4 to 0.4	−0.2 to 0.0
Nicotine	969 ng/mL	0.2 to 0.6	−0.2 to 0.0
Oxymetazoline HCl	0.0006 µg/mL	0.2 to 0.6	0.0 to 0.4
Phenylephrine	30 ng/mL	0.0 to 0.6	0.0 to 0.4
Prednisolone	1200 ng/mL	−0.4 to 0.6	−0.2 to 0.0

Rheumatoid Factor	500 IU/mL	−0.4 to 0.4	−1.0 to −0.6
Triglycerides/Triolein	15 mg/mL	−0.2 to 0.6	−0.2 to 0.0

These data demonstrate that the presence of commonly encountered interferents does not significantly alter the Access MeMed BV score.

b. Cross-reactivity

A cross-reactivity study was performed to evaluate the potential impact of structurally related substances on the Access MeMed BV assay. Testing was performed on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. Each potential cross-reactant was tested at a concentration of 50 ng/mL in two native serum samples prepared to represent clinically relevant score ranges: a low-score serum sample (BV Score 5, indicative of a likely viral infection) supplemented with TRAIL antigen, and a high-score serum sample (BV Score 94, indicative of a likely bacterial infection) supplemented with CRP antigen. Control samples were prepared identically using solvent only, without the cross-reactant. Test and control samples were analyzed on three DxI 9000 Access Immunoassay Analyzers and three Access 2 Immunoassay Systems, using three reagent lots per analyte and one calibrator lot. The BV Score for each replicate was calculated from the corresponding CRP, IP-10, and TRAIL concentrations, and the difference in mean scores between test and control samples was used to assess cross-reactivity. The acceptance criterion for all cross-reactants was a bias of no more than ±12.5 BV Score units. The cross-reactants evaluated, organized by analyte, are listed in Table 10. All samples met acceptance criteria for the Access MeMed BV assay on the DxI 9000 Access Immunoassay Analyzer and Access 2 Immunoassay System.

Table 10. Potential Cross-reactants Evaluated

TRAIL Cross-reactants – Substances evaluated at 50 ng/mL	
4-1BB Ligand	TNF-α
CD40 Ligand	TNF-β
LT α1/β2	Adiponectin
LT α2/β1	
IP-10 Cross-reactants – Substances evaluated at 50 ng/mL	
BLC/BCA-1	IL-8
ENA-78	I-TAC
GCP-2	NAP-2
GROα	MIG
GROγ	SDF-1α
IFNγ	SDF-1β
CRP Cross-reactants – Substances evaluated at 50 ng/mL	
Pentraxin 2/SAP	Pentraxin 3/TSG-14

c. Hook Effect Study

A study was performed to determine whether a high-dose hook effect occurs when samples containing analyte concentrations substantially exceed the upper limit of the analytical measuring range. Testing was performed on the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. Samples containing analyte levels exceeding the upper

end of the analytical measuring range were evaluated using three reagent lots and one calibrator lot, with five replicates tested per sample preparation. All samples demonstrated an increasing amount of chemiluminescence with increasing concentration of analyte. No hook effect was observed for TRAIL up to 1,000 pg/mL, IP-10 up to 10,000 pg/mL, and CRP up to 500 mg/L on either platform.

v. Detection Limit and Assay Reportable Range:

a. Limit of Blank

Studies were performed to determine the Limit of Blank (LoB), Testing was performed using a protocol based on CLSI EP17- A2, *Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – Second Edition* on one Access 2 Immunoassay System and one DxI 9000 Access Immunoassay Analyzer using three reagent pack lots per analyte and one calibrator lot. Four blank samples were used for the LoB determination. Samples were tested over three days with one run per day and five replicates per run per reagent lot, yielding a total of 60 results per reagent lot. The LoB was calculated using a non-parametric approach with the 95th percentile of the blank replicate distribution used as the LoB estimate. Results are summarized in Table 11.

Table 2. Limit of Blank Results Summary

Limit of Blank (LoB)	Maximum Observed Result	Design Criteria
TRAIL	for DxI 9000 TRAIL 0.2 pg/mL	< 15 pg/mL
	for Access 2 TRAIL 0.37 pg/mL	
IP-10	for DxI 9000 IP-10 0.017 pg/mL	≤100 pg/mL
	for Access 2 IP-10 0.6 pg/mL	
CRP	for DxI 9000 CRP 0.002 mg/L	≤1.0 mg/L
	for Access 2 CRP 0.0 mg/L	

b. Limit of Detection

Studies were conducted to determine the Limit of Detection (LoD) of the Access MeMed BV assay. Testing was performed according to CLSI EP17- A2, *Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – Second Edition* on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer. Seven samples containing low levels of each analyte were evaluated across both serum and lithium heparin plasma specimen types. For IP-10 and TRAIL, low concentrations were achieved by stripping native samples of the antigen, except for one serum sample for IP-10 that was naturally low in antigen. For CRP, all seven samples for both specimen types were native samples at naturally low concentrations, requiring no additional preparation. Samples were tested in replicates of nine per run, with one run per day over five days per reagent lot, yielding a minimum of 40 replicates per sample per reagent lot. Commercial quality controls were run in duplicate each day to confirm systems performance. The within-laboratory standard deviation (SD) was calculated for the five lowest-concentration samples per reagent lot, platform, and specimen type. A precision profile was generated by fitting a linear regression model to the within-laboratory SD versus mean sample concentration. When the linear term was statistically significant, the fitted SD at the lowest tested concentration was used to compute the LoD using the CLSI EP17-A2 LoD equation. When the regression was not significant, the LoD was instead calculated using the pooled SD across the same five low-

level samples. In all cases, the highest LoB observed for that analyte across the verification study was used in the LoD calculation.
All observed LoD values across both platforms and both specimen types fell well below the pre-specified acceptance criteria, CRP ≤ 1.0 mg/L, IP-10 ≤ 100 pg/mL, and TRAIL ≤ 15 pg/mL, confirming that the analytical sensitivity of the Access MeMed BV assay met the required performance specifications on both the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer (Table 12).

Table 3. Limit of Detection (LoD) Results Summary

Limit of Detection (LoD)	Maximum Observed Result	Design Criteria
TRAIL	for DxI 9000 TRAIL Plasma 0.5 pg/mL	< 15 pg/mL
	for DxI 9000 TRAIL Serum 0.5 pg/mL	
	for Access 2 TRAIL Plasma 0.7 pg/mL	
	for Access 2 TRAIL Serum 0.7 pg/mL	
IP-10	for DxI 9000 IP-10 Plasma 0.23 pg/mL	≤100 pg/mL
	for DxI 9000 IP-10 Serum 0.07 pg/mL	
	for Access 2 IP-10 Plasma 0.93 pg/mL	
	for Access 2 IP-10 Serum 0.77 pg/mL	
CRP	for DxI 9000 CRP Plasma 0.007 mg/L	≤1.0 mg/L
	for DxI 9000 CRP Serum 0.004 mg/L	
	for Access 2 CRP Plasma 0.008 mg/L	
	for Access 2 CRP Serum 0.012 mg/L	

c. Limit of Quantitation (LoQ)

A study was conducted to determine the Limit of Quantitation (LoQ) of the Access MeMed BV assay. Testing was performed in accordance with a protocol based on CLSI EP17-A2, Evaluation of Detection Capability for Clinical Laboratory Measurement Procedures; Approved Guideline – Second Edition on one Access 2 Immunoassay System and one DxI 9000 Access Immunoassay Analyzer per study, using three reagent lots and one calibrator lot per analyte. Seven samples containing low levels of each analyte were evaluated across both serum and lithium heparin plasma specimen types. For IP-10 and TRAIL, low concentrations were achieved by stripping native samples of the antigen, except for one serum sample for IP-10 that was naturally low in antigen. For CRP, all seven samples for both specimen types were native samples at naturally low concentrations, requiring no additional preparation. Samples were tested in replicates of nine per run, with one run per day over five days per reagent lot, yielding a minimum of 40 replicates per sample per reagent lot. Commercial quality controls were run in duplicate each day to confirm that the systems were in control. A variance components model was used to estimate the within run and within laboratory (total) %CV for each sample on each instrument and reagent lot combination. A log-log quadratic precision profile model was fitted to within-laboratory (total) %CV versus observed sample mean. The fitted precision profile was used to calculate the 20% CV LoQ. When the fitted precision profile remains below the 20% CV threshold throughout the range of samples tested, the LoQ is conservatively estimated as the minimum observed mean concentration across the samples. The maximum observed LoQ is taken as the reported value for the measurement procedure. The acceptance criteria were a 20% within-laboratory CV at or below the following concentrations: IP-10 ≤ 100 pg/mL, TRAIL ≤ 15 pg/mL, and CRP ≤ 1.0 mg/L. It should be noted that for CRP, the samples tested were not sufficiently low in concentration to allow a

meaningful fit of the precision profile model; therefore, the lowest measured sample concentration was reported as a conservative LoQ estimate for both platforms and specimen types. All analytes met the acceptance criteria on both platforms. The determined LoQ values are summarized in Table 13 and Table 14.

Table 4. Limit of Quantitation per analyte per instrument

Limit of Quantitation (LoQ) ≤ 20% within- lab CV	Maximum Observed Result	Design Criteria
TRAIL	for DxI 9000 TRAIL Plasma 3 pg/mL	< 15 pg/mL
	for DxI 9000 TRAIL Serum 2 pg/mL	
	for Access 2 TRAIL Plasma 2 pg/mL	
	for Access 2 TRAIL Serum 2 pg/mL	
IP-10	for DxI 9000 IP-10 Plasma 4 pg/mL	≤100 pg/mL
	for DxI 9000 IP-10 Serum 1 pg/mL	
	for Access 2 IP-10 Plasma 3 pg/mL	
	for Access 2 IP-10 Serum 1 pg/mL	
CRP	for DxI 9000 CRP Plasma 0.07 mg/L	≤1.0 mg/L
	for DxI 9000 CRP Serum 0.03 mg/L	
	for Access 2 CRP Plasma 0.07 mg/L	
	for Access 2 CRP Serum 0.02 mg/L	

Table 5 Limit of Quantitation across all platforms and matrices

Limit of Quantitation (LoQ) ≤ 20% within- lab CV	Maximum Observed Result	Design Criteria
TRAIL	3 pg/mL	≤ 15 pg/mL
IP-10	4 pg/mL	≤ 100 pg/mL
CRP	0.07 mg/L	≤1.0 mg/L

vi. Traceability, Stability, Expected Values (Controls, Calibrators, or Methods):

Calibration Interval/Open Pack Stability Study

A study was conducted to verify the reagent open pack stability and calibration interval stability of the Access MeMed BV assay under the recommended open pack storage conditions (2–10°C). Testing was performed according to recommendations in CLSI EP25-Ed2, *Evaluation of Stability of In Vitro Medical Laboratory Test Diagnostic Reagent.* For each assay analyte, five conditions were evaluated across three unique reagent pack lots. Two lots were stored under recommended pack storage conditions for the duration of the study. The third lot was divided into three portions prior to testing: one portion was subjected to simulated summer shipping conditions, one portion was subjected to simulated winter shipping conditions, and one portion remained under standard storage conditions without any simulated shipping stress. Twelve serum samples were tested at 10 time points, spanning from baseline (t=0) through Day 28 and Day 31. A single calibration curve was established at baseline and held constant throughout the study. Mean doses were calculated at each time point and analyzed by linear regression to predict percent drift from baseline at Day 28 and Day 31. Acceptance criteria

required a calibration interval and open pack stability of at least 28 days for all three analytes, with drift limits of ±7% for CRP and TRAIL and ±10% for IP-10.

All three analytes passed their respective drift criteria at both Day 28 and Day 31, across both instrument platforms and all reagent lot conditions, including packs subjected to simulated shipping stress. The data supports a 28-day Open Pack and Calibration Interval Stability claim for the Access MeMed BV assay on the Access 2 Immunoassay System and the DxI 9000 Access Immunoassay Analyzer.

Sample Stability

Several studies were performed to assess the stability of serum and lithium heparin plasma samples exposed to different storage conditions.

a. Refrigerated Sample Storage Stability (2°C–10°C)

A study was conducted to evaluate the stability of serum and lithium heparin plasma samples stored under refrigerated conditions for use with the Access MeMed BV assay. Seven serum and six lithium heparin plasma samples, with analyte concentrations spanning the analytical measuring range of the assay, were tested across four Access 2 Immunoassay Systems using one reagent pack lot per analyte and one calibrator lot. Samples were aliquoted and stored at 2°C to 10°C. One aliquot per sample was tested immediately after collection to establish baseline values (t=0), with subsequent testing performed at 2, 4, and 5 hours. Each individual sample was tested in triplicate on the same instrument. Two quality controls were run each day to verify instrument performance. Stability was assessed by comparing the mean BV Score at each time point against the baseline value. Results were evaluated against an acceptance criterion of ±12.5 BV Score units from baseline. Study results are summarized in Table 15 below. All samples met the acceptance criterion through the four-hour time point, supporting a refrigerated sample storage stability claim of up to four hours at 2°C–10°C.

Table 15: Sample Stability Study Results

Temperature (2°C – 10°C)	Mean score difference between T0 and storage conditions		
	2 hr	4 hr	5 hr
Serum (Score)	1.8	2.0	3.1
Plasma (Score)	1.0	1.7	1.4

*b. Room temperature Sample Storage Stability (*20°C to 25°C*)*

A sample stability study was conducted to evaluate the handling and storage of patient samples for the Access MeMed BV assay at room temperature (20°C to 25°C). Two sample matrix types were evaluated: serum and lithium heparin plasma. Twelve samples with analyte concentrations spanning the analytical measuring range of the assay were tested — six serum samples (four native, two antigen-supplemented) and six lithium heparin plasma samples (four native, two antigen-supplemented). Sample stability was assessed at 25°C (the upper limit of the room temperature claim) at three time points: 1 hour, 2 hours, and 3 hours. One aliquot from each sample was tested immediately to establish a mean baseline BV Score at time zero (T0); remaining aliquots were stored at 25°C for each pre-determined duration before testing. The study was conducted on four Access 2 Immunoassay Systems using one reagent pack lot per analyte and one calibrator lot. Each unique sample was tested across all time points on the same instrument to minimize inter-instrument variability. Two quality control samples were

run in duplicate each day to confirm that the systems were in control. For each sample at each time point, the mean of the two BV Score values was calculated and compared to the T0 baseline to determine the score difference. The mean score difference from baseline was then calculated across all samples at each time point and compared against the acceptance criterion of a mean score difference within ±12.5 score units. The acceptance criterion for sample stability was ≥2 hours at 20°C to 25°C. Both serum and lithium heparin plasma samples met the ±12.5 score unit acceptance criterion at all three time points tested. Mean score differences from baseline are summarized in Table 16. All values remained well within the ±12.5 score unit limit through 3 hours, supporting the product claim that patient samples, in both serum and lithium heparin plasma matrices can be stored for up to 2 hours at room temperature (20°C to 25°C).

Table 16. Room Temperature Sample Stability Study Results

Room Temperature (20-25°C)	Mean score difference between T0 and storage conditions		
	1 hr	2 hr	3 hr
Serum	0.5	1.9	3.7
Lithium Heparin Plasma	0.7	0.8	2.0

c. Short-Term Frozen Sample Stability (−15°C to −30°C)

A study was conducted to evaluate the stability of serum and lithium heparin plasma samples stored under short-term frozen conditions for use with the Access MeMed BV assay. Thirteen samples, seven serum (4 native, 3 antigen-supplemented) and six lithium heparin plasma (4 native, 2 antigen-supplemented), with analyte concentrations spanning the analytical measuring range of the assay were evaluated. Each sample was aliquoted and stored at −15°C, then tested in replicates of two at predefined time points using one reagent pack lot per analyte and one calibrator lot. All aliquots from each individual sample were analyzed on the same Access 2 Immunoassay System, with three instruments used across the overall study. Two quality controls were run in duplicate each day. Stability was assessed by calculating the mean BV Score difference from baseline across all samples at each time point and comparing the results against an acceptance criterion of ±12.5 BV Score units from baseline. All samples met the acceptance criterion through the final time point, supporting a short-term frozen sample storage stability claim of at least 30 days at −15°C to −30°C for both serum and lithium heparin plasma specimen types (Table 17).

Table 6. Frozen Sample Stability Results Summary

Frozen Storage (-15°C to -30°C)	Mean Score Difference Between T0 and Storage Conditions								
	2 days	3 days	7 days	10 days	20 days	22 days	24 days	30 days	34 days
Serum*	1.1	0.5	4.3	2.5	3.1	3.9	4.8	3.2	4.3
Lithium Heparin Plasma	2.7	1.4	2.6	2.4	2.7	3.1	3.2	3.0	3.0
Short Term Frozen Temperature (-15°C to -30°C)	Mean Score Difference Between T0 and Storage Conditions								
	5 days	11 days	13 days	15 days	19 days	22 days	25 days	33 days	

Serum*	0.0	3.0	1.3	1.7	1.2	2.0	3.5	2.8	

*Serum samples were split between two studies with different start dates.

d. Long-Term Frozen Sample Storage Stability (−65°C)

A study was conducted to evaluate the long-term stability of samples stored under frozen conditions for use with the Access MeMed BV assay. Seven serum and six lithium heparin plasma samples, with analyte concentrations spanning the analytical measuring range of the assay, were used for this evaluation. Baseline measurements were first established for each sample, after which aliquots were stored at −65°C or below. At predefined time points, aliquots were retrieved and tested in triplicate using one reagent pack lot per analyte and one calibrator lot. All aliquots from each individual sample were analyzed on the same Access 2 Immunoassay System, with two instruments used across the overall study. Two quality controls were run in duplicate each day to confirm that the system was in control. Stability was assessed by calculating the mean BV Score difference from baseline for each sample at each time point and comparing the results against an acceptance criterion of ±12.5 BV Score units from baseline. All samples met the acceptance criterion through the final time point, supporting a long-term frozen sample storage stability claim of up to 282 days at −65°C or below for both serum and lithium heparin plasma specimen types (Table 18).

Table 18. Sample Stability (-65°C) Results Summary

Sample Type	Mean Score Difference from T0				Specification
	T0 (Day 0)	T1 (Day 87)	T2 (Day 189)	T3 (Day 282)	
Serum	0	1.4	-0.7	0.1	+/-12.5
Lithium Heparin Plasma	0	0.9	-1.3	0.7	+/-12.5

e. Freeze/Thaw Stability

A study was conducted to evaluate the effect of freeze-thaw cycling on Access MeMed BV assay using both serum and lithium heparin plasma specimen types. Forty-four samples, twenty-two serum and twenty-two lithium heparin plasma with analyte concentrations spanning the full analytical measuring range of the assay were evaluated. Of the serum samples, 14 were native and 8 were supplemented with antigen; of the lithium heparin plasma samples, 15 were native and 7 were supplemented with antigen. Baseline BV Score measurements (t=0) were established for each sample immediately after collection. Each sample was then aliquoted and frozen at −20°C. Aliquots were subsequently subjected to one or two freeze-thaw cycles, each consisting of thawing at room temperature followed by re-freezing at −20°C. After completion of the respective cycling, each aliquot was tested in duplicate using one reagent pack lot per analyte and one calibrator lot. Three Access 2 Immunoassay Systems were used across the study. All aliquots from each individual sample were analyzed on the same instrument to minimize between-instrument variability. Two quality controls were run in duplicate each day to confirm system performance. The mean BV Score of the two replicates was calculated for each sample and its corresponding aliquots after one and two freeze-thaw cycles. The mean score difference from baseline was then calculated across all samples at each cycle and compared against an acceptance criterion of ±12.5 BV Score units. Both serum and lithium heparin plasma met the acceptance criterion at both time

points, with the two-cycle data serving as one cycle beyond the product claim. These results support a freeze-thaw stability claim of at least one cycle at −20°C for both specimen types.

f. Fresh vs. Frozen Stability

Equivalence between fresh and frozen specimens was established using data from the first freeze-thaw cycle of the freeze-thaw stability study described above. Fresh samples were tested immediately after collection to establish baseline values, then frozen at −20°C, thawed at room temperature, and re-tested in duplicate. The mean BV Score difference from baseline after one freeze-thaw cycle was calculated across all samples and compared against the same acceptance criterion of ±12.5 BV Score units. Results were well within the acceptance criterion for both serum (mean difference: 1.2) and lithium heparin plasma (mean difference: 2.6), demonstrating that fresh and frozen samples produce equivalent results and can be used interchangeably with the Access MeMed BV assay.

vii. Assay Cut-Off:

Not applicable

B Comparison Studies:

i. Method Comparison with Predicate Device:

A clinical validation study for the Access MeMed BV assay was performed by comparing results generated on the Access 2 immunoassay System and the DxI 9000 Immunoassay Analyzer to those obtained using the FDA cleared predicate MeMed BV assay run on the MeMed Key device. Testing was conducted across three external clinical sites. Samples were collected from pediatric and adult patients presenting to the Emergency Department or Urgent Care Center with signs and symptoms consistent with suspected acute bacterial or viral infection. Sample collection was carried out at four enrollment sites and through two external vendors, together representing multiple geographic locations and U.S. demographic diversity. A total of 423 serum samples were collected for this study. The target sample size was divided into two cohorts: a pediatric cohort (>90 days to <18 years of age; target n=30) and an adult cohort (≥18 years of age; target n=214).

The primary analysis evaluated quantitative agreement between the Access MeMed BV assay run on both the Access 2 Immunoassay System and DxI 9000 Access Immunoassay Analyzer and the predicate MeMed Key device. Agreement was assessed for each of the three individual analytes (CRP, IP-10, and TRAIL) as well as the composite BV Score. Weighted Deming regression was applied for the individual analytes, and Deming regression was applied for the BV Score. Both analyses generated slope and intercept estimates with 95% confidence intervals, along with Spearman correlation coefficients (Table 19). Predicted bias was additionally calculated at the four medical decision bin cutoff points (score values of 10, 35, 65, and 90). A secondary analysis assessed method concordance by calculating bin-level percent agreement and non-adjacent bin disagreement rates across the five BV Score interpretation bins. Serum samples spanning the analytical measuring range for each analyte were included: CRP (1–250 mg/L), IP-10 (100–2,000 pg/mL), TRAIL (15–300 pg/mL), and BV Score (0–100). A total of 396 samples were tested on the DxI 9000 Access Immunoassay Analyzer, and 399 samples were tested on the Access 2 Immunoassay System. Samples with results falling outside the analytical measuring range for a given analyte were excluded from

that analyte's individual regression analysis but were retained in the BV Score analysis. Both the Access 2 Immunoassay System and DxI 9000 Access Immunoassay Analyzer met all pre-specified acceptance criteria for CRP, IP-10, TRAIL, and the BV Score. Spearman correlation coefficients exceeded 0.95 for all analytes on both platforms, and absolute biases at all defined bin cutoff points remained within acceptable limits (Table 19, Table 20, Table 22, Table 23). Method concordance results similarly demonstrated strong overall agreement between both Access platforms and the predicate MeMed Key device (Table 21 and Table 24).

Table 19. Predicate Comparison: Linear Regression Analysis of Access MeMed BV Analyte and Score Values on the DxI 9000 Access Immunoassay Analyzer

Analyte	N	Range	Slope (95% CI)	Y-intercept (95% CI)	R (Spearman)	R2 (Spearman)
TRAIL	358	15-292 pg/mL	1.13 (1.09 to 1.17)	-7.24 (-9.37 to -5.12)	0.97	0.94
IP-10	235	104-1986 pg/mL	1.09 (1.05 to 1.13)	12.34 (3.08 to 21.60)	0.98	0.95
CRP	346	1-240 mg/L	1.08 (1.06 to 1.11)	-0.18 (-0.30 to -0.06)	0.99	0.98
Score	396	0-100	1.03 (1.01 to 1.04)	-0.27 (-0.84 to 0.30)	0.98	0.97

Table 20. Predicate Comparison: Bias at Bin Cutoff for Access MeMed BV Score on the DxI 9000 Access Immunoassay Analyzer

Bin Cutoff	N
10	0.02
35	0.62
65	1.39
90	2.03

Table 7. Bin Concordance with the Predicate for the Access MeMed BV assay on the DxI 9000 Access Immunoassay Analyzer

Access MeMed BV Score Interpretation	MeMed BV Score Interpretation				
	High likelihood of viral infection (or other non-bacterial etiology)	Moderate likelihood of viral infection (or other non-bacterial etiology)	Equivocal	Moderate likelihood of bacterial infection (or co-infection)	High likelihood of bacterial infection (or co-infection)
High likelihood of viral infection(or other non-	156	14	0	0	0

bacterial etiology)					
Moderate likelihood of viral infection (or other non-bacterial etiology)	7	68	8	0	0
Equivocal	0	13	31	9	1
Moderate likelihood of bacterial infection (or co-infection)	0	0	6	24	1
High likelihood of bacterial infection (or co-infection)	0	0	0	10	48
TOTAL	163	95	45	43	50
Bin agreement	95.7% (156/163)	71.6% (68/95)	68.9% (31/45)	55.8% (24/43)	96.0% (48/50)
Overall Agreement	82.6% (327/396) 95% CI: 78.5% - 86%				
Overall Adjacent Bin (±1 bin) Agreement	99.7% (395/396) 95% CI: 98.6% - 100%				

Table 22. Predicate Comparison: Linear Regression Analysis of Access MeMed BV Analyte and Score Values on the Access 2 Immunoassay System analyzer

Analyte	N	Range	Slope (95% CI)	Y-intercept (95% CI)	R (Spearman)	R2 (Spearman)
TRAIL	359	17-300 pg/mL	1.13 (1.09 to 1.16)	-6.07 (-8.07 to -4.07)	0.97	0.94
IP-10	237	106-1998 pg/mL	1.15 (1.11 to 1.19)	2.19 (-6.93 to 11.31)	0.98	0.95
CRP	351	1-236 mg/L	1.07 (1.04 to 1.10)	-0.11 (-0.21 to -0.00)	0.99	0.98
Score	399	0-100	1.02 (1.00 to 1.03)	-0.82 (-1.40 to -0.24)	0.98	0.96

Table 23. Predicate Comparison: Bias at Bin Cutoff for Access MeMed BV Score on the Access 2 Immunoassay System analyzer

Bin Cutoff	N
10	0.67
35	0.27

65	0.21
90	0.60

Table 8. Method Concordance on Access 2 Immunoassay System

Access MeMed BV Score Interpretation	MeMed BV Score Interpretation				
	High likelihood of viral infection (or other non-bacterial etiology)	**Moderate likelihood of viral infection (or other non-bacterial etiology)**	**Equivocal**	**Moderate likelihood of bacterial infection (or co-infection)**	**High likelihood of bacterial infection (or co-infection)**
High likelihood of viral infection (or other non-bacterial etiology)	157	17	0	0	0
Moderate likelihood of viral infection (or other non-bacterial etiology)	7	68	11	0	0
Equivocal	0	10	30	7	0
Moderate likelihood of bacterial infection (or co-infection)	0	0	4	29	2
High likelihood of bacterial infection (or co-infection)	0	0	0	7	50
TOTAL	164	95	45	43	52
Bin Agreement	95.7% (157/164)	71.6% (68/95)	66.7% (30/45)	67.4% (29/43)	96.2% (50/52)
Overall Agreement	83.7% (334/399) 95% CI: 79.8% - 87.0%				
Overall Adjacent Bin (±1 bin) Agreement	100.0% (399/399) 95% CI: 99.0% - 100.0%				

Overall, these results demonstrate equivalent performance between the Access MeMed BV test and the predicate device

ii. Sample Comparison:

A sample matrix equivalency study was performed to evaluate the comparability of serum and lithium heparin plasma for use with the Access MeMed BV assay on the Access 2 Immunoassay System and DxI 9000 Access Immunoassay Analyzer. The study followed a standardized protocol based on the recommendations within CLSI EP35-ED1 and was run on both analyzers.

Paired serum and plasma samples were collected from the same patients and tested side by side. 53 sample pairs were tested on one DxI 9000 Access Immunoassay Analyzer. 60 sample pairs were tested on two Access 2 Immunoassay Systems; each sample was tested in triplicate. One reagent lot per analyte per platform and one calibrator lot were used. Quality controls were run in duplicate each day to confirm system performance. Results were analyzed using Passing-Bablok regression, with regression slope and intercept values and corresponding 95% confidence intervals calculated for each platform. The acceptance criterion was a Passing-Bablok slope within 1.00 ± 0.10 for the BV Score when lithium heparin plasma was compared to serum. Both platforms met the acceptance criterion, demonstrating that lithium heparin plasma is equivalent to serum for use with the Access MeMed BV assay on the Access 2 Immunoassay System and DxI 9000 Access Immunoassay Analyzer.

C Clinical Studies:

i. Clinical Sensitivity:

See Method Comparison Section Above.

ii. Clinical Specificity:

See Method Comparison Section Above.

iii. Clinical Cut-Off

See Method Comparison Section Above.

iv. Other Clinical Supportive Data (When 1. and 2. Are Not Applicable):

Not applicable.

D Expected Values/Reference Range:

The reference interval of the Access MeMed BV Assay was established through a prospective, single-site reference interval study conducted in accordance with recommendations contained in CLSI EP28-A3c, *Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory, 3rd Edition*. Testing was performed at one study site between February 25, 2025, and March 14, 2025, using both the Access 2 Immunoassay System and DxI 9000 Access Immunoassay Analyzer. The study was designed to assess the expected range of BV Score values in an apparently healthy adult population. Reference interval limits were defined as the 2.5th and 97.5th percentiles of the score distribution, estimated using a nonparametric method without assumption of a specific underlying data distribution. A total of 224 serum samples from apparently healthy adult individuals were tested. Subjects were classified as apparently healthy based on self-reported medical history and predefined inclusion and exclusion criteria. Serum samples were obtained from an approved commercial vendor and from Beckman Coulter's internal blood donor program. Samples were shipped frozen and tested under a single calibration and quality control reagent lot on each platform.

The study population included adult males and females, representative of U.S. demographics with respect to age, sex, and race. The demographic characteristics of this reference population categorized by MeMed BV score bin are summarized in Table 25.

Table 9. Access MeMed BV Score Reference Range Study Demographics

Demographics		MeMed BV Score Band				
		0 ≤ score ≤ 10	10 < score < 35	35 ≤ score ≤ 65	65 < score < 90	90 ≤ score ≤ 100
Sex						
Female	N	31	46	28	11	0
	%	26.72	39.66	24.14	9.48	0
Male	N	28	55	21	1	1
	%	26.42	51.89	19.81	0.94	0.94
Unknown	N	1	1	0	0	0
	%	50.00	50.00	0	0	0
Age						
Age	Median	49	45	48	39	62
	IQR	23.50	21.00	23.00	30.50	0.00
Race*						
American Indian / Alaska Native	N	0	0	1	0	0
	%	0	0	100.00	0	0
Asian / Pacific Islander	N	1	1	1	1	0
	%	25.00	25.00	25.00	25.00	0
White	N	33	55	20	7	1
	%	28.45	47.41	17.24	6.03	0.86
Other, Mixed	N	1	0	0	0	0
	%	100.00	0	0	0	0
Unknown	N	0	2	0	0	0
	%	0	100.00	0	0	0
Black / African American	N	25	44	27	4	0
	%	11.16	19.64	12.05	1.79	0

* Hispanic is defined as an ethnicity rather than a race, therefore, not present in this table.

The Median, 2.5th, and 97.5th percentile reference interval of the MeMed Score in the reference population, measured by the Access MeMed BV assay is shown in Table 26 and Table 27.

Table 10. Access 2 MeMed BV Reference Interval (Apparently Healthy Adults; N = 224)

Sample Statistic	Percentile	Access MeMed BV Score	90% Confidence Interval
Median = 15	2.5th	2	[1 – 3]

Sample Statistic	Percentile	Access MeMed BV Score	90% Confidence Interval
	97.5th	72	[61 – 87]

Table 11. DxI 9000 MeMed BV Reference Interval (Apparently Healthy Adults; N = 224)

Sample Statistic	Percentile	Access MeMed BV Score	90% Confidence Interval
Median = 21	2.5th	2	[1 – 4]
	97.5th	77	[67 – 87]

E Other Supportive Instrument Performance Characteristics Data:

Not applicable

VIII Proposed Labeling:

The labeling supports the finding of substantial equivalence for this device.

IX Conclusion:

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