

High-Sensitivity* Cardiac Troponin I and T Assay Analytical Characteristics Designated by Manufacturer

IFCC Committee on Clinical Applications of Cardiac Bio-Markers (C-CB) v062024

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
Abbott/Alinity i systems/ Alinity i STAT High Sensitive Troponin-I; commercial- OUS	1.0	1.6	Overall: 4.0% F: 5.3% M: 3.5%	1.3	4.7	Overall n =1531 21-75y F: n=764 21-75y M: n=766 21-73y	Overall: 26.2 F: 15.6 M: 34.2	Lithium heparin (with/without separator), K2 EDTA, K3 EDTA, serum (with/without separator), serum with thrombin-based clot activator	Overall: 85% F: 78% M: 92%	Robust	NP	NP	OUS Only G71275R02 January 2017
Abbott/ ARCHITECT i systems/ ARCHITECT STAT High Sensitive Troponin-I; commercial-US	0.9	1.7	Overall: 4.3% F: 5.0% M: 4.1%	2.3	4.6	Overall n =1531 21-75y F: n=764 21-75y M: n=766 21-73y	Overall: 28 F: 17 M: 35	K2 EDTA	Overall: 85% F: 78% M: 92%	Robust	NP	NP	US FDA 510k September 2019
Abbott/ ARCHITECT i systems/ ARCHITECT STAT High Sensitive Troponin-I; commercial	0.7 to 1.3	1.1	Overall: 4.0% F: 5.3% M: 3.5%	1.3	4.7	Overall n =1531 21-75y F: n=764 21-75y M: n=766 21-73y	Overall: 26.2 F: 15.6 M: 34.2	Lithium heparin (with/without separator), K2 EDTA, K3 EDTA, serum (with/without separator), serum with thrombin-based clot activator	Overall: 85% F: 78% M: 92%	Robust	NP	NP	OUS only: G5-6634/R01 April 2015
Beckman Coulter/ Access 2, DxI/Access hsTnI; commercial – OUS	0.0 to 1.7	1.0 to 2.3	Overall: 3.7% F: 4.2% M: 3.6%	1.0 to 2.3	5.6	Overall n=1089 21-99y F: n=595 M: n=494	Overall: 17.5 F: 11.6 M: 19.8	Li-Heparin plasma, EDTA, serum	> 50%	Non- Parametric	Rec trop complex at cTnI levels 30.7, 144, 567, 2293, 9280 and 27027 ng/L	NP	OUS B52699/ C11140 Sept 2017

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
Beckman Coulter/ Access 2, /Access hsTnl; commercial – U.S.: LiHep plasma	0.0 to 0.8	1.0 to 2.0	Overall: 3.7% F: 4.2% M: 3.6%	0.9 to 2.3	4.1	Overall n=1089 21-99y F: 595 M: 494	Overall: 17.5 F: 11.6 M: 19.8	Heparin plasma	> 50%	Non- Parametric	Rec trop complex at cTnl levels 30.7, 144, 567, 2293, 9280 and 27027 ng/L	NP	US B52699/ C09449 June 2018
Beckman Coulter/ Access 2, /Access hsTnl; commercial – U.S.: Serum	0.0 to 0.8	1.0 to 2.0	Overall: 6.0% F: 6.9% M: 5.8%	0.9 to 2.3	4.1	Overall n=1088 21-99y F: 595 M: 493	Overall: 18.2 F: 11.8 M: 19.7	Serum	> 50%	Non- Parametric	Rec trop complex at cTnl levels 30.7, 144, 567, 2293, 9280 and 27027 ng/L	NP	US B52699/ C09449 June 2018
Beckman Coulter/ Dxl, Access hsTnl; commercial – U.S.: LiHep plasma	0.0 to 1.7	1.5 to 2.3	Overall: 5.2% F: 5.6% M: 5.0%	1.2 to 2.3	5.6	Overall n=1088 21-99y F: 593 M: 495	Overall: 17.9 F: 14.9 M: 19.8	Heparin plasma	> 50%	Non- Parametric	Rec trop complex at cTnl levels 30.7, 144, 567, 2293, 9280 and 27027 ng/L	NP	US B52699/ C09448 June 2018
Beckman Coulter/ Dxl, Access hsTnl; commercial – U.S.: Serum	0.0 to 1.7	1.5 to 2.3	Overall: 6.2% F: 6.5% M: 6.1%	1.2 to 2.3	5.6	Overall n=1085 21-99y F: 592 M: 493	Overall: 18.1 F: 13.6 M: 19.8	Serum	> 50%	Non- Parametric	Rec trop complex at cTnl levels 30.7, 144, 567, 2293, 9280 and 27027 ng/L	NP	US B52699/ C09448 June 2018
bioMérieux VIDAS High Sensitive Troponin I; commercial	1.9	3.2	7.0%	4.9	NP	Overall n = 815 41-80y F: 368 41-80y M: 447 41-80y	Overall: 19 F: 11 M: 25	Serum or heparin plasma	NP	NP	NP	C: 41-49, 24-40 D: 87-95	France Dec 23rd 2015

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
ET Healthcare Pylon hsTnl assay; China FDA approved	0.8	1.2 – 1.4	10%	2	10	Overall n=863 15-91y F: 438 M: 425 (AACC Universal Sample Bank)	Overall: 27 F: 21 M: 27	EDTA plasma, EDTA whole blood, serum	Overall: 91% F: 89% M: 94%	Non- Parametric	NP	C: 27-40 D: 41-49	China, 2018
ET Healthcare Pylon hsTnT; research	0.4	0.8	4%	1	4	Overall n=863 15-91y F: 438 M: 425 (AACC Universal Sample Bank)	Overall: 13 F: 13 M: 14	EDTA whole blood, EDTA plasma, serum	Overall: 94% F: 93% M: 97%	Non- Parametric	NP	C: 119-138, D: 132-151	China, 2018
Fujirebio Lumipulse G G1200 and G600II hsTnl	1.2	2.1	≤4.6%	NP	7.3	Overall n=1018, 18-90 years F: 428 M: 590	Overall: 28.6 F: 22.4 M: 32.9 Serum Overall: 26.9 F: 21.4 M: 29.4 Li-Hep plasma Overall: 29.6 F: 27.8 M: 32.8	Red top serum, serum separator tube, rapid clotting tubes; Disodium EDTA*, Dipotassium EDTA*, Lithium heparin, Sodium heparin, Sodium Citrate, PST with lithium heparin	Overall: 68.3% Serum: 68.1% Li Heparin Plasma: 65.0%	Robust	NP	NP	English FRI0030, Feb 2017 Ver.01

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
LSI Medience PATHFAST cTnI; commercial	NP	1	< 6%	2	3.1	Overall n =474 18-86y F: 236 M: 238	Overall: 15.46 M: 16.91 F: 11.46	Heparin-Na, heparin-Li or EDTA whole blood or plasma	Overall: 76.3%	Non- Parametric	Human cardiac I- T-C complex	C: 41-49 D: 71-116, 163-209	WW except US & Japan: Ver.6, Apr.2021
LSI Medience PATHFAST hs- cTnI /PATHFAST cTnI-II	1.23	2.33	6.1%	4	15	Overall n=734 Age >18 F: 352 M: 382	Overall: 27.9 F: 20.3 M: 29.7	Heparin-Na, heparin-Li or EDTA whole blood or plasma	Total: 66.3% F: 52.8% M: 78.8%	Non- Parametric	Human cardiac I- T-C complex	C:41-49 D: 71-116, 163-209	hs-cTnI : WW except US Ver.3, Apr. 2021
Maccura/ i9000, i8000, i6000, i3000, i3000L, i3000S, i1000, i1000L, i1000S, i820, i800/High- Sensitive Troponin I	0.8	1.5	Overall: 3.4% F: 4.1% M: 3.7%	0.5	3.5	Overall N=1672 1-92 y F: 896 1-90y M: 776 2-92y	Overall: 26.4 F: 19.8 M: 33.5	Serum, Plasma (Heparin or EDTA)	Overall: 89.5% F:88.2% M: 91.0%	Non- parametric	NP	NP	CE-marked 2022 China, 2023
Maccura/ i 9000, i8000, i6000, i300, i3000L, i3000, i1000, i1000, i1000S, i820, i800/High- Sensitive Troponin T	1.0	1.6	Overall: 5.7% F: 6.6% M: 5.4%	0.9	4.0	Overall n =1903 1-96y F: 1041 1-91y M: 862 1-96y	Overall: 14.1 F: 10.1 M: 15.5	Serum, Plasma (Heparin or EDTA)	Overall: 89.9% F: 84.3% M: 96.5%	Non- parametric	NP	NP	CE-marked 2022 China, 2023

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
Mindray/ CL- series/ hs-cTnI	0.1 to 0.5	0.5 to 0.7	Overall: 3.7% F: 2.6% M:1.9%	0.9-1.3	2.0-2.3	Overall N=832 21-87y F: 407 21-87 y M:424 21-83y	Overall: 24.2 F: 15.3 M: 31.3	Serum; Plasma (Na Heparin or Li Heparin)	Overall 93% F: 87% M; 99%	Non- parametric	Re- combinant Cardiac Troponin I-C	C: 24-40, 41- 49 D: cTn complex	CE-marked, 2023 China, 2023
QuidelOrtho/ VITROS/ hsTroponin I; commercial	0.14 to 0.51	0.39 to 0.86	<10%	1.23	1.99	Overall n =952 22-91y F: 486 M: 466	Serum Overall: 11 F: 9 M: 12 LiHep Plasma Overall: 11 F: 9 M: 13	Serum; Lithium Heparin Plasma	>50%	Non- Parametric	NP	C: 87-91 D: 24-40, 41-49	CE Mark: WW except US March 2019
QuidelOrtho/TRI AGE/ Quidel TriageTrue hs- cTnI	0.4 (plasma) 0.5-0.8 (whole blood)	0.7 – 1.6 (plasma) 1.5-1.9 (whole blood)	5.0 – 5.9% at 21 ng/L (plasma) 5.9 – 6.5% at 22 ng/L (whole blood)	2.1 – 3.6 (plasma) 2.8 (whole blood)	4.4 – 8.4 (plasma) 5.8 – 6.2 (whole blood)	Overall n = 789 F: 391 M: 398	Overall: 20.5 F: 14.4 M: 25.7	EDTA whole blood or plasma	Overall: ≥ 50%	NP	NP	NP	hs-cTnI: WW except US April 2020
Roche/ cobas e601, e602, e411/cTnT-hs 18-min; commercial	2.53; (1.58 for e411)	3.16; (2.54 for e411)	<10%	1.72 (4.01 for e411)	3.94 (7.45 for e411)	Overall n=533 20-71y F: 49.7%	Overall:14 F: 9 M:17	Serum, plasma: EDTA, heparin	Overall: 57.4%	NP	NP	C: 125-131 D: 136-147	EU (2022)
Roche/ cobas e601, e602, e411/ cTnT-hs STAT; commercial	2.36; 2.14 for e411	2.85; 3.25 for e411	<10%	1.21 (2.88 for e411)	2.92 (6.74 for e411)	Overall n =533 20-71y F: 49.7%	Overall: 14 F: 9 M: 17	Serum, plasma: EDTA, heparin	Overall: 57.4%	NP	NP	C: 125-131 D: 136-147	EU (2022)

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
Roche/ cobas e801/ e402 cTnT-hs 18-min and 9-min; commercial	18 min: 2.21 9 min: 1.91	18 min: 2.97 9 min: 2.72	<10%	18 min: 2.30 9 min: 1.00	18 min: 5.40 9 min: 3.22	Overall n =533 20-71y F: 49.7%	Overall: 14 F: 9 M: 17	Serum, plasma: EDTA, heparin	Overall: 57.4%	NP	NP	C: 125-131 D: 136-147	EU (2022)
Roche/ cobas e601, e602, e411 cTnT Gen 5 STAT; commercial	2.5; 3 for e411	3; 5 for e411	<10%	6	11	Overall n =1301 21-89y F: 50.4%	Overall: 19 F: 14 M: 22	Plasma heparin	Overall: 55.1%	NP	NP	C: 125-131 D: 136-147	USA (2022)
Roche / cobas e801/ e402; cTnT Gen 5 - 9 min; commercial	2.5	3	<10%	6	11	Overall n =1301 21-89y F: 50.4%	Overall: 19 F: 14 M: 22	Plasma heparin	Overall: 55.1%	NP	NP	C: 125-131 D: 136-147	USA (2022)
Siemens ATELLICA High- Sensitivity TnI (TnIH), US & OUS; commercial#	0.50	1.6	<4.0%	2.50	<6.0	Overall n = 2001 22-91y F: 1007 M: 994	Overall: 45.4 F: 38.6 M: 53.5	Li Hep Serum	Overall: 75% F: 62% M: 89%	Non- Parametric	NP	C: 41-50, 171-190 D: 29-34	CE-marked March 2017 FDA 510k July 2018
Siemens ATELLICA VTLi hs-cTnI#	0.55	1.2 (plasma) 1.6 (whole blood)	6.5% (plasma) 6.1% (whole blood)	2.1 (plasma) 3.7 (whole blood)	6.7 (plasma) 8.9 (whole blood)	Overall n = 694 18-91y F: 331 M: 363	Overall: 22.9 F: 18.5 M: 27.1	Li Hep whole blood and plasma, capillary blood	Overall: 84% F: 80% M: 87%	Non- Parametric	NP	C: 41-49 D: 2 Abs in range 20-100 cTnC Ab	CE-marked March 2021
Siemens ADVIA Centaur XP/ XPT/CP High-Sensitivity TnI (TNIH), US & OUS; commercial*#	0.50	1.6	<4.9%	2.50	<6.0	Overall n = 1990 22-91y F: 1006 M: 984	Overall: 46.5 F: 39.6 M: 58.0	Li Hep Serum	Overall: 72% F: 57% M: 86%	Non- Parametric	NP	C: 41-50, 171-190 D: 29-34	CE-marked March 2017 / *March 2021 FDA 510k July 2018
Siemens Dimension VISTA High Sensitivity TnI (TNIH), OUS; commercial#	1.0	2.0	<5.0%	3.0	10.0	Overall n = 2021 22-91y F: 1017 M: 1004	Overall: 58.9 F: 53.7 M: 78.5	Li Hep Serum (OUS only)	Overall: 81.8% F: NP M: NP	Non- Parametric	NP	D: 41-50 171-190 C: 29-34	CE-marked 2017 FDA 510k March 2019

Company/ Platform/ Assay	LoB (ng/L)	LoD (ng/L)	% CV at 99 th Percentile	Conc at 20% CV (ng/L)	Conc at 10% CV (ng/L)	Reference Population N, Ages, Sex	99 th Percentile Overall M / F (ng/L)	Specimen Type	Percent Normals Measured ≥ LoD Overall M / F	Statistic Used to Calc 99 th Percentile	Calibrator material	Epitopes Recognized by Antibodies	Country of Package Insert: Version Date
Siemens Dimension ExL High Sensitivity Tnl (TNIH), OUS; commercial [#]	1.1	2.7	<5.0%	4.0	12.0	Overall n = 2020 22-91y F: 1017 M: 1003	Overall: 60.4 F: 51.4 M: 76.2	Li Hep Serum (OUS only)	Overall: 51.5% F: NP M: NP	Non- Parametric	NP	D: 41-50 171-190 C: 29-34	CE-marked 2017 FDA 510k May 2019
Tosoh CL AIA- PACK cTnl; commercial	NP	1.61	NP	2.3	5.6	Overall n = 328 Asian/ Caucasian	Overall: ≤ 24 (Asian) ≤ 31 (Caucasian)	Li Hep, EDTA Serum	NP	NP	NP	NP	CE-marked EU CL-CTNI- 020118 For use in Europe and Asia

LoB, limit of blank; LoD, limit of detection; NP, not provided; C, capture antibody; D, detection antibody; M, male, F, female; Conc, concentration; WW, worldwide; OUS, outside United States; RCV, reference change value. All data have been listed as provided by the manufacturer. *Please note manufacturers may have submitted assays they claim to be 'high sensitivity' that do not meet the IFCC requirements of: a) ≤10% CV at the 99th percentile and b) ≥ 50% measurable concentrations ≥ LoD for both males AND females. [#] Disclaimer: The products/features mentioned herein are not commercially available in all countries. Their future availability cannot be guaranteed.