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Corrigendum-II

Bihar Medical Services and Infrastructure Corporation Limited (BMSICL) had invited E-Bids from the interested parties for Procurement, Rate contract, Supply, Installation of Medical Equipment vide Tender No.-BMSICL/2025-26/ME-400. After publishing corrigendum-1 regarding amendment in technical specification for this tender, representation of certain bidders were received which were discussed and deliberated on by the experts. On the basis of their recommendations certain amendments in the technical specification of the equipment have been made which are annexed as **Annexure-I** of this corrigendum.

Sd/-

GM (Procurement)

BMSICL

Annexure-1

1. Name of Equipment:- CARDIAC CATH LAB Machine		
Sl. No	Technical Specification After Amendment	After Re-Amendment
1	(I) C-ARM	
2	1. The C-Arm should be multidirectional high speed giving free access to the patient.	No Change
3	2. The C-Arm should have both right and left positioning capabilities essential for some of the pace maker procedures.	No Change
4	3. Variable speed of at least 15 deg/sec or more	No Change
5	4. Should have full body coverage	No Change
6	5. The C-Arm should have parking facility without hindrance to the patients.	No Change
7	6. The Gantry Should be Ceiling or Floor Mounted	No Change
8	7 Facility for motorized rotation of stand from the floor base/ceiling pivot by +/-80 degrees for improved workflow and for ease of operation left side motorized right side manual/motorized of the patient in addition to zero degree normal head end position.	No Change
9	(II) X.RAY GENERATOR	
10	1. Generator should be of latest technology with high frequency type with at least 100kW output.	No Change
11	2. X Ray tube with noise less operation with high Anode Heat Storage Capacity to support long interventional procedures without interruption.	No Change
12	3. X.ray generator should be of high frequency X.ray generator with centralized system control with max power rating 100 KW	No Change
13	4. The X.ray generator should be able to deliver up to 1000 mA.	No Change
14	5. The X.ray generator should be able to support pulsed fluoroscopy high contrast fluoroscopy and normal fluoroscopy as standard.	No Change
15	6. System should have automatic dose correction.	No Change
16	7. Cooling rate or heat dissipation in kW should be at least 2900 W .Higher will be preferred	No Change
17	8. The generator should be able to expose at 30 Hz/sec	No Change
18	9. should have grid switching and latest radiation reducing features like CARE & CLEAR /CLARITY /AUTORIGHT/ASPIRE or equivalent	No Change
19	10. X.ray tube –heat storage capacity – 3.7 mHu or above	No Change
20	11. Collimeter should have facility for copper pre filtration and dose measurement chamber in order to display the dose on the monitor in the lab.	No Change
21	12. RAO/LAO angle should be +/-105 degree & Crenial-caudial movement should be +/- 45 degree	No Change
22	(III) DIGITAL CARDIAC IMAGING SYSTEM	

23	1. High Resolution digital imaging system with high quality image display, DICOM connectivity.	No Change
24	2. Should have facility for rotational angiography.	No Change
25	3. The system should have the facility to perform live online and real.time DSA.	No Change
26	4. Should have capability of frame speed .6/7.5/12.5/15/25/30 fps.	No Change
27	5. Should have facility for rotational angiography.	No Change
28	6. Online DSA should be performed from examination room itself.	No Change
29	7. The system should have image storage level of minimum 100,000 images in 1Kx1K matrix on the main system disk.	No Change
30	8. The system should support acquisitions and display in high.resolution 1024x1024x12 bit matrix at 12,5f/sec, 25f/sec.	No Change
31	9. The system should have complete coronary analysis (QCA) programmed to be, which is clinically validated with control from patient tableside in the examination room.	No Change
32	10.Image Harmonization feature or s/w for improved image quality should be quoted as standard	No Change
33	(IV) Image Display Monitor	
34	1. Should have latest Applications for stent enhancement clear stent Dynamic/stent vessel viz or equivalent stent enhancement for sequentially and separately visualization of stent and vessel outline for assessment of stent deployment. Stent visualization should be operated and post processing from table side as well as console side.	No Change
35	2. ECG and Hemodynamic Parameter should displayed on Angio monitors and Console also.	No Change
36	3. Should have 14 bit or more capacity machine	No Change
37	4. Should haveDynamic flat detector	No Change
38	5. Should have 1024X1024 matrix	No Change
39	6. Should have stent visualization and quantification should be available with fade.in – fade out facility.	No Change
40	7. Should have capability of frame speed .6/7.5/12.5/15/25/30 fps.	No Change
41	8. Should have 1024X1024 matrix	No Change
42	9.Should have 14 bit or more capacity machine	No Change
43	10 Should have stent visualization and quantification.	No Change
44	11. ECG and Hemodynamic Parameter should displayed on Angio monitors and Console also.	No Change
45	12. Should be compatible with IVUS system as well as OCT system	No Change
46	13. Should be fully loaded with	No Change
47	3D RA	Optional
48	Optional- 3D CA (complete) or Equivalent cornery road mapping	No Change

49	QCA	No Change
50	Q. vessel analysis.	No Change
51	LV function	No Change
52	Total no. of monitor in examination room-04+01=05	No Change
53	1. Two LCD/ TFT / LED flat 19" or higher, monochrome monitors with wide viewing angle, high luminous , high contrast, flicker free, distortion free: one for live image and one for reference.	No Change
54	2. One additional color monitor for hemodynamic display	No Change
55	3. One additional Color monitor for displaying 3D electro.anatomic mapping (CARTO/ onsite) images or external devices like 3D rotational Angiography / OCT/ ECHO display etc.	No Change
56	4. Monitors in the examination room should be ceiling suspended with height adjustment and longitudinal travel to either side of the table.	No Change
57	5 All monitors may be incorporated in to a single suspensible frame for smooth functioning of patient cases	No Change
58	7. Monitor brightness should be 600cd / m2.	No Change
59	8. Display System pixel size should be minimum.150 micron	No Change
60	Total number of monitor in console room – 04	No Change
61	1.One Display monitor for live reference display – monochrome in console	No Change
62	2. Slave colour monitor in console for hemodynamic display .01	No Change
63	3. Two LCD/ TFT / LED flat 19" or higher, monochrome monitors with wide viewing angle, high luminous, high contrast, flicker free, distortion free: one for live image and one for reference.	No Change
64	4. Patient details viewing facility by computer in console room to view the patients	No Change
65	(V) PATIENT TABLE (WEIGHT BEARING CUSTOMISED	
66	1. The table should have rotational facility for emergency use.	No Change
67	2. Floor mounted angiography table with low absorption carbon fiber table top all movements with standard accessories.	No Change
68	3. Table should be able to take patient weight of 200 kg.	No Change
69	4. Additional weight for resuscitation in the metal free overhang area with or without having to retract the table back on its base Operator lamp (Light)Pivot range of the Table: .90 to + 180 deg.	No Change
70	5. Table should be able to lock at any position.	No Change
71	VI) CATHLAB RECORDING SYSTEM	
72	1.NIBP, SpO2, Three Invasive Pressures, 12 Lead Surface ECG, Thermal cardiac output, Body surface temperature, Respiration	No Change

73	2. Patient cable set (10 Lead Trunk Cable, 5 Lead Limb Set, 5 Lead Chest Set, 5 Lead Radiolucent set, SPO2 Adaptor Cable, Reusable paediatric/adult clip SpO2 sensor, NIBP Hose, Comfort Reusable Cuff Kit . all sizes (infant, paediatric, small adult, adult, large adult, thigh), Bath Probe, Cardiac Output Cable, External Temperature Probe).	No Change
74	3. Printer, IBP Cable/ Reusable Transducer to be supplied.	No Change
75	4. Easy to operate, rapid calculation software both online in the duplicate system console in exam room and off line from CD's directly on the CD recorder/review station would be preferred.	No Change
76	5. Image storage capacity of more than 1, 00,000 images at 1024 x 1024 with 10 bits on main system hard disk.	No Change
77	(VII) FLAT DETECTOR	
78	1. 180 um or lesser pixel arrays ensures highest spatial resolution and excellent contrast.	200 um or lesser pixel arrays ensures highest spatial resolution and excellent contrast.
79	2. Fluoroscopy as well as image acquisition is always done in 1 k matrix and 14.bit gray scale resolution with high details visibility.	No Change
80	3. Acquisition frame rates are possible up to 30 f/s.	No Change
81	4. The detector should be minimum of 12 inch Diagonal, Should have Dynamic flat detector	No Change
82	(VIII) EXAMINATION LAMP, 230 V	
83	1. Luminance: 50,000 Lux (4,650) for 100 cm distance.	No Change
84	2. Working distance: 70 to 140 cm	No Change
85	3. Color rendering index Ra (gen): 96	No Change
86	4. Color temperature: 4,300 Kelvin	No Change
87	5. Focusable spot size: 14 to 25 cm.	No Change
88	6. Light body diameter: 22 cm	No Change
89	Halogen lamp: 22.8 V/50W, Power supply examination lamp 230V.	No Change
90	Complete cath lab system online UPS with atleast 30 min backup	No Change
91	Machine should be USFDA approved model	Machine should be USFDA and AERB approved model
	Added:-	1. Online UPS of suitable capacity with min. 30 minutes backup for completed cathlab system. 2. Lead apron with neck color (not less than 0.5 mm lead equivalent)- 10 nos.

2. Name of Equipment:- IVUS		
Sl. No	Technical Specification After Amendment	After Re-Amendment
	IVUS (INTRA VASCULAR USG)	
1	Equipment name.IVUS (INTRA VASCULAR USG) with FFR	No Change
2	The system should be the latest generation of Intra.vascular ultrasound for 360 image evaluation of coronary and peripheral lumen and can be integrated to cath lab. IVUS and FFR should be stand alone or integrated machine.	No Change
3	· The system should be able to perform coronary, peripheral and intracardiac echo IVUS	No Change
4	Frequency: 9 MHz to 60 MHz (+/-5%)	No Change
5	· The system should have integrated FFR, iFR and iFR Scout	Deleted
6	Should be a Windows 10 or Higher based system capable of accepting phased array and/ or mechanical transducer technology with antivirus & security protection.	No Change
7	Should be DICOM.3 compatible	No Change
8	Should have DICOM storage to CD.R/DVD.R and hospitable network compatible	Should have DICOM storage to CD.R/DVD.R/USB and hospitable network compatible
9	Compatibility with HD Coronary SD Coronary Peripheral and Intracardiac Echo catheters All types of catheters should be approved for sales and available in India	No Change
10	Should be accompanied with Flat Panel LCD /LED 18" or above high quality monitor with keyboard, trackball and mouse or with touch pad	No Change
11	Data entry should be possible by keyboard and touch screen both.	Deleted
12	Hard disk storage space should be sufficient to store at least 20 clinical case studies	No Change
13	Should have ECG input on screen	Deleted
14	Multiple image screen format	No Change
15	Availability of AI driven automated Lesion Assessment with low confidence map and manual measurement of all essential parameters like diameter and areas. Multiscreen format for comparison with prior measurements.	No Change
16	Digital Video loop storage: upto 8 minutes with still frames (Jpeg) with full editing capabilities including offline editing	No Change
17	Should have automatic border detection, both lumen and vessel	No Change
18	Should have online 2D longitudinal display and measurements (seen as longitudinal cut section of the artery) as well as cross. Sectional imaging.	No Change
19	Should be capable of fully integrating within the Cath lab systems or mobile	No Change

20	Clear visualization of blood flow, coloured and improved detection of blood flow; dissections stent apposition etc, Colour distinctions for plaque composition with virtual histology or equivalent and chromaflow or equivalent.	Clear visualization of blood flow, coloured and improved detection of blood flow; dissections stent apposition etc.
21	Data entry should be possible by keyboard and touch screen	Data entry should be possible via keyboard or touch screen.
22	Should have ECG input on screen	Deleted
23	Should be able to assess distal Pressure through device.	No Change
24	Display both real time pressure and mean pressure values.	No Change
25	Should give Graphical presentation of pressure waves.	No Change
26	Should be operator friendly, guide steps to follow for procedure	No Change
27	Input power: 200 — 240 VAC; and 50/60 Hz	No Change
28	The system should be upgraded with Co registration and vessel enhancement (Optional, Quote separately)	No Change
29	Post processing IVUS analysis software	No Change
30	Accessories included: Printer (01 No.), CD/DVD Writer Built	No Change
31	Disposables/Accessories to perform 50 no of patient cases as start up to be provided with the machine.	No Change
32	Prices of all accessories like pull back device; IVUS catheters, FFR wires etc. to be quoted separately for future purchase	No Change
33	Training of the departmental staff onsite will be required	No Change
34	USFDA/ European CE(Issued by notified body) approved model	No Change

3. Name of Equipment:- EPS Machine

Sl. No	Technical Specification After Amendment	After Re-Amendment
	Cardiac EP (Electro Physiology) Lab Recording system with Stimulator	No Change
	EP Lab:	
	Latest, state of the art, US-FDA or European CE (Issued by notified body) approved EP recording system with high end processors with review screen.	No Change
1	EP Lab Should have 12 lead body surface ECG.	No Change
2	System should have a minimum 84 bipolar intra cardiac channels	System should have a minimum 84 Bipolar or more Unipolar channels
3	It Should have a facility for recording of invasive pressures and should display at least 2 Channels	No Change
4	Display Capability: 12 Lead ECG, 4 Analog inputs.	No Change
5	System should have an in-built or separate Stimulator connected to the Amplifier/recorder. It should be possible to stimulate both from patient side and operator console	No Change

6	Must be operatable with a laptop making it a portable system or with Fixed Workstation making it a Fixed lab system	No Change
7	Should have a facility of minimum 2 pacing channels with up to 5 extra stimulations options	No Change
8	Should have at least 3 preprogramed protocols and 10 programmable protocols	No Change
9	Should have facility for displaying at least 2 pages with configurable leads/channels/page set up etc. This should be configurable/changeable in the midst of a study.	No Change
10	Sweep speeds are 25, 50, 100, 150 and 300 mm/sec	No Change
11	Should have a facility of off-line Software system to review data—to provide one review station with printer & scanner outside	No Change
12	Must be supplied with compatible laser printer & scanner.	No Change
13	Operating system should be latest.	No Change
14	Should have HDD minimum 1 TB, 4GB RAM.	No Change
15	System should have data storage in standard HDD, Patient data writable through DVD/CD or USB.	No Change
16	Must have a facility of real time beat by beat display	No Change
17	Should provide retro recording for minimum of 30 sec or more.	No Change
18	Should have continuous surface ECG visualization	No Change
19	Facility of split screen display for re-viewing & matching the EGMs.	No Change
20	Selectable amount of data to be stored per patient	No Change
21	Must have computer-based display of RF parameter	No Change
22	Amplifier should be with 32-bit sample conversation rate at 2KH or more.	No Change
23	System should have Adequate filtering for good signal quality	No Change
24	User configurable reporting format should be available.	No Change
25	System should have at least four 23" Monitors.	System should have at least 03 (Three) 23" Monitor
26	All software upgrades will be provided for 5 years from the date of installation.	No Change
27	A proper clinical training will be given to technical team	No Change
28	Trolley will be provided with Lab.	No Change
29	Company must quote only their latest and most updated model.	No Change
30	1. The Cardiac EP (Electro Physiology) Lab Recording including radiofrequency ablation system and 3D Electro-anatomical Mapping system should be compatible with the catheters from multiple companies. 2. The companies participating in the tender should be having the local clinical and technical resources.	No Change

RADIOFREQUENCY Ablator system for Cardiac Arrhythmias		
Sl. No	Technical Specification After Amendment	After Re-Amendment
1	Latest, state of the art, microprocessor controlled digital Radiofrequency generator for ablation of cardiac arrhythmias. The model quoted must be the most recent and updated version complete in all aspects as a standalone system	No Change
2	The company should provide a cool flow pump. The system should be supplied with appropriate power cables, connection cables, foot pedal and grounding cable. All necessary accessories, cables and equipment should be supplied with the RF generator. Vendor should provide prices of all accessories, cables, spares, etc for fixation and should include all these cables, accessories, spares, etc within the scope of warranty and CMC.	No Change
3	The system must have the touch screen or LCD/LED screen functionality.	No Change
4	The system should be able to visualize ablation parameters in a graphical format.	No Change
5	The system should allow for personalization and storing of present preferences in the system. The system should support a minimum of 4 presets to allow on demand recall of preferences according to catheter characteristics.	No Change
6	The system should allow for personalization and storing of present preferences in the system. The system should support presets to allow on demand recall of preferences according to patient, procedure	No Change
7	It should have real-time data and summary screen to provide easy reference to produce information.	No Change
8	Ability to measure bio-impedance pre, during and post.	No Change
9	The system should provide error message in case of incorrect connections/incomplete circuits in the system.	No Change
10	It should be supplied with appropriate connectors and software/hardware to be able to connect with most types of ablation catheters.	It should be supplied with appropriate connectors and software / hardware to be able to connect ablation catheters of multiple leading companies
11	The cool flow pump should be compatible with the 3D mapping system in the cath lab. It should be capable of adjusting saline flow rates automatically when RF power is modified. It should have easy to load tubing feature that simplifies set up. It should have bubble detectors to help assure safe circuit set up and readiness.	No Change
12	Bubble Detection: Designed to detect bubbles $\geq 2 \mu\text{L}$	No Change

13	Ablator should display real time data and a summary screen side by side to provide an easy textual and graphical reference to the complete procedural details.	No Change
14	Should have a customizable trolley to house all the equipment with theft protection.	No Change
15	1. Accessories included: Printer (01 No.), CD/DVD Writer Built 2. Disposables/Accessories to perform 50 no of patient cases as start up to be provided with the machine.	Deleted
	Added:-	Accessories included- 1. CD/DVD Writer in-Built 2. 50 Set of Disposables/Accessories to perform patient cases as start up to be provided with the machine. One set of consumables include; Quadripolar Catheter with Cable - 2 Nos, Decapolar Catheter with Cable - 1 Nos , Non irrigated Ablation Catheter with Cable - 1 Nos.

3D Electro-anatomical Mapping system

Sl. No	Technical Specification After Amendment	After Re-Amendment
1	Non-fluoroscopic 3-Dimensional beat by beat mapping system to create true 3-dimensional matrix by point-by-point acquisition / multi-point acquisition and mapping, to localize the chamber and the catheter with high precision in both Atrial and Ventricular Chambers.	No Change
2	The system should provide in vivo accuracy of 2 mm or more and should have anatomical reference to overcome patient movement artifacts.	No Change
3	The system should provide with 6 degrees of freedom: x, y, z, yaw, pitch and roll. or Equipment Technology The system should have the capability to provide online activation maps unipolar maps and bipolar maps as primary maps of the operators' choice. In addition to the primary online maps the system should be capable of providing isochronal, mesh, propagation maps.	No Change
4	The system should possess technology that combines the accurate magnetic-based technology of the 3D Electro-anatomical mapping system with current or impedance - based	No Change

	data for accurate visualization and location of all catheters.	
5	The system should be capable of respiration gating that maintains mapping accuracy independent of catheter movement due to respiratory motion, patient condition and procedure time.	No Change
6	The system should offer Multiple catheter visualization: • Can Visualize multiple catheters and at least 50 electrodes • No location shifts over time • No interference between catheters • All electrodes can be seen (tip and curve) • Complete visualization of the Pulmonary vein circumferential catheter	No Change
7	The system should be capable of quickly create electro-anatomical mapping with High resolution CT like images.	No Change
8	The system should have the capability to provide online activation maps unipolar maps and bipolar maps as primary maps of choice.	No Change
9	In addition to the primary online maps the system should be capable of providing isochronal, mesh, propagation maps to suit the operator.	No Change
10	The system should be capable of integrating the patient CT, DYNACT or MRI (DICOM format) image with the image of the heart chamber and overlap the same with the 3D maps with high degree of accuracy	No Change
11	Automatic display of identity of catheter design upon plug-in to the system using catheter definition tool.	No Change
12	The system should be capable of displaying the online parameters like power, temperature, time, intra-cardiac channels on the display screen.	No Change
13	Arrhythmia based display protocol that can be preset on 3D screen.	No Change
14	The supplier should be able to interface the 3D mapping system with the existing electrophysiology recorder in the dept	No Change
15	The computer workstation should comprise of at least 4 nos. 21” or bigger high resolution (1920 pixels × 1200 pixels) medical grade monitors.	The computer workstation should comprise of at least 2 nos. 21” or bigger high resolution (1920 pixels × 1200 pixels) medical grade monitors.
16	There should be a central connection point for catheters and equipment.	No Change
17	The system should be capable of segmenting the patient’s image with the in-built software.	No Change
18	The system should accurately merge a pre-acquired CT or MRI image with electro anatomical data from 3D Mapping System.	No Change
19	The system should be capable of integrating the patient’s CT or MRI (DICOM format) image with the image of the heart chamber and overlap the same with the 3D maps with high	No Change

	degree of accuracy. The system should be capable of segmenting the patient's image with the in-built software.	
20	The computer workstation should comprise of 21" or larger size high resolution medical grade monitor, should integrate with the existing cath lab.	No Change
21	Supplier should possess proper clinical and technical support team to support the system.	No Change
22	The contact force catheter should contain a transmitter coil to send location reference signal, a location sensor to detect micro-movement of transmitter coil and a precision spring or integrated Contact force technology to provide consistent movement in response to contact force enabling precise calculation of force in grams.	No Change
23	The system should be capable of integrating real-time contact force feedback and provide precise calculation of both contact force and direction.	No Change
24	Multi electrode mapping feature should be available, allows to acquire multiple mapping points, see and record high-resolution electrogram from each catheter electrode, capture more points in one click to enhance understanding of transient events.	No Change
25	Should include feature to provide a way of graphically displaying ablation sites, filtered according to physician preference based on parameters like Force Data (EMEA), catheter stability, ablation parameters.	Should include feature to provide a way of graphically displaying ablation sites, filtered according to physician preference based on parameters like Force , catheter stability, ablation parameters.
26	Should have high density mapping with auto data acquisition.	No Change
27	Must have sensor enabled multi electrode catheter integration model.	No Change
28	Continuously tracks, stores and quantifies the electrophysiological parameters during RF applications	No Change
29	Analyze the electrophysiological parameters during RF applications and after RF application.	No Change
30	Should contain the feature of Automatic Pace mapping, quantitative matching of pace mapped signals to the previously recorded morphologies during VT Mapping.	No Change
31	Equipment must be of the latest and updated technology available with the company and must quote all the latest software Modules.	No Change
32	System must have capability to review ongoing study for previous ECG data and catheter electrode location	No Change
33	System should have a software for combining real-time ultrasound imaging data with 3-Dimensional Maps and should have the capability to create 3-Dimensional geometry of Left-sided chambers from the right side.	Deleted

34	System should have the facility to save 3 second ultrasound clip to mark anatomical information.	Deleted
35	It should have the ability to associate PVC activation to its corresponding normal sinus rhythm location	Deleted
36	Functional capability of visualizing the specialty sheath	Functional capability of visualizing the specialty sheath or feature of sheath filter
37	It should have the ability to integrate with RF generator that allows circular ablation/ RF Balloon and to visualize circular ablation catheters that helps in efficient AF therapy with 3D mapping and less fluoroscopy	Deleted
38	It should have the functional ability to use catheters meant for very high-power short duration ablation(vHPSD) enabling ablation at up to 90 watts of RF power for four seconds or less.	It should have the functional ability to use catheters meant for very high-power short duration ablation(vHPSD)
39	System should be able to visualize compatible ultrasound catheter with sensor. The real-time ultrasound images should be displayed in the 3-D System, as well as on a compatible ultrasound system.	System should be able to visualize compatible ultrasound catheter
40	System should have multiple intracardiac bipolar channels and multiple body surface ECG channels for stable reference for mapping atrium and ventricle.	No Change
41	System should have automatic channel selection for reference.	No Change
42	System should have velocity filter for geometry creation	No Change
43	System must have capability of creating up to 35 maps per study.	No Change
44	System should have the capability for automatic analysis of multiple, simultaneous intracardiac (IC) signals and enables the creation of high-density dynamic maps.	No Change
45	System should have the inbuilt software for representing electrical waves by means of direction vectors and color coding.	No Change
46	System should have the capability to map multiple VTs simultaneously and do retrospective automatic mapping.	No Change
47	System needs to have capability for correcting the catheter displacement to create accurate map for Premature Ventricular beat	No Change

48	System should have software for graphical representation of local activation time of all contributing electrical points	System should have software for representation of local activation time of all contributing electrical points
49	Early Meets Late option is used to find areas indicating reentry circuits or conduction blocks. These areas are also referred to as "Head Meets Tail" areas	No Change