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### **Corrigendum-II**

Bihar Medical Services and Infrastructure Corporation Limited (BMSICL) had invited E-Bids from the interested parties for the procurement, rate contract and the supply of medical equipment for different Govt. Health Institutions of Bihar vide Notice Inviting Tender No.-BMSICL/2019-20/ME-149. After pre- bid meeting various suggestions from prospective bidders were received and accordingly some amendments have been made in the technical specification by the technical experts which is annexed as Annexure-1 of this corrigendum.

Sd/-

**GM (Procurement)  
BMSICL**

**Annexure-1**

**Name of Equipment - High End Ultrasound Machine with colour Doppler**

<b>Sl no.</b>	<b>Technical Specification Before Amendment</b>	<b>Technical Specification After Amendment</b>
	<b>1. Detailed specifications for Ultrasound Machine for Radio diagnosis</b>	<b>No Change</b>
	i. The equipment must be capable of operating in B, M, Doppler, CDI, Power Doppler, CW –Doppler, directional power angio contrast imaging, real time 3-D(4-D) modes. It must support transducers with linear, sector and convex formats. Further, it must include a full array of measurement and calculation packages. The specific minimum requirements for this equipment are as follow.	<b>No Change</b>
	<b>2. User Interface &amp; Ergonomics</b>	
	i. The premium system must be physically small and sturdy.	<b>No Change</b>
	ii. The keyboard and monitor shall allow for “float” to minimize repetitive stress issues with users. The float shall consist of adjustable manual or motor driven height, adjustable rotation and adjustable extension from the main console.	<b>No Change</b>
	iii. The system shall support backlight keys or provide an integrated light for ease of use in darkened work areas. The backlighting shall be tri-state to further simplify ease of use and indicate function selected.	<b>No Change</b>

	<p>iv. The system should include at least a 19" LCD high resolution monitor of medical grade to allow for both excellent image viewing as well as providing workflow and productivity features.</p>	<p>iv. The system should include at least a 19" LCD/LED high resolution monitor of medical grade to allow for both excellent image viewing as well as providing workflow and productivity features.</p>
	<p>v. The system shall include a touch-screen LCD of size at least 9".</p>	<p>The system shall include a touch-screen LCD/LED of size at least 9".</p>
	<p>vi. The system shall have at least four active probe ports in a convenient, easy to access location to maximize the availability of needed probes with electronic switching facility from key board without probe adaptor removal.</p>	<p style="text-align: center;"><b>No Change</b></p>
<p><b>3. Productivity</b></p>		
	<p>i. The system shall offer an extended field-of-view imaging that operates by sweeping a transducer over the anatomy of interest. This mode shall build the extended field-of-view in a real-time manner, showing the image as it builds.</p>	<p style="text-align: center;"><b>No Change</b></p>
	<p>ii. System shall have image management features that store images by patient and include the ability to review images from different exam dates.</p>	<p style="text-align: center;"><b>No Change</b></p>
	<p>iii. System shall support the ability to do post process on the stored images that allows to optimize imaging parameters such as B Gain, TGC, Color Gain, Dynamic Range, Speckle Reduction levels, Doppler Gain, Doppler Base Line on image recalled from the image archive.</p>	<p style="text-align: center;"><b>No Change</b></p>

<p>iv. System shall allow for live image and archive images side-by side or quad display on a single monitor. This display shall allow any type of image – B-Mode, Color, or power Doppler on either side.</p>	<p><b>No Change</b></p>
<p><b>4. Workflow</b></p>	
<p>i. The system shall implement a feature, which enables to help streamlining the workflow. In particular the system should automatically invoke the correct mode and imaging parameter and advance to the next step within the examination with a one-button operation.</p>	<p><b>No Change</b></p>
<p>ii. The system shall have build in protocols for applications such as abdominal,thyroid, vascular and urology and OB/GYN, but should allow flexibility so that operator or department specific protocols can be set up.</p>	<p><b>No Change</b></p>
<p>iii. In particular automation should include</p>	<p><b>No Change</b></p>
<p>a. Automatic insertion of comments</p>	<p><b>No Change</b></p>
<p>b. Automatic set up of imaging controls and modes</p>	<p><b>No Change</b></p>
<p>c. Automatic steering in Color and Pulsed Wave Doppler</p>	<p><b>No Change</b></p>
<p>d. Initiation auto-completion of required measurements</p>	<p><b>No Change</b></p>
<p>e. Intuitive advancement to the next step in an exam</p>	<p><b>No Change</b></p>
<p>f. Automatic preset selection by transducer, user and exam type</p>	<p><b>No Change</b></p>
<p>g. Automatic Program selection based on the DICOM Work list Exam</p>	<p><b>No Change</b></p>
<p>Description</p>	<p><b>No Change</b></p>

<b>5. FUSION &amp; GPS</b>	
(Quote as Optional Item separately with price, not taken for evaluation)	<b>(Quote as standard and should be provided with the equipment)</b>
i. The system should have facility to allow fusing real time ultrasound images with images acquired from other imaging modalities such as e.g. CT and MR.	<b>No Change</b>
ii. DICOM Datasets from those modalities can either be retrieved via the DICOM Q/R function or via DICOM Media (e.g. USB Devices).	<b>No Change</b>
iii. Registration of those datasets and the real time ultrasound images is achieved by using anatomical landmarks	<b>No Change</b>
iv. The registration is done either by plane registration or by marking multiple points within the volume	<b>No Change</b>
v. The system shall be capable of operate in B Mode & Color Flow Mode while performing a fusion	<b>No Change</b>
vi. The system should be capable of displaying biopsy lines (for all Transducers) while performing a fusion	<b>No Change</b>
vii. The system shall be capable of providing a “GPS” alike functionality. This allows the operator to mark a specific point of interest within the image (e.g. Liver lesion). While moving the transducer, the system indicates position and distance relative to the marked target (Optional).	<b>No Change</b>
<b>6. Scanning Parameters</b>	
i. The system should have speckle reduction imaging with multiple levels of adjustment algorithm that enhances borders, reduces speckle artifact and improves detail and contract resolution in gray scale with compatibility in Color mode, 3D and side-by-side display	<b>No Change</b>

ii. The system should have Spatial compound imaging to enhance ultrasound beam data by including information from adjacent lines to improve resolutions and should be minimum 3 levels	<b>No Change</b>
iii. The system should have real time panoramic view, When stretching Reference B Mode should be available	<b>No Change</b>
iv. The system shall provide scan depths from a minimum of 2 cm to a maximum of at least 30 cm	<b>No Change</b>
v. Operating modes that should be available	<b>No Change</b>
<b>7. Display Mode</b>	
i. B- Mode	<b>No Change</b>
ii. B/B Mode	<b>No Change</b>
iii. B/M Mode - Up / down, Right/ Left, 1/2, 1/3, 2/3	<b>No Change</b>
iv. B/PW Doppler –Up/down, Right/Left, 1/2, 1/3, 2/3	<b>No Change</b>
v. B/CW Doppler –Up/Down, Right/Left, 1/2, 1/3, 2/3	<b>No Change</b>
vi. B/CFM Mode	<b>No Change</b>
vii. CFM Mode	<b>No Change</b>
viii. B and CFM Mode	<b>No Change</b>
ix. B/ power Angio	<b>No Change</b>
x. B and Power Angio	<b>No Change</b>
<b>8. Tissue Harmonic Image</b>	
i. Spectral Doppler	<b>No Change</b>
a. PRF range should be 500Hz to 50000Hz	<b>No Change</b>
ii. Colour Flow Mapping	<b>No Change</b>
a. PRF range should be 500Hz to 24000Hz	<b>No Change</b>
iii. Dynamic Range	<b>No Change</b>
a. System Dynamic range should be 190db or more	<b>System Dynamic range should be 230 db or more</b>
iv. Line density	<b>No Change</b>
a. B Mode Line density adjustment should be 10 steps	<b>No Change</b>

b. CFM Mode Line density adjustment should be 6 steps	No Change
c. Depth Virtual convex (Trapezoid) format with linear probes available	No Change
d. Different User Account should be provided	No Change
v. Real time 3D (4-D imaging). The system should offer a very high frame rate minimum 700 frame per second. The system shall be able to perform mechanical 4 D acquisitions at least 20 volume per second.	<b>Real time 3D (4-D imaging). The system should offer a very high frame rate minimum 1000 frame per second. The system shall be able to perform mechanical 4 D acquisitions at least 20 volume per second.</b>
vi. System should be capable to do Elastography with convex, TV and linear probes.	No Change
vii. Multi slice /I slice/TUI imaging should be there	No Change
<b>9. B-Mode/ M-Mode Imaging</b>	
i. The system should have Dynamic range more than 190 dB. The system shall provide the capability for coded tissue harmonic imaging on all offered transducers.	<b>The system should have Dynamic range more than 230 dB. The system shall provide the capability for coded tissue harmonic imaging on all offered transducers.</b>
ii. The system should have user selectable levels of frame averaging or persistence for noise reduction 0 to 7 levels	No Change
iii. The system shall provide selectable levels of edge enhancement 0 to 3 levels	No Change
iv. The system shall provide the user with user-selectable gray scale maps and the ability to program and save user programmable maps	No Change
<b>10. Color flow / Power Doppler</b>	
i. Color flow/Power Doppler shall be available for all probes	No Change
ii. The system shall provide a user controlled mechanism to easily control the size and position of the color flow/power Doppler Region of Interest	No Change

	(ROI) including independent control of its height and width	
	iii. The system shall support a large range of velocity scales that can be easily adjusted by the user	<b>No Change</b>
	iv. The system shall support selectable wall filters.	<b>No Change</b>
	v. The system shall provide selectable levels of frame averaging or persistence for color flow and power Doppler. PRF range should be 500 Hz to 50,000 Hz	<b>No Change</b>
	vi. The system shall provide a variety of user selectable display maps including, as a minimum, transparent and opaque maps, power maps, variance maps, and topographic maps	<b>No Change</b>
	vii. The system shall provide the user with a high frame rate/resolution control (line density) that varies the acoustic beam density	<b>No Change</b>
	viii. The system shall provide a user selectable control to vary the color flow/power Doppler frequency	<b>No Change</b>
	ix. The system shall provide a real-time triplex mode (B +PW/CFM/PW)	<b>No Change</b>
	x. Advanced CFM flow imaging (Wide Band Color Doppler Imaging)	<b>No Change</b>
	xi. System should pick-up TINY blood vessel without blooming (Outside of Vessels) with contrast and without contrast mode.	<b>No Change</b>
	xii. Necessary software should be provided. It should be available all the probes	<b>No Change</b>
	<b>11. RECONSTRUCTED MPR 3D (2D Images) Spectral Doppler (PW)</b>	
	i. Doppler mode shall be available on all probes	<b>No Change</b>



ii. The Doppler cursor shall be user-steerable with linear transducers.	<b>No Change</b>
iii. The system shall provide the user with control to either have Doppler with real time B Mode, Doppler with periodic B-Mode update or Doppler with frozen B-Mode scanning.	<b>No Change</b>
iv. The system shall provide stereo audio of the Doppler spectral signal.	<b>No Change</b>
v. The system shall provide the user with control during timeline replay to review the spectrum only (i.e., frozen B-Mode) or with the spectrum and B-Mode together and synchronized	<b>No Change</b>
vi. The system shall provide the user with the ability to add a spectral peak and spectral mean trace onto the spectrum in both real time or after freezing the image	<b>No Change</b>
<b>12. Measurements and Calculations</b>	
i. The system shall provide digital callipers for at least the following measurements:	<b>No Change</b>
ii. Detailed OB Package should be provided	<b>No Change</b>
a) Minimum 20 Calliper should be available	<b>No Change</b>
b) Renal package should be available	<b>No Change</b>
c) Uterus/ Ovary package should be available	<b>No Change</b>
d) Bladder/ Prostate package should be available	<b>No Change</b>
e) Radiology measurement package should be available	<b>No Change</b>
f) Detailed Vascular packages which include Lower Limb, Upper Limb,	<b>No Change</b>
g) Carotid & % stenosis package, Thyroid, small parts, Obstetric & Fetal etc, should be available	<b>No Change</b>

iii. All measurements should be possible on frozen images as well as on images recalled from the image archive.	<b>No Change</b>
iv. Intima media thickness measurement and report should be available for calculation of maximum IMT & mean IMT	<b>No Change</b>
v. The system shall provide a comprehensive set of obstetrical and gynaecologic calculations and vascular calculations with summary reports.	<b>No Change</b>
vi. 4D imaging should be available for Following Probes / study	<b>No Change</b>
a. Convex Probe	<b>No Change</b>
b. Endocavity Probe	<b>No Change</b>
c. 4D Application for Convex Probe:	<b>No Change</b>
d. Covered Area Early OB	<b>No Change</b>
e. Foetus Study	<b>No Change</b>
f. Abdomen	<b>No Change</b>
g. Fetal Brain	<b>No Change</b>
h. Neonatal Brain	<b>No Change</b>
i. Fetal Heart	<b>No Change</b>
j. Pelvic Study	<b>No Change</b>
vii. For Endocavity Probe	<b>No Change</b>
a) Uterus	<b>No Change</b>
b) Ovaries	<b>No Change</b>
c) Endometrium	<b>No Change</b>
d) Early OB	<b>No Change</b>
e) Prostate	<b>No Change</b>
f) Follicle	<b>No Change</b>
g) 4D Display Mode Live 4D Single-Single real time 4D Image	<b>No Change</b>
h) Live 4D Dual -Real Time 2D/4D Image	<b>No Change</b>
i) Live 4D MPR -Real Time A.B.C Plane Image with 4D mage	<b>No Change</b>
j) Single Sweep – Automatic High Quality 3D image by 4D Probe	<b>No Change</b>
k) Vol PureA Compounding Imaging in 2D by 4D Mode in RealTime	<b>No Change</b>

l) Vol Pure C –Real Time CT Slice Imaging in “C” Plane	No Change
m) Stic Imaging-Cine MPR volume Stic Mode for Fetal Cardic	No Change
n) Flexible Cut Line – 4D Cut line can be adjusted according to the Image.	No Change
o) 4D Rendering Mode Volume rendering	No Change
p) X-ray projection Transparent Display Mode	No Change
q) Cavity Mode 4 D display blood Vessel	No Change
r) 4D Functions Multi View CT slice Technique	No Change
s) Volume view	No Change
t) 4D IP 4D map & 4Dimage	No Change
u) 4D View image rotation /reverse	No Change
v) 3D clipping	No Change
w) 3D clipping modes	No Change
x) 3D measurement -Basic & Volume	No Change
y) 3D image storage 4D data to be stored in two formats.	No Change
z) AVI (Cine) & JPEG) storage	No Change
aa) Raw data Storage	No Change
bb) 4DRaw data Processing	No Change
<b>13. Image Archive and Networking</b>	
i. The device should store images onto an integrated CD/DVD-R Multiridrive and a USB port storage device.	No Change
ii. The system shall include at least 150 GB bytes of dedicated hard drive for large local storage capacity	<b>The system shall include at least 500 GB bytes of dedicated hard drive for large local storage capacity</b>
iii. The system shall include 256 Mbytes of memory for CINE storage.	No Change
iv. The system shall provide the ability to sort images stored on board based on either patient name or exam date	No Change
v. The device should store images in DICOM, JPG, WMV and AVI formats for maximum flexibility	No Change
<b>14.DICOM Connectivity</b>	

	i. The system shall support for DICOM service classes:	<b>No Change</b>
	ii. The ability to retrieve DICOM Images from other Imaging Modalities than Ultrasound	<b>No Change</b>
	iii. Separate viewing workstations should be provided by the bidder- the color display monitor of reputed make and the CPU should be high end latest configuration with dedicated graphics card and HDD of min 2TB.	<b>No Change</b>
	<b>15. Transducers</b>	
	i. <b>Convex Probe: Normal and 4D Convex (volume convex)</b> , Wide band Operating Frequency: 2 - 5 MHz	<b>Convex Probe: Normal and 4D single crystal or similar technology Convex (volume convex), Wide band Operating Frequency: 2 - 6 MHz (1 MHz tolerance on lower and upper limit) with reusable biopsy guides</b>
	ii. <b>Linear Probe</b> , Wide band Operating Frequency: 5 – 11 MHz (1Mhz tolerance on lower and upper limit). Rate to be quoted separately and the rate offered will not be taken for evaluation	<b>DELETED</b>
	iii. <b>Phased Array Sector</b> with Wide Band of 2-3 MHz 90degree field of view and 3 Selectable THI frequency and CDI frequency and 2 Doppler frequencies for TCD Application Rate to be quoted separately and the rate offered will not be taken for evaluation Application	iii. <b>Phased Array Sector</b> with Wide Band of 2-3 MHz (+- 1 MHz Tolerance) 90degree field of view and 3 Selectable THI frequency and CDI frequency and 2 Doppler frequencies for TCD Application Rate to be quoted separately and the rate offered will not be taken for evaluation Application
	iv. <b>Linear Array Probe</b> , Operating Frequency: 6- 15 MHz (1Mhz tolerance on lower and upper limit).	<b>Linear Array Probe, Operating Frequency: 6- 15 MHz (2Mhz tolerance on lower and upper limit).</b>
	v. <b>4D Transvaginal Probe (volume TVS)</b> , Wide band Operating Frequency: 4-9MHz (1Mhz tolerance on lower and upper limit)	<b>No Change</b>
	vi. <b>Cardiac Probe (Adult and Pediatric)</b>	<b>DELETED</b>

	<b>16. Safety Standard:</b>	
	The offered model of the quoted equipment must have USFDA 510 (K) certified only.	The offered model of the quoted equipment must have USFDA 510 (K) & European CE (issued by notified body) certified only.
	<b>17. UPS &amp; Printer:</b> Online UPS with 60 min backup for entire system (machine as well as console) and B/W Thermal Printer of latest model.	<b>UPS &amp; Printer:</b> Online UPS with 30 min backup for entire system (machine as well as console) and suitable colour inkjet printer.
		<b>Added- sl. No- 18-</b> Broad band Endocavity probe with frequency range of 5-15 MHz (tolerance +- 2 MHz) with reusable biopsy guide.