Notice Inviting e-Tender

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SUPPLY & INSTALLATION OF BRACHYTHERAPY MACHINE ALONG WITH ACCESSORIES FOR THE DEPARTMENT OF RADIOTHERAPHY, NRS MEDICAL COLLEGE & HOSPITAL OF THE GOVERNMENT OF WEST BENGAL.

(Submission of Bid through *online*)

Bid Reference No.: WBMSCL /NIT-314/2021	Dated–08.09.2021

Amendment-I

1. TECHNICAL SPECIFICATIONS

A.GENERAL SPECIFICATIONS

1. The system should be high dose rate Remote After loading Ir -192 Brachytherapy system capable of Intra cavitary, Intraluminal, Interstitial, surface mould Brachytherapy.
2. The offered model whose hardware & software upgradation done in the year 2016 or after.
3. The HDR system should be microprocessor based with PC control.
4. The HDR system must be from a well established company with a documented history of reliability.
5. The HDR machine should be in compliance of all AERB specified safety regulation and AERB type approved.
6. The HDR system manufacturer should have an ISO 9001 and FDA approval.
7. The HDR system must have a "check" cable that automatically checks the operation of the complete system prior to Treatment. The check cable must also be possible to use as a "Dummy" source to allow simulation of particular source Locations.
8. The system should be in use in renowned centers in India. The tender offer must be accompanied with letters of reference from at least 3 (three) existing users of the offered product. At least 1 (one) reference should be from user in India.

9. The vendor should provide warranty for at least 5 years and CAMC for at least subsequent 10 years. The vendor should provide service and all necessary part for at least 15 years from the date of installation.
10. The room for installation of the HDR Brachytherapy system has already been constructed as per AERB approval. If any modification work is required depending on the model is to be done by the Hospital Authority as per AERB recommendation.
11. All the AERB specified Radiation safety features in the control unit and in the room should be available.

B. Detailed Specification: Treatment Unit – HDR

1. Treatment unit should be on wheels for easy mobility within the room.
2. Separate stepper motors to control the dummy check cable and source cable.
3. Maximum air kerma rate at 1 meter and on the surface of the after loader treatment unit should not exceed AERB specified limit.
4. The maximum source holding capacity without exceeding AERB specified air kerma rate at a distance 1 meter from the surface of the after loader and on the surface of after loader should be specified.
5. Multichannel indexer with a minimum of physical 30 channels having an automatic/ optical verification of channel number and applicator connection.
6. The source must be retractable in the event of an emergency/power failure by following methods:
   i) By an independent DC Motor
   ii) Manual source retraction through hand crank.
7. UPS back up for at least 30 min should be provided separately for HDR Brachytherapy Machine, control unit and in the TPS. A detailed circuit for checking the battery condition should be provided.
8. Nominal wire speed should be specified.
9. Unit should have Catheter end check for enhanced safety
10. A Safe must to be contain the source which complies with AERB and international safety regulations to hold source with minimum 10 Ci (370 GBq) for Ir-192.The activity of the sources to be supplied should be mentioned.

C. RADIATION SOURCE AND TRANSFER MECHANISM:

1. The source must be a single, High Dose Rate Iridium-192 Source.
2. The source cable connection must be tested to withstand minimum 5,000 transfers per source. The source transfer guarantee must be high to ensure optimal usage of each individual source.
3. Treatment curvature of the source cable should be mentioned.
4. A package of twenty radioactive sources (for Ir 192) for an appropriate time period (around 10 years) depending on the source transfer guarantee specified by the manufacturer must be provided. The price of the sources should be mentioned separately.
5. The sources should be supplied as and when required/requisition by the user department.
6. Insurance and freight cost, the custom clearance and transport cost, and all other cost related to the import and delivery to the department of the new/unused sources; and

export/disposal of the used sources from the department must also be included in the order for all the sources to be procured.

7. The logistic arrangement for import and delivery to the department of new/unused sources; and the export /disposal of the used source from the department should be arranged by the vendor.

8. The source transfer guarantee and uninterrupted functioning of each source should be ensured for minimum 6 (Six) Months for Ir-192 source.

9. The dimension of the source to be specified.

D. Control Unit:

1. Stand alone and independent PC based control unit with color monitor, keyboard, mouse, printer (for hardcopy) built in audio card, network card and a backup media.
2. Control unit should have a graphical user interface and should contain an extensive reporting facility.
3. Control Unit software should run on Windows application.
4. Control Unit should have a self-testing feature.
5. Control unit must keep track of patient's fractionated treatment.
6. Access must be limited to authorized users with Password protection.
7. The treatment times must be automatically corrected for the decay of the source.
8. The no of dwell positions for the source in each channel should be mentioned. Smaller Variable step size is preferable.
9. Display window should show dwell time and dwell position.
10. Display of Total reference air Kerma and dose should be available.
11. The control unit should contain:

i) An inbuilt protection circuit to prevent treatment without proper applicator connection and proper indexer locking.

ii) Minimum 1 TB internal Hard drive should be provided along with a backup option to an internal/external storage device of 1TB or more.

iii) Availability of a built-in log book and event recording in Control unit should be specified.

E. Brachytherapy Treatment Planning System

i) Hardware

1. The hardware should be of high end graphics workstation with latest high resolution scanner and multicolour network Printer.
2. The software should be latest and up-datable for at least 10 yrs.
3. Latest version of DICOM facility for Import/export from all existing CT/MR/PET/PACS/C-ARM/ultrasound should be available. The HDR Brachytherapy system and all imaging machines available should be integrated with the network for import /export of image/ structure.

4. Two separate workstations to be provided for contouring and treatment planning with all relevant licenses.

ii) SOFTWARE:

1. The Brachytherapy treatment Planning software should 3D and be able to perform all kinds of 2D/3D planning, isodose plotting and display of patient files, beam data acquisition etc.

2. It should support treatment modalities including intracavitary, interstitial, intraluminal and surface mould techniques.

3. All the reconstruction technique like: Orthogonal Semiorthogonal with reconstruction box Variable angle Isocentric must be available.
4. Dose Calculation should be based on TG43 (Mandatory). Automatic placement of Basal Dose Points for Paris Technique (optional).
5. Different Optimization techniques like Dose point Optimization on distance and volume. Geometrical Optimization on distance and volume, Graphical Optimization with local and global control should be available.
6. Fast and accurate dose calculation considering radial dose function, anisotropy function and geometric function should be there.
7. Rapid reconstruction of catheter using tracking algorithm and indication of corresponding lines on the images should be present.
8. Extremely accurate and dwell time optimization and dose calculation must be available.
9. Wide range of dose volume histogram methods, Point dose option. Different planes view must be available.
10. Catheter /applicator reconstruction in 3D space for 3D image imported from simulator, CT scanner, MRI scanner & Ultrasound scanner should be available.
11. Reconstruction of 3DS models of anatomical structures, based on 3D data set from simulator, CT, MRI and Ultrasound scanner .
12. Catheter and applicator reconstruction in 3D space from: orthogonal film, semi orthogonal film stereo shift films using zig reconstruction.
13 CT and MR fusion features should be available

F. Standard applicator set to provided. For detail ANNEXURE I attached.

G. The Following Quality assurance tools and other equipment to be provided:

1. One G.M based Survey meter for Brachytherapy Installation (Reputed brand).
2. Source position check device
3. One Electrometer with well type chamber (Reputed brand) with connecting cable of at least 20 meter length.
4. The source holder for dosimetry (for well type chamber) should be machine and source dimension specific.
5. One Gamma zone monitor for Brachytherapy installation (Reputed Brand).
6. One mercury thermometer and aneroid barometer.

7. One PC with scanner and printer with latest configuration.
8. One packet of Gafchromic film for Brachytherapy auto radiograph
9. Contamination monitor : 1 no (Reputed Brand).
10. CC TV camera with monitor : 3 nos
11. LMO Switch : 1 no
12. Radiation Signage : 2nos
13. Radiation warning Lights : 2nos
14. New swing door along with interlock for treatment room (with maintenance)

15. List of furniture is required:

i) At Console Room :
L shaped table, 2.5 m x 2.75m
L shaped wall hanging cabinet with two shelfs, 2.5m x 2.75m
Revolving Chair with wheels 8 nos

ii) At TPS Room :
L shaped table, 2.4 m x 2.4m
L shaped wall hanging cabinet with two shelfs, 2.4m x 2.4m
Revolving Chair with wheels - 6 nos

iii) At Brachytherapy Procedure Room :
Wooden cabinet with Glass Door 2m(H) x 1m (W) x 1m (D)- 2 Nos (for transfer tubes)

iv) At Brachy Therapy OT :
Steel cabinet- 1 no, 1.8M (H), 3m (W), 0.6m (D), with 3 shelfs and Glass Door.

16. Core Cutting : 1 no between treatment room and Console, for cable connecting Brachytherapy machine with console.

17. Networking Cable from 1st floor to Brachytherapy room at 2nd floor (approximate distance 35 m) with RJ45 socket – 3nos and one networking switch to be provided by Supplier.
18. Emergency light-4 nos.

H. Training of staff

1. In house onsite training should be arranged for five medical physicists and five radiation oncologists and fourMedical Technologists (RT).
2. Training should be arranged for five medical physicists and five radiation oncologists in a reputed institution in India. Logistic costs in connection with training of Doctors, Physicists will be borne by WBMSCL.

ANNEXURE I

Brachytherapy Applicator Requirements

A. INTRACAVITARY

1. Segmented AND Non Segmented Cylinder Applicator Set CT Compatible and MR Compatibility: Conditional
Single channel- all sizes (3 each)
Multiple channel- all sizes if available 3cm (2)-
Cylinder – Diameter – 2 cm, 2.5 cm, 3 cm

2. Fletcher-style Applicator Set – Defined Geometry
All tandem angles, all ovoid diameters (2 each)-3
Fetcher – INTRA UTERINE TANDEM – Anteflexion angulation 15*, 30*, 45*
B/L OVOID– Full & Half.

3. CT/MRI Fletcher-Suit-Delclos-style Applicator Set, Flexible Geometry CT Compatible and MR Compatibility: Conditional
All tandem angles, all ovoid diameters (2 each)
Fetcher – INTRA UTERINE TANDEM – Anteflexion angulation 15*, 30*, 45*
B/L OVOID– Full & Half.

4 Manchester-style Applicator Set – Flexible Geometry -2 sets
Fetcher – INTRA UTERINE TANDEM – Anteflexion angulation 15*, 30*, 45*
B/L OVOID– Full & Half.

5. Ring & Tandem Applicator Set CT Compatible / MR Compatibility: Conditional
All angles (2 each)
Fetcher – INTRA UTERINE TANDEM – Anteflexion angulation 15*, 30*, 45*, 60* (any three is required)
WITH DIFFERENT RING DIAMETERS.

6. NASOPHARYNGEAL applicator APPLICATOR CT & MRI (CONDITIONAL) COMPATIBLE (ATLEAST TWO CHANNEL)- 2 sets.

7. BALLON CATHETER APPLICATOR CT & MRI (CONDITIONAL) COMPATIBLE FOR CA BREAST (MAMMOSITE) - 25 qty

B. Advanced ICRT + ISRT set (combined interstitial plus intracavitary applicator with ring and tandem and transvaginal interstitial needle application.) – MR Compatible- (2)

C. INTRALUMINAL

1. Esophagus Bougie Set CT Compatible (2)

2. Centering Intraluminal Applicator Set CT Compatible (1)

D. INTERSTITIAL

1. Perineal Implant Template Set or equivalent-

a. MUPIT/ equivalent Template Set- (2) + Needles (CT and MR Compatible)-(2 sets)

b. Syed Neblett template set (2) + needles-(2 sets)

2. Breast Implant Template Set CT Compatible (any one)-2
   I. SQUARE
   II. TRIANGLE

3. Prostate - i. MUPIT set + needles (CT and MR Compatible)

4. ISRT stainless steel Needles (CT compatible) as available-
Long – 4 sets- 2
Medium- 4 sets-2
Short- 4 sets-2

5. Interstitial Needles (CT Compatible and MR Compatibility: Conditional) – 2 sets each size

6. Plastic Catheters- Single ended- 500 nos (3 yr life span)
Double ended- 500 nos (3 yr life span)