

**TENDER**  
**FOR**  
**GI Endoscopy ERCP, EUS, Bronchoscope, EBUS Simulator**  
**AT**  
**NATIONAL INSTITUTE OF AYURVEDA, JAIPUR**

<b>NIT ISSUE DATE</b>	<b>:</b>	<b>25-11-2021 ( 06:00 PM)</b>
<b>NIT NO.</b>	<b>:</b>	<b>NIA/CS/S.T/2021/(1)60</b>
<b>LAST DATE OF SUBMISSION</b>	<b>:</b>	<b>16-12-2021 (02:00 PM)</b>
<b>BID OPENING DATE</b>	<b>:</b>	<b>17-12-2021 (02:00 PM)</b>
<b>TENDER COST</b>	<b>:</b>	<b>2500/-</b>



**NATIONAL INSTITUTE OF AYURVEDA**

(Deemed to be University)  
MINISTRY OF AYUSH GOVT. OF INDIA  
JORAWAR SINGH GATE AMER ROAD, JAIPUR

**GI Endoscopy ERCP, EUS, Bronchoscope, EBUS Simulator**

**NIA/CS/S.T/2021/(1)60**

National Institute of Ayurveda, Jaipur an autonomous body under the Ministry of AYUSH, Government of India invites **online bids in two bid system** for tenders for supply & installation of **GI Endoscopy ERCP, EUS, Bronchoscope, EBUS Simulator**. Best offers are invited along with the complete details of specifications, terms & conditions.

<b>S.N.</b>	<b>ITEM DESCRIPTION</b>	<b>QTY</b>	<b>EMD (RS.)</b>
<b>1</b>	<b>GI Endoscopy ERCP, EUS, Bronchoscope, EBUS Simulator</b>	<b>01</b>	<b>3,50,000/-</b>

**INSTRUCTIONS:**

1. Bids shall be submitted online at CPPP website: <https://eprocure.gov.in/eprocure/app>
2. The complete bidding process is online Bidders should be in possession of valid digital Signature Certificate (DSC) of class II or III for online submission of Bids, Prior to bidding DSC need to be registered on the website mentioned above.
3. Tenderer/Contractor/Bidders are advised to follow the instructions provided in the instructions to the contractors/Tenderer/Bidders for the e-submission of the bids online through the Central Public Procurement Portal for e-Procurement at <https://eprocure.gov.in/eprocure/app>.
4. Bid documents may be scanned with 100 dpi in black and white option which helps in reducing size of the scanned document.
5. Tenderer /Contractor/Bidders are advised to submit Technical Bid Document photo copy before last date of bid submission.
6. **EMD Payment:**

The Bidder shall be required to submit the Earnest Money Deposit (EMD) for an amount of **Rs. 3,50,000 (Rupees Three Lacs Fifty Thousand Only)** by the way of demand drafts or Bank Guarantee only. The demand drafts or Bank Guarantee shall be drawn in favor of **“Director, National Institute of Ayurveda”** Payable at **Jaipur**. The EMD of the Successful Bidder shall be returned after the successful submission of Bank Guarantee/Security Deposit and for unsuccessful Bidder(s) it would be returned after award of the Contract. **The demand Drafts or Bank Guarantee for EMD must deliver to Director, NIA, Jaipur on or before last date /time of Bid Submission.**

- a) Tenderer shall not be permitted to withdraw his offer or modify the terms and conditions thereof. In case the tenderer fails to observe and comply with stipulation made herein or back out after quoting the rates, the aforesaid amount of earnest money will be forfeited.
- b) The firm who are registered with National Small industries corporation (NSIC) or Small Scale Industries (SSI) are exempted to submit the EMD(Copy of registration must be provided along with Technical Bid) Registration proof and Udyog Aadhar Certificate should be enclosed with Technical Bid.
- c) Bidders are not allowed to submit more than one bid anytime during the tendering process for the same/similar tendered item else all his bids shall be cancelled thereby making him disqualified in addition to the forfeiture of the EMD.
- d) The EMD, in case of unsuccessful Bidders shall be retained by NIA, Jaipur till the finalization of the Tender. No Interest will be payable by NIA, Jaipur on EMD.
- e) EMD is required to protect the purchaser against the risk of Bidders conduct. The EMD will be forfeited if the bidder withdraws or amends its tender or impairs or derogates from the tender in any respect within the period of validity of its tender or if it comes to the notice that the information/ documents furnished in its tender is incorrect or false.

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- f) The EMD/PBG shall be forfeited if successful bidder fails to supply the goods/equipment in stipulated time or fails to comply with any of the terms & conditions of the contract or fail to sign the contract.

### **7. Submission of Tender:**

The tender shall be submitted online in two parts, viz., Technical Bid and Financial Bid (BOQ). All the pages of bid being submitted must be signed and sequentially numbered by the bidder irrespective of nature of content of the documents before uploading.

The Bidder shall quote the Technical and Financial Bids as per the format enclosed with tender document. ***The Bidders should submit their all relevant documents (Technical bid document and EMD proof etc.) before last date and time of bid submission.***

**The offers submitted by Telegram/Fax/email shall not be considered. No correspondence will be entertained in this matter.**

### **8. Technical Bid:**

**All pages of the Tender should be numbered and indexed.**

The bidder shall provide in its tender the required as well as the relevant documents like technical data, literature, drawings etc. to establish that the goods and services offered in the tender fully confirm to the goods and services specified by the purchaser in the tender documents. For this purpose, the bidder shall also provide a clause-by-clause commentary on the technical specifications and other technical details incorporated by the purchaser in the tender documents to establish technical responsiveness of the goods and services offered in its tender duly indicating relevant page numbers in the product literature.

The following documents are to be furnished by the contractor/Bidder along with Technical Bid as per the Tender Document:

- a) Signed and scanned copy of appropriate value of valid registration certificate (if any), experience certificate as per the tender notice, PAN, GST registration certificate and Tender Acceptance Letter.
- b) Signed and Scanned Copy of make and model of all systems, sub systems and additional items should be mentioned in the technical bid and complete technical details should be provided in the form of Brochures and write-ups.
- c) The bidders are required to submit user certificate for the relevant equipment on the letter head of the institution (Government/ Private)
- d) Signed & stamped compliance sheet of the technical specification of the goods with technical printed literature must be enclosed with the bid
- e) **Manufacturer Authorization:**  
The bidder (if not original equipment manufacturer must submit Original Equipment Manufacturer authorization certificate that the tenderer is authorized for selling and maintain the equipment quoted for.

### **9. Financial Bid:**

Price Schedule(s) as per BoQ format filled up with all the details including Make, Model etc. of the goods offered to be uploaded.

While filling up the columns of the Financial Bid, the following aspects should be noted for compliance:

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**Price should include:**

- a) Duties and fees, if any
- b) Charges towards Packing & Forwarding, Inland Transportation, Insurance, Loading/Unloading and other local costs incidental to delivery of the goods to their final destination as specified in the List of Requirements and Financial Bid
- c) The price of annual CMC, as mentioned in List of Requirements, Technical Specification and Financial Bid
- d) GST will be payable separately as per applicable rate.

**Schedule of price bid in the form of BOQ\_XXXX .xls**

The below mentioned price bid format is provided as BoQ\_XXXX.xls along with this Tender Enquiry Document at <https://eprocure.gov.in/eprocure/app> . Bidders are advised to download this BoQ\_XXXX.xls as it is and quote their offer/rates in the permitted column and upload the same in the commercial bid. Bidder shall not tamper/modify downloaded price bid template in any manner. In case if the same is found to be tempered /modified in any manner, tender will be completely rejected and tenderer is liable to be banned from doing business with NIA, Jaipur.

10. The authorized signatory of the bidder must digitally sign the bid. Individuals digitally signing the bid or other documents connected with a contract must specify whether he signs as:
  - a) A 'Sole Proprietor' of the firm or constituted attorney of such Sole Proprietor
  - b) In case of partnership firm he must have authority to quote & to refer to arbitration dispute concerning the business of the partnership either by virtue of the partnership agreement or a power of attorney
  - c) Constituted attorney of the firm if it is a company.

**11. Turnover**

The Firm/Agency should have an annual minimum turnover of Rs. 175 lakhs during the Last 3 Years (2017-18, 2018- 19, 2019-2020) to be eligible for consideration.

**12. Validity:**

The quoted rates must be valid for a period for 180 days from the date of closing of the tender. The overall offer for the assignment and bidder(s) quoted price shall remain unchanged during the period of validity. If the bidder quoted the validity shorter than the required period, the same will be treated as unresponsive and it may be rejected.

13. The bidding firm should be continuously engaged (with Valid License/Registration) in the same business at least for last 3 Years. The bidding firm should have at least 1 similar contract with Central Government/State Government/Public Sector Undertakings/ Universities/ Deemed to be universities/ Autonomous Bodies/Reputed Medical Institute or Organizations in last 3 Years.

14. The bidder shall provide a list of major Government and Private Institutions where its relevant bid item has been supplied during last 3 years along with order copies

15. **The bidder firm should not have been blacklisted by any Ministry/Department of Govt. of India/State Government/any PSU's etc. The Performance Security Deposit will be forfeited after awarding the Bid, in case the bidding firms found black listed by Central Government/State Government/PSU's/Universities/Deemed to be Universities/Autonomous Bodies at any point of time.**

16. **The Director, National Institute of Ayurveda reserve the right to accept or reject any/all tenders without assigning any reason thereof.**

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**17. Availability of Funds:**

Expenditure to be incurred for the proposed purchase will be met from the funds available with the purchaser/consignee

**18. Delivery and Installation:**

**For goods supplied from India:**

- a) All the goods ordered shall be delivered and Installed at NIA, JAIPUR within **30 days** from the date of issue of supply order. All the aspects of safe delivery, installation and commissioning shall be the exclusive responsibility of the supplier. If the supplier fails to deliver, install and commission the goods on or before the stipulated date, then a penalty at the rate of 0.5% per week or a part thereof of the total order value shall be levied subject to maximum of 10% of the total order value. The successful tenderer will also provide required training for supplied items at NIA.JAIPUR. The goods should be manufactured after adoption of latest technology. If at any time during the currency of the contract, the supplier encounters conditions hindering timely supply of the goods and performance of services, the supplier shall promptly inform the NIA, JAIPUR for extension of the delivery schedule accordingly.
- b) On receiving the supplier's communication, NIA, JAIPUR shall examine the situation as soon as possible and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages for completion of supplier's contractual obligations by issuing an amendment to the contract. In the case of package supply where the delayed portion of supply materially hampers installation and commissioning of the systems, liquidated damages charges shall be levied as above on the total value of the concerned package of the purchase order. Quantum of liquidated damages assessed and levied by the purchaser shall be final and not challengeable by the supplier.

**19. Signing the Contract:**

The successful bidder shall be required to execute the Contract Agreement accepting all terms and conditions stipulated herein on a non-judicial stamp paper of Rs. 500/- (Rs. Five Hundred only) along with performance security within fifteen days of the issue of the Letter of notification of a ward. In the event of failure on the part of the successful bidder to sign the Contract within the period stipulated above, the EMD shall be forfeited and the acceptance of BID shall be considered as cancelled.

**20. Performance Security:**

As a guarantee towards due performance and compliance of the contract work, the successful bidder (contractor) will deposit an amount equal to 3% of order value and should be kept valid for a period of 60 day beyond completion of all the contractual obligation, including CMC period towards security deposit by way of demand draft/ bank Guarantee in favour of "**DIRECTOR NIA, JAIPUR**" payable at JAIPUR drawn on any Nationalized Bank/Scheduled Bank and payable at JAIPUR within fifteen days of the issue of the Letter of notification of award along with non-judicial stamp paper of Rs. 500/- (Contract agreement).

**7. Incidental Services:**

The supplier shall be required to perform the following services: -

- a) Installation & Commissioning, Supervision and Demonstration of the goods.
- b) Providing required jigs and tools for assembly, minor civil works required for the completion of the installation.
- c) On Site Training to Doctors/ Technicians/ Staff is to be provided by Supplier for operation and maintenance of the equipment for a period of 30 working days after successful installation of the machine, as per direction of user department.
- d) Supplying required number of operation & maintenance manual for the goods.

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- e) To provide non-locked open software and standard interface inter-operability conditions for networked equipment's in hospital management information system, wherever applicable.

### **21. After Sales Service:**

After sales service Centre should be available on 24 (hrs.) X 7 (days) X 365(days) basis. Complaints should be attended properly, maximum within 24 hrs. to ensure an uptime of minimum 95%, wherever applicable, failing which the necessary penalty measures shall be enforced.

### **22. Inspections:**

- a) NIA, Jaipur shall have the right to inspect and/or to test the goods to confirm their conformity to the NIT Specifications at no extra cost to the Purchaser.
- b) NIA, Jaipur right to inspect, test and, where necessary, reject the Goods after the goods arrival at the final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by NIA,JAIPUR prior to the goods shipment.
- c) The Director, NIA,JAIPUR shall be the final authority to reject full or any part of the supply which is not confirming to the specification and other terms and conditions
- d) No payment shall be made for rejected items and those must be removed by the Bidders within two weeks of the date of rejection at their own cost and replaced immediately. In case these are not removed, these will be auctioned at the risk and responsibility of the suppliers without any further notice.

### **23. Payment Terms:**

Payment of the total order value shall be released after the successful installation/ commissioning and tanning of the ordered goods against the submission of the inspection report.

### **24. Guarantee / Warrantee Period:**

The Tenderers must quote for 5 year comprehensive warranty (including all Spares, Accessories and Labor) from the date of completion for satisfactory installation. The Warranty Charges shall not be quoted separately otherwise the offer shall be summarily rejected.

### **25. Breach of Terms and Conditions:**

In case of breach of any terms and conditions as mentioned above, the Competent Authority, will have the right to cancel the work order/ job without assigning any reason thereof and nothing will be payable by NIA, Jaipur in that event the security deposit shall also stands forfeited

### **26. Insolvency etc.:**

In the event of the firm being adjudged insolvent or having a receiver appointed for it by a court or any other order under the Insolvency Act made against them or in the case of a company the passing any resolution or making of any order for winding up, whether voluntary or otherwise, or in the event of the firm failing to comply with any of the conditions herein specified NIA, Jaipur shall have the power to terminate the contract without any prior notice

### **27. Force Majeure:**

If, at any time during the subsistence of this contract, the performance in whole or in part by either party of any obligation under this contract is prevented or delayed by reasons of any war or hostility, act of public enemy, civil commotion, sabotage, fire, floods, explosion, epidemics, quarantine restriction, strikers lockout or act of God (herein after referred to as events) provided notice of happening of any such eventuality is given by part to other within 21 days

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from the date of occurrence thereof, neither party shall by reason of such event be entitled to terminate this contract nor shall either party have any claim for damages against other in respect of such non-performance or delay in performance, and deliveries have been so resumed or not shall be final and conclusive. Further, that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may, at least option to terminate the contract.

- 28.** Bidder shall submit a copy of the tender document and addenda thereto, if any, with each page of this document should be signed and stamped to confirm the acceptance of the entire terms & conditions as mentioned in the tender enquiry document.
- 29.** After due evaluation of the bid(s) Institute will award the contract to the lowest evaluated responsive tenderer.
- 30.** Conditional bid will be treated as unresponsive and it may be rejected.

**31. Demonstration:**

NIA, Jaipur reserves the right to ask the tenderers for arranging demonstration of their equipment for which rates have been quoted, to the concerned committee, if required.

- 32.** The Institute reserves the right to accept in part or in full or reject any or more tender(s) without assigning any reasons or cancel the tendering process and reject all tender(s) at any time prior to award of contract, without incurring any liability, whatsoever to the affected bidder or bidder(s)

**33. Applicable Law:**

The contract shall be governed by the laws and procedures established by Govt. of India, within the framework of applicable legislation and enactment made from time to time concerning such Commercial dealings / processing

Any disputes are subject to exclusive jurisdiction of Competent Court and Forum in Jaipur, Rajasthan, India only

The Arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the venue of arbitration shall be at Jaipur. The decision of the Arbitrator shall be final and binding on both the parties

Force Majeure: Any delay due to Force Majeure will not be attributable to the supplier.

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**Technical Bid**

1.	Name of Tendering Company/Firm/Agency	:	
2.	Name of Owner/Partners/Directors	:	
3	Full Particulars of the Head Office	:	
	• Address	:	
	• Telephone No.	:	
	• Fax No.	:	
	• E-mail address	:	
4	<b>Full Particulars of the Bankers of the Company/Firm/Agency, with full Address/Tel. No.</b>	:	
	• Name of the Bank	:	
	• Address of the Bank	:	
	• Telephone No.	:	
	• Fax No.	:	
	• E-mail address	:	
5	<b>Registration Details:</b>	:	
	• Copy of Firm/Agency's Registration No.	:	
	• PAN/GIR NO.	:	
	• GST Registration No	:	
	• Aadhar No. of Owner/Partners/Directors	:	
6	<b>Details of Earnest Money Deposit</b>	:	
	• Amounts (Rs.)	:	
	• DD/PO No. and Date	:	
	• Drawn on Bank	:	
	• Valid upto	:	
7	<b>Details of Tender Fee</b>	:	
	• Amount	:	
	• DD/PO No.	:	
	• Drawn on Bank	:	
	• Valid upto	:	
8	Annual Turnover of the Company/Firm/Agency for the last 3 years (With Proof duly certified by Chartered Accountant/Auditor) Last 03 Years balance sheet and copies of Income tax returns for 3 Years as stated in Terms & Conditions		
	<b>2017-2018</b>	:	
	<b>2018-2019</b>	:	
	<b>2019-2020</b>	:	
9	The Firm who are registered with NSIC or Small Scale Industry/Or MSME are exempted to submit the tender fee or EMD (Copy of Registration certificate must be provided along with Udyog Addhar)		
10	<b>Similar supplies in last 3 Years (with Proof)</b>		
	<b>Experience in the field for the minimum 3years</b>		<b>1.</b> Similar 1 Government Running Contract with Central Government /State Government/Public Sector Undertakings /Universities/ deemed to be universities / Autonomous Bodies / Reputed Medical Institute or Organizations in last 3 Years.



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**Certificate**

**(To be submitted with the Technical Bid)**

The Annual Turnover of M/s. \_\_\_\_\_ for the last 3 Years are given below and it is certified that the Statement is true and correct:

S.N.	Year	Turnover (in Rs.)
1	2017-2018	
2	2018-2019	
3	2019-2020	
	Total	Rs _____ Lacs

Average Turnover Per Annum: Rs. \_\_\_\_\_ Lacs.

*Signature of Chartered Accountant/Auditor with Seal*

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**MANUFACTURER'S/PRINCIPAL'S AUTHORIZATION FORM**

TO,  
Director  
National Institute of Ayurveda  
Jaipur  
Sir,

Tender:-----.

We ----- who are established and reputable manufacturer of having factories at ----- and -----, hereby authorize Messrs.------(name and address of agent(s)to bid, negotiate and conclude the contract with you against Tender.

No----- for the above goods manufactured by us. No company or firm or individual other than Messrs. ----- are authorized to bid, negotiate and conclude the contract in regards to this business against this specific tender.

We hereby extend our full guarantee and warranty as per the conditions of tender for the goods offered for supply against this tender by the above firm.

The authorization is valid upto -----

Yours faithfully,

For and on behalf of Messrs.'-----  
(Name of manufacturers) principal

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**Technical Specifications:**

**GI ENDOSCOPY, ERCP, EUS, BRONCHOSCOPY, EBUS SIMULATOR**

- The system should be fully computerised and interactive.
- Should have PC with latest Intel i7 and Virtual Reality simulation processor with remote access.
- Should have a 19” Flat LCD touch screen or better, with a movable arm.
- Should have a double foot switch and have a mannequin with mouth and buttock for performing upper/lower GI procedures.
- The system should be equipped with a reliable high end technological Haptic (force feedback) to provide realistic sensation that mimic the look and feel of an actual procedure.
- Should have adapted original true to life actual endoscope for upper/lower GI/ ERCP / EUS procedures.
- Should have adapted original true to life actual endoscope for original OEM bronchoscope adapted to simulation purposes, to provide realistic feel and manoeuvrability.
- Should have one master tool device, one 10cc syringe and one needle (adapted).
- The system should have Web based Simulator Curricula Management System, providing the optimal solution for managing simulation based training and education needs
  - Should facilitate performing the administrative tasks of running a training course or workshop.
  - Should offer extensive library of courses including a library of ready-to-use simulator based courses and a platform to design new ones. Courses may include online didactic content, proficiency based hands-on training and performance review and assessment.
- The system should have over 100 and above tasks & cases and the following modules
  - GI Endoscopy Fundamental Skills Training Module:**
    - Should provide a comprehensive solution to learning and training in Flexible Endoscopy Skills, for both Surgery and Gastroenterology.
    - Should incorporate at least 5 or more skill tasks covering navigation, mucosal evaluation, targeting, retroflexion and loop reduction.
  - Colonoscopy Module:**
    - Should have at least 15 or more virtual patient cases to enable performance of a complete survey of the lower GI tract with an authentic forward viewing video-endoscope.
    - Trainees should encounter true to life situations such as intestinal looping, complex colon anatomies, patient discomfort, and be able to practice therapeutic procedures such as biopsy and polypectomy.
  - Gastroscopy Module:**
    - Should have at least 10 or more virtual patient cases to offer a safe environment to perform a complete survey of the upper GI tract with a forward viewing video endoscope.
    - Trainee should identify typical lesions in a variety of upper GI anatomies and pathologies, and perform diagnostic or therapeutic procedures according to his clinical judgment.

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### **Gastric Emergency Bleeding Modules:**

- Should have at least 5 or more virtual emergency bleeding cases to enable trainees encounter emergency situations of the upper GI tract.
- The module should offer practice in both diagnostic stage of bleeding lesions and therapeutic procedures.
- Should have various accessories for treatment of bleeding pathologies, such as spray catheter, a bipolar coagulation, an injection needle, a cold snare for clot removal and a rotating clip.

### **Flexible Sigmoidoscopy Module:**

- Should have at least ten virtual cases to enable practice of Flexible Sigmoidoscopy and biopsy techniques on difficult and unusual anatomies and pathologies.
- Should enable Realistic anatomy of the lower GI tract for complete Sigmoidoscopy training including examination of the anus, rectum, sigmoid and descending colon, retro in the distal rectum for complete examination.
- Should help trainees improve their decision making skills, identify pathologies and make appropriate recommendations based on findings.

### **ERCP Module:**

- Should have at least 5 or more virtual patient cases.
- The module should feature simultaneous displays of both endoscopic and fluoroscopic views, as well as a wide variety of accessories to perform cannulation and therapeutic procedures.
- The module should enable realistic environment of the upper GI tract to enable complete training tool of this challenging procedure.
- Trainee should gain practice in papilla cannulation, fluoroscopic understanding of the biliary tree and pancreatic duct, sphincterotomy, stricture dilation and stone extraction and stent deployment.
- Should have Variety of endoscopic instruments incorporated such as sphincterotome, needle knife, guide wire, stents, balloons and basket.

### **Endoscopy Ultrasonography Module:**

- Should offer systematic and didactic tasks, designed to train endoscopic ultrasound performance, identifying over 30 significant anatomical landmarks.
- Should have separate education module and task module.
- Should have both linear and radial ultrasound.

### **EMR & ESD Module**

- Should provide a complete virtual patient environment featuring realistic anatomy and physiology, while including complication management as an integral part of the procedure.
- Endoscopic Mucosal Resection (EMR) simulation, should offer practice of injection-assisted polypectomy for various pathological lesions, while using common injection materials, snaring devices and different complication treatments.  
The module should allow practice of lesion diagnosis, using on-demand optical endoscopic imaging technique.
- Should have patient management including moderate sedation
- Endoscopic Submucosal Dissection (ESD) simulations should offer practice of lesion border marking, circumferential incision and full submucosal dissection skills, all using common cautery devices with proper working modes.

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### **BRONCHOSCOPY BASIC CHARACTERISTICS:**

- Should simulate the full spectrum of the Bronchoscopic Procedure:
  - Patient management with moderate sedation and topical anaesthesia
  - On-going patient monitoring
  - Solving complications such as hypoxia, respiratory depression, dangerous levels of BP and HR
- All virtual patient cases should offer an unrestricted clinical environment for inspecting, analyzing, diagnosing and treating accordingly.
- Should provide real life patient environment with:
  - Reactive vital signs
  - Altering consciousness
  - Complications
  - True to life physiological responses such as cough
- Should have designated tasks to support structured self-learning of sampling methods with immediate performance feedback.
- Should have designated tasks to improve eye hand coordination and navigational skills.
- Advanced modules should offer choice between moderate sedation by the trainee to pre-existing general anaesthesia.
- Should offer a choice of didactic aids enhancing 3D and anatomical perception such as anatomy compass, external 3D Map, anatomy atlas and anatomical labels for bronchial segments and lymph nodes.
- System should support the trainees' performance with real time guidance including efficiency, comments and patient safety alerts.
- The performance assessment should be most advanced and include biopsy results per sampled location or lymph node, for advanced Modules.
- Should incorporate electric tools such as electro cautery probe and APC probe.
- Should offer the following Bronchoscopic tools and methods for the trainee to use at his clinical discretion:
  - Diagnostic Bronchoscopy, all clinical cases should offer: Topical anaesthesia and BAL using an actual syringe, cytology brushes, biopsy forceps, conventional TBNA needles with actual syringe to apply suction.
  - Essential EBUS, all clinical cases should offer: Topical anaesthesia using an actual syringe, EBUS-TBNA needle with actual syringe to apply suction.
  - Emergency Bronchoscopy, different cases should offer: basket, balloon, grasping forceps, V-shape forceps, electro cautery probe, APC probe, iced saline, epinephrine and mucomist endobronchially using an actual syringe (**V-Shape forceps, iced saline, epinephrine and mucomist endobronchially are optional**)
- Should offer a structured curriculum and certification for essential Bronchoscopic skills and Diagnostic Bronchoscopy by a leading professional organization – The American College of Chest Physicians.

### **TRAINING MODULES AND VIRTUAL PATIENT CASES:**

- The system should have the following modules and virtual patient cases:
  - Essential Bronchoscopy Module which is Offering skill and procedural tasks:
    - Bronchoscope control and manoeuvring
    - Anatomic navigation
    - Anatomical recognition of bronchial segments and lymph node stations
    - Step-by-step procedural performance of forceps biopsy, brushing and conventional TBNA
  - Diagnostic Bronchoscopy Module with:

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- Biopsy result per the area sampled
- Cases with malignant endobronchial findings
- Sarcoidosis case, Pediatric inflammation case
- Kaposi's sarcoma case, Aspergillus
- Emergency Bronchoscopy Module with cases of:
  - Endobronchial bleeding in main airways
  - Peripheral endobronchial bleeding following biopsy
  - Foreign body aspiration – pediatric and adult.
  - Therapeutic aspiration - mucus filled airways and with hiding a tumor
- Essential EBUS Module with:
  - A step-by-step procedural task for complete EBUS-TBNA performance
  - Tasks to learn and identify the different lymph node stations on the ultrasound view. Radial peripheral EBUS basic training
  - Cases with multiple lymph nodes, all of which can be sampled by the trainee. Pathological finding results per the sampled lymph nodes
  - A case with different pathological findings for different lymph nodes
  - Malignant lymph nodes, Benign lymph nodes and Sarcoidosis case.
- Standardized CHEST Curriculum for Essential Bronchoscopic Skills and Diagnostic Bronchoscopy, offering:
  - Highly structured curriculum by a leading medical association
  - Theoretic learning and hands-on training are seamlessly combined in performance and assessment
  - Huge knowledge base in Chest Medicine to learn and get tested on
  - Curriculum covers both skills and clinical aspects
  - Can be performed in a training mode for learning, or in a testing mode to be objectively assessed
  - Certificate of Completion by CHEST will be issued directly from the simulator if acceptance criteria was met in testing mode (future development)
- The system should be ISO / CE certified.
- Should have designated cyberscopy navigation tasks to improve eye hand coordination and navigational skills.
- The simulator should have an unrestricted patient environment.
- Should offer a choice of aids enhancing 3D and anatomical perception such as external 3D Map.
- Should have a 3D map for the ease of users to learn and understand the anatomy better. Should support the trainees' performance with real time guidance, comments and patient safety alerts.
- The performance assessment should be most advanced with benchmark setting depending on the user level. Should incorporate electric tools such as electro cautery probe. Fluoroscopic view should be available on ERCP Modules.
- Should facilitate web based simulator curricula management system, providing the optimal solution for administration of users, Curricula design, Prepreparation with didactic learning, Simulation and Reporting and assessment remotely.
- Should have ready to use designed Curricula from famous institutes.
- Should have a facility to access, assign, evaluate and administer the data of users remotely.
- **Optional:** Should have 35 and above validations studies.