



## Critical Care, Emergency Care & Endocrinology, Internal Medicine



Accessibility for the public to the Emergency Management System, to adequate radio space for providers to communicate with each other in spite of disaster, communications is the epitome of EMS.



## Designated Departmental Critical Care Units

## DEPARTMENT OF CRITICAL CARE



### FOREWORD

*The intensive care unit at Virinchi Hospitals is well equipped for handling severely injured and critically ill patients, as well as complicated cases or circumstances that require extensive medical care. The Critical care unit is a Level-I trauma centre capable of providing total care for every aspect of injury - from treatment through rehabilitation.*

*The unit provides 24-hour monitoring by critical care nurses, physiotherapists, pharmacists, dietitians, and other relevant & specially-trained healthcare professionals trained to meet the high demands of this special patient care. The team of surgeons includes general surgeons, trauma surgeons, neurosurgeons, neuro-intensivists and intensivists who focus on treatments that maximize survival and quality of life using state-of-the-art technology to aggressively monitor and treat all types of critical conditions.*

*Every bed in the critical care unit is clearly visible from the nursing station. The critical care unit features state-of-the-art medical equipment, including a computerized monitoring system and a computerized medication administration record to ensure attendance and clinical intervention.*



## Dr. Srinivas Samavedam

MD, DNB, FRCP, FNB, EDIC, FICCM

Diploma in Healthcare Quality Management

**Head Critical Care**

Dr. Srinivas Samavedam is Director of Critical Care Medicine at Virinchi Hospitals. He is nationally recognized practitioner with more than 15 years of experience in Internal Medicine and Critical Care. He has been practising evidence-based medicine for treating critically ill patients with different types of diseases. He has hands-on experience in Internal Medicine, Critical care, ECMO, Advanced modes of Ventilation. He has worked as a Director, Critical Care, and Director of training for ISCCM and NBE courses in Critical Care, Care Hospitals, Hyderabad. He has been a Chairperson of Hospital Infection Control Committee; Member of Medical Advisory Committee and Member of Clinical Pathways Committee. He has also worked as a Consultant in Internal Medicine & Critical Care, Image Hospitals, Hyderabad and Manipal Hospital, Bangalore, respectively. He is a faculty and National Executive Member of Indian Society of Critical Care Medicine (ISCCM).



## Dr. Narmada Aluru

MBBS, DA (Anaesthesia), IDCC

**Consultant Critical Care**

Dr Narmada Alluru is a Consultant Critical Care in the Department of Critical Care Medicine at Virinchi Hospitals. She has overall six years' experience in critical care medicine. Prior to joining Virinchi Hospitals, she worked as a Consultant Critical Care at Life Hospital and Century Hospitals and completed her fellowship in Critical Care at Care Hospital. She has hands-on experience in ultrasound-guided procedures, extracorporeal membrane oxygenation (ECMO) or extracorporeal life support (ECLS). Her areas of interest include tropical disease control in ICU. In the past four years of her career in intensive care, she acquired lot of experience and knowledge in new techniques (rapid diagnostic methods, airway clearance techniques, respiratory care, invasive monitoring, etc.) in the ICU.



## Dr. Sangeeta Vithoba Y

MBBS, MD (Anaesthesia),  
FNB (Critical Care Medicine)

**Consultant Critical Care**

Dr Sangeeta Vithoba Yelle is a Consultant Critical Care in the Department of Critical Care Medicine at Virinchi Hospitals. She has overall six years' experience in anaesthesia and critical care medicine. Prior to Joining Virinchi Hospitals, she worked as a Consultant Intensivist at Century Super-speciality Hospital, Hyderabad and Breach Candy Hospital, Mumbai and as Assistant Professor in the Department of Anaesthesia and Critical Care at Bhabha Hospital (Kurla), Mumbai.

As an intensivist she is trained to provide care to adults who have severe cardiac and respiratory conditions, complications from surgery, brain trauma, renal failure and life threatening infections. She has mastered various kinds of life saving therapeutic and diagnostic procedures like central line insertion, difficult intubation, spinal tap, etc. She is quite passionate about her work and desirous to deliver the best outcomes in critical care and emergency medicine.



## Dr. Rajyalakshmi B

MBBS, MD

**Consultant Intensivist**

Dr Rajyalakshmi B is a Consultant Critical Care in the Department of Critical Care Medicine at Virinchi Hospitals. She has more than three years' experience in critical care medicine. Prior to joining Virinchi Hospitals she worked at Care Hospitals and Maxcure Hospitals respectively. She is well-versed in Advanced Cardiac Life Support, advanced modes of mechanical ventilation, advanced hemodynamic monitoring, all procedures including central lines, dialysis sheaths, percutaneous tracheostomy, ICDs, advanced neurological monitoring and high-risk patient transport. In addition, she holds expertise in dealing with all types of critically ill patients including neurological, cardiovascular, medical, gynaecological, obstetric, neurosurgical, trauma and postsurgical patients.



## Dr. Naveena Rani N

MBBS, CTCCM

**Registrar Critical Care Medicine**

Dr Naveena Rani Nayakanti is a Registrar Critical Care in the Department of Critical Care Medicine at Virinchi Hospitals. She has overall four years' experience in critical care medicine. Prior to joining Virinchi Hospitals, she worked at Care Hospitals and Century Hospitals. She possesses good experience in ACLS, advanced modes of mechanical ventilation, advanced hemodynamic monitoring, all procedures including central lines, dialysis sheaths, ICDs, advanced neurological monitoring and high-risk patient transport. In addition, she has expertise in dealing with all types of critically ill patients including neurological, cardiovascular, medical, gynaecological, obstetric, neurosurgical, trauma and postsurgical patients.



## Dr. Ghazala Fathima

MBBS, M.D. Anaesthesiology

**Registrar**

Dr. Fathima Ghazala is a Registrar in department of Critical Care at Virinchi Hospitals. She has more than two years of experience in this field. Before joining Virinchi Hospitals, she worked as resident in department of Critical Care at Care Hospitals, Hyderabad in 2012. Later, she joined Gandhi Medical College as Senior Resident in department of Anaesthesiology.

Dr. Ghazala passed her M.B.B.S. in 2004 from Kamineni Institute of Medial Sciences, Hyderabad. She did her internship from Narketpally branch in 2010. She completed her M.D. (Anaesthesiology) from Deccan College of Medical Sciences in 2012.

Dr. Ghazala has attended few conferences and workshops in India. She also has keen interest in Research field and conducted a study at Owaisi Hospital, Hyderabad.



## EXTRACORPOREAL MEMBRANE OXYGENATION

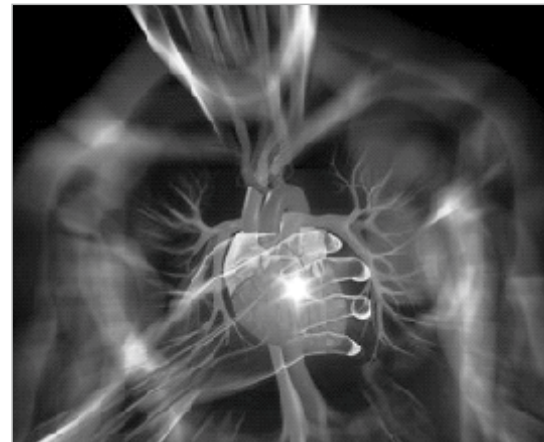
### UNIQUE FEATURES

- Makes available new therapy options using extracorporeal circulation and incorporates improved usability and additional safety
- Light enough to be carried by one person and compact enough to be transported
- Combines the complex technology needed for cardiopulmonary surgery with clear and concise handling necessary for safe and effective patient management
- All controls and monitors are managed from a single panel for user-friendly operation

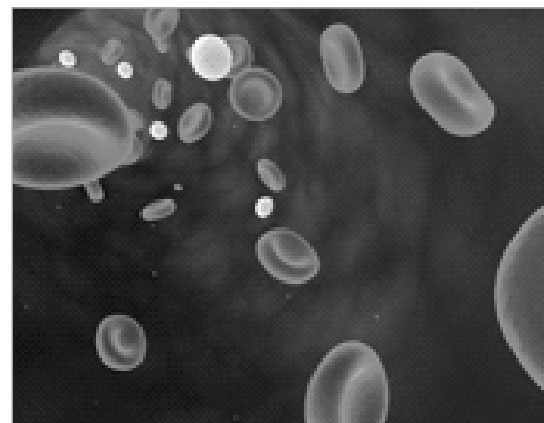
### CLINICAL APPLICATIONS

- Hypoxemic respiratory failure
- Hypercapnic respiratory failure
- Refractory cardiogenic shock
- Cardiac arrest

- Failure to wean from cardiopulmonary bypass after cardiac surgery
- Heart transplantation or placement of a ventricular assist device



- Cardiovascular complications
- Central nervous system pathologies with increased intracranial pressure and seizures
- Gastrointestinal conditions, including liver failure
- Conditions relevant to Haematology/oncology



## ULTRASOUND

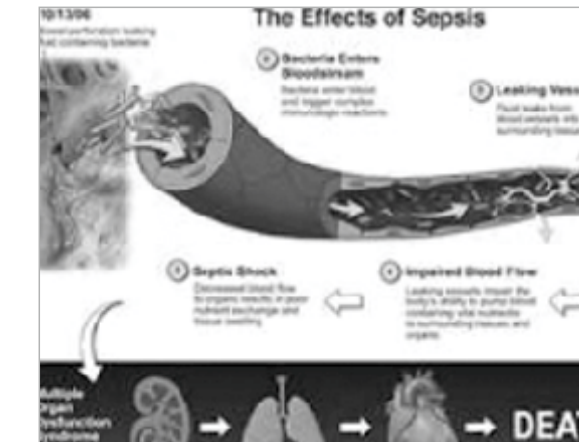
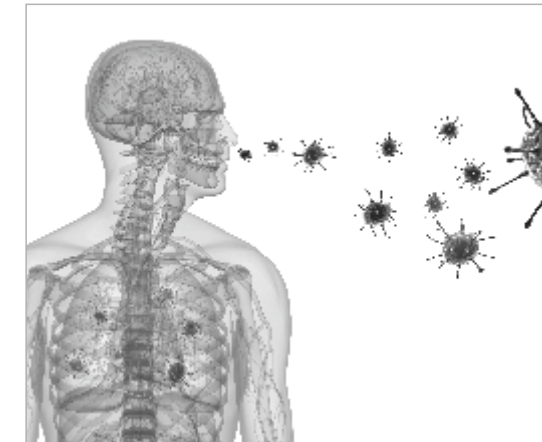
### UNIQUE FEATURES

- Technology has improved penetration capabilities & provides excellent detailed resolution in difficult-to-image patients.
- Allows visualization of low velocity micro circulation while evaluating organ perfusion of small vasculatures
- Fully integrated fusion capabilities allow clinicians to achieve fast & effective fusion of CT/MR/PET with live ultrasound
- Excellent ergonomics may help reduce repetitive stress injuries
- Minimally invasive procedure which uses no ionizing radiation

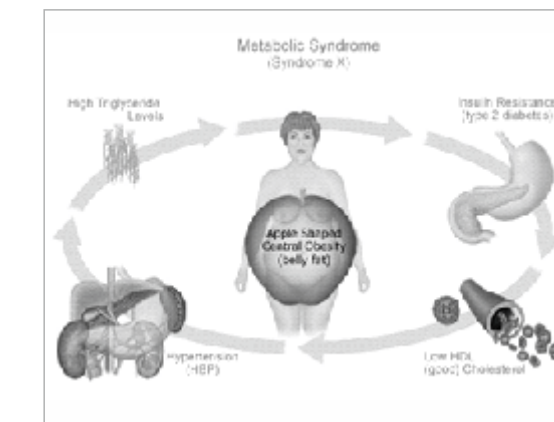
### CLINICAL APPLICATIONS

- Interventional Cardiology
- Interventional Radiology
- Critical care
- Liver Imaging

- Regional anaesthesia
- Pain Medicine
- Cardiology
- Gynaecology including obstetrics



- Metabolic conditions
- Nephrology conditions
- Infectious and non-infectious respiratory diseases
- Sepsis





**ELECTROCARDIOGRAPH**

**UNIQUE FEATURES**

- The touch operation provides most sophisticated operation with seamless data retrieval
- Highlights critical values for conditions which require immediate clinical attention
- 6 event markers help with highest diagnostic efficiency

**CLINICAL APPLICATIONS**

- Heart's electrical activity assessment
- Heart attack, pericarditis or angina
- Checks working of pacemaker
- Tachycardia and irregular fibrillation



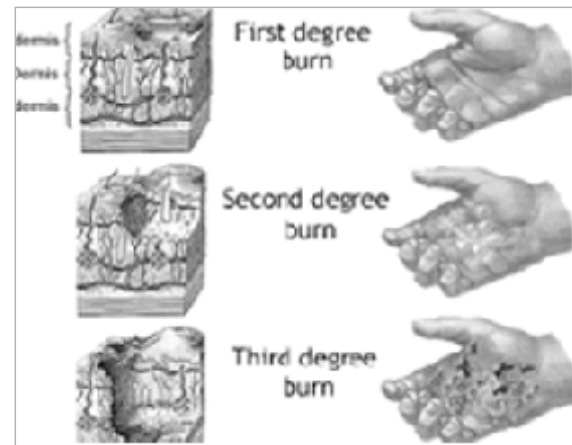
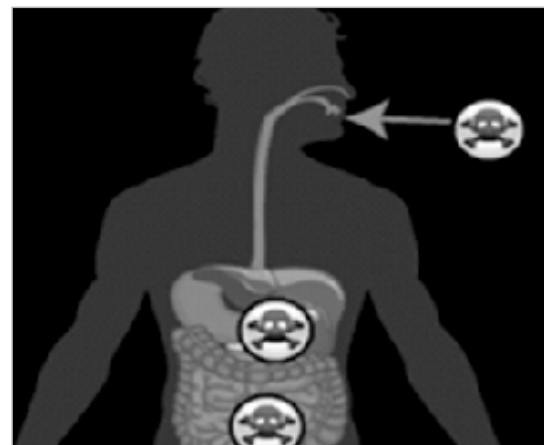
**ANESTHETIC MACHINE**

**UNIQUE FEATURES**

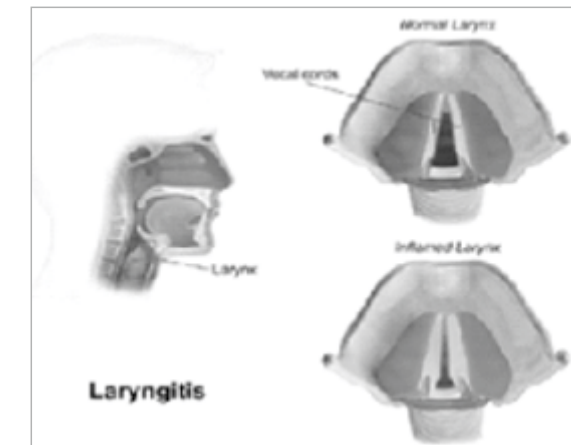
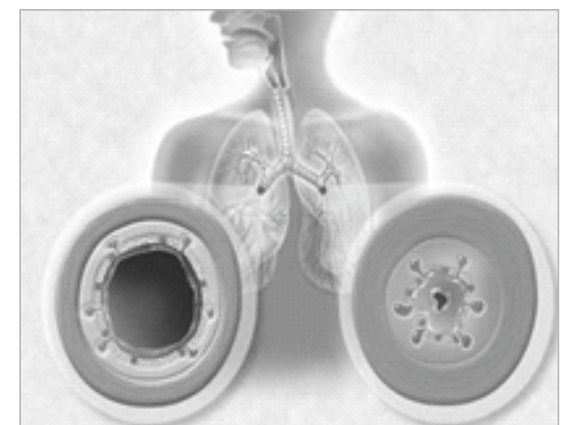
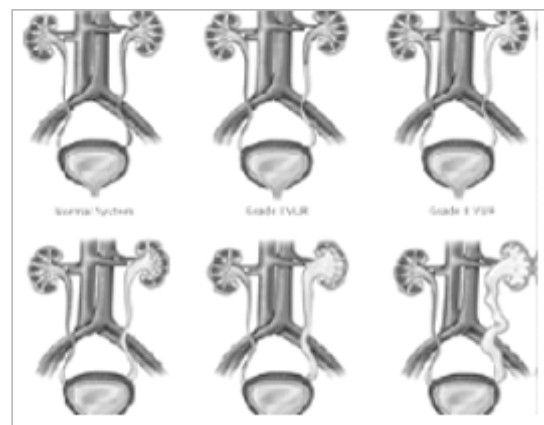
- Robust and reliable
- Is compact, lightweight, and easy to manoeuvre in any environment
- The intuitive user interface allows constant visual confirmation of function

**CLINICAL APPLICATIONS**

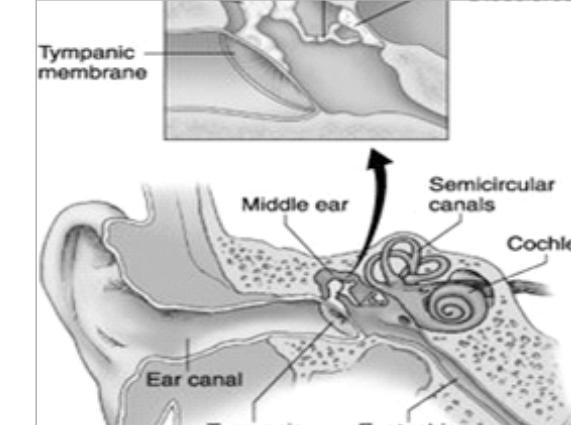
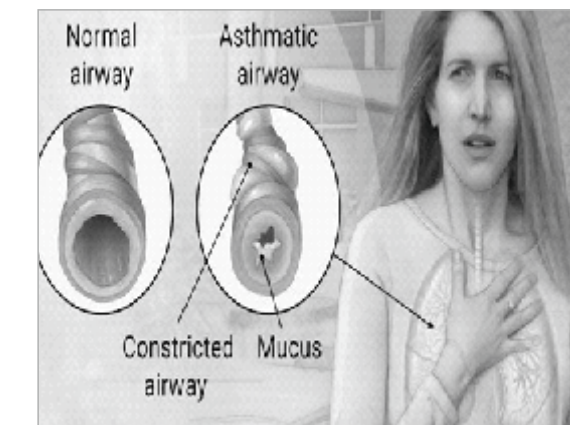
- Pain Relief/Analgesia
- Amnesia
- Unconsciousness
- Body reflex inhibition
- Muscle Relaxation



- Toxic ingestions
- Plastics/Burns
- Genitourinary infections and conditions



- Otolaryngological conditions
- Post-anaesthetic recovery stages
- Trauma





## HEMODYNAMIC MONITOR

### UNIQUE FEATURES

- It is scalable & adaptable to both Operation theatre & Intensive care unit
- Presents patient hemodynamic information clearly. Colour-based indicators communicate patient status at a glance
- Screen options include the real-time physiology screen (both intermittent and continuous), the cockpit screen, the goal positioning screen, graphical trend screens and the physio-relationship screen
- Helps the user to track and manage key parameters, and create and monitor customized protocols

### CLINICAL APPLICATIONS

- Standard basic hemodynamic monitoring (ECG, heart rate, blood pressure, central venous pressure, temperature, peripheral venous oxygen saturation, blood gas analysis)



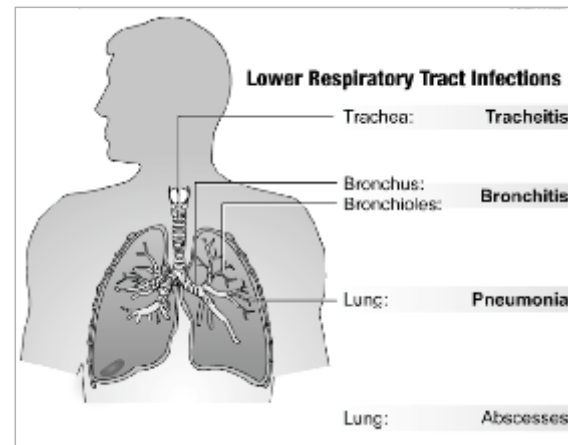
## BRONCHOSCOPY

### UNIQUE FEATURES

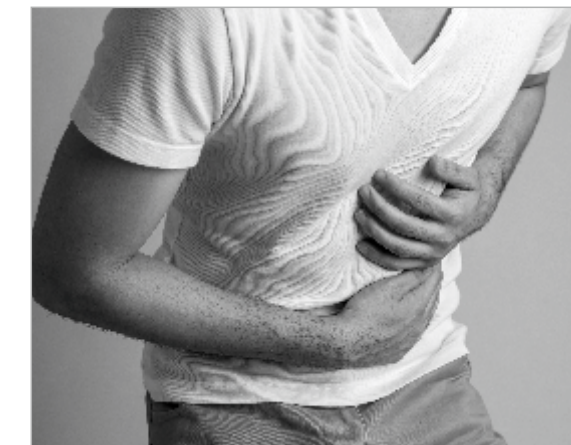
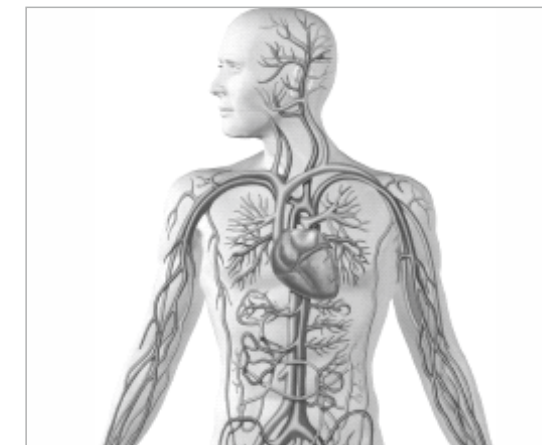
- This slim bronchoscope enables better access to the lung periphery and has an instrument channel to enable a range of EndoTherapy procedures
- Bronchoscope's insertion tube can be rotated up to 120° by simply turning a ring on the control section of the scope, thus minimizing operator fatigue
- Connector allows full submersion, avoiding costly accidental damage. It is also incredibly easy to use, linking scope and system in a single movement
- The combination of the insertion tube rotation function and wider angulation range greatly enhances maneuverability which enables easier access to difficult-to-reach areas

### CLINICAL APPLICATIONS

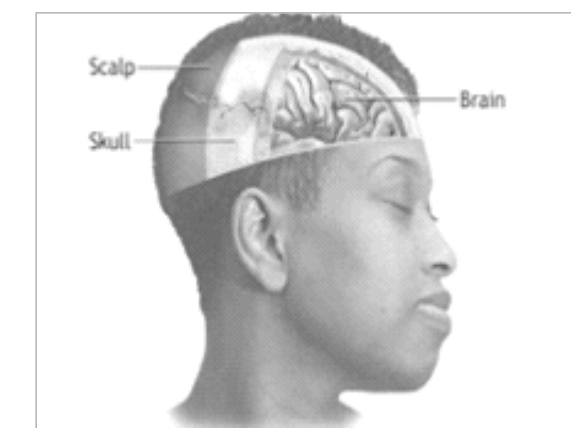
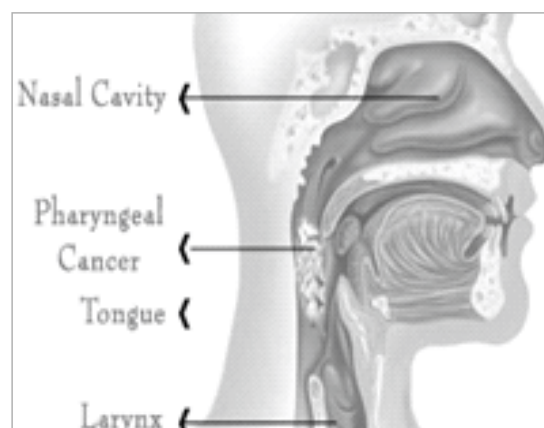
- Airway problems
- Chronic Lung disease
- Pneumonia
- Cancer

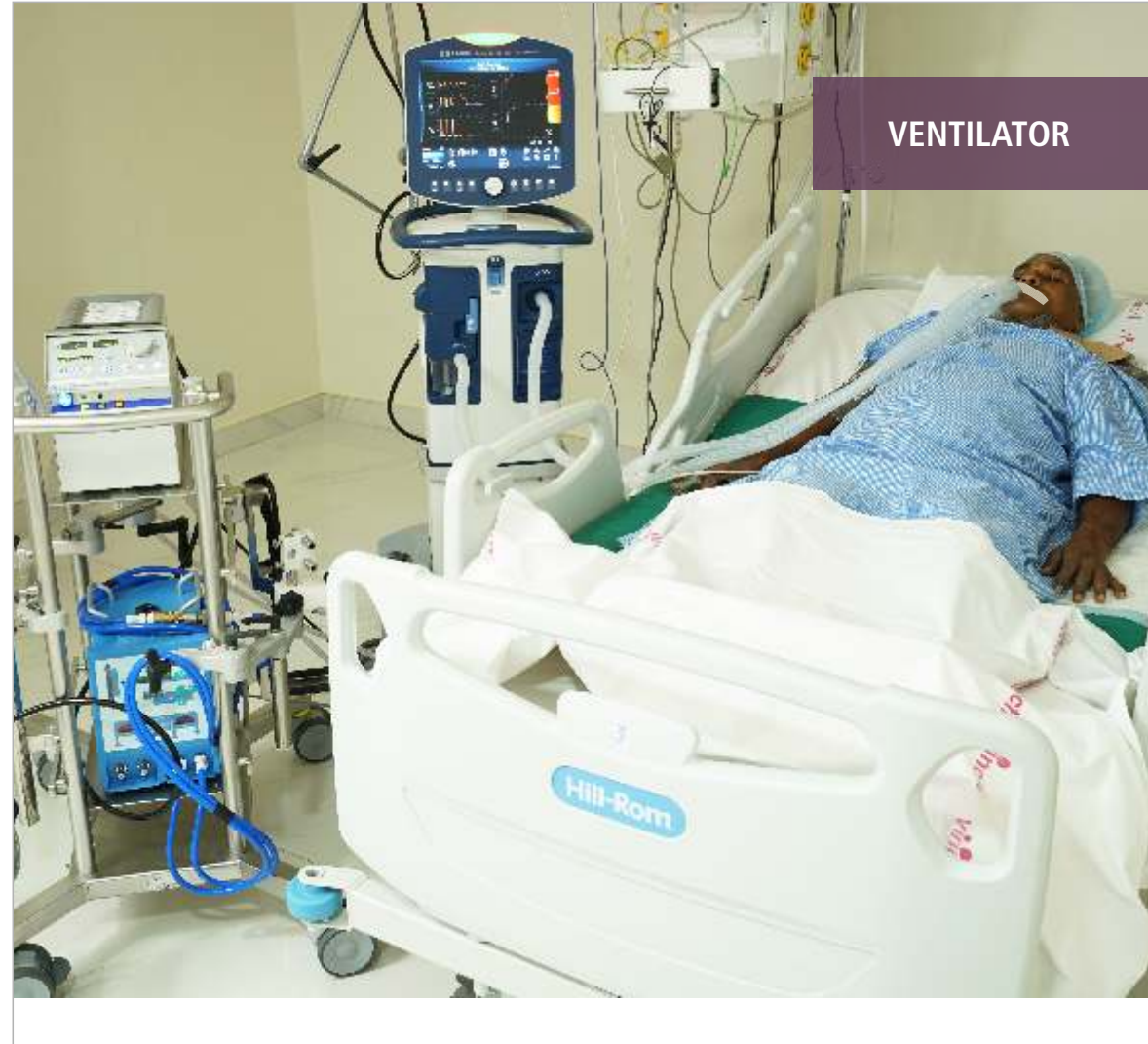


- Long Term Ventilation (LTV)
- Basic Respiratory Monitoring and Support
- Advanced Respiratory Support Mechanical ventilatory support



- Airways pressure (CPAP) or non-invasive (e.g. mask) ventilation
- Circulatory Support
- Neurological Monitoring and Support including psychiatrist consultations





**VENTILATOR**

**UNIQUE FEATURES**

- Supports Invasive & Non-invasive ventilation with leakage compensation
- The standard configuration includes several ventilation modes and options like Pressure Regulated Volume Control (PRVC) and Volume Support (VS) can easily be added on
- EdiSignal provides useful information on respiratory drive, volume requirements and the effect of ventilator settings
- For continuity of care with no loss of treatment information, it is available for Magnetic resonance imaging (MR) and for Hyperbaric oxygen therapy (HBO)
- Y sensor measurement for neonatal/paediatric and adult patients enables measurement of pressure and flow as close to the patient's airway as possible
- CO2 Analyser for end tidal carbon dioxide measurement gives important insight into the efficiency of the ventilation
- Setting a controlled mode allows the ventilator adapt to the current patient situation, switching between controlled and supported breathing in connection with patient effort

- CLINICAL APPLICATIONS**
- Oxygen/carbon dioxide levels maintenance in blood
  - Respiratory muscle Relaxation
  - Improved sleep quality
  - Easy breathing and coughing
  - Lung inflation
  - Respiratory complications

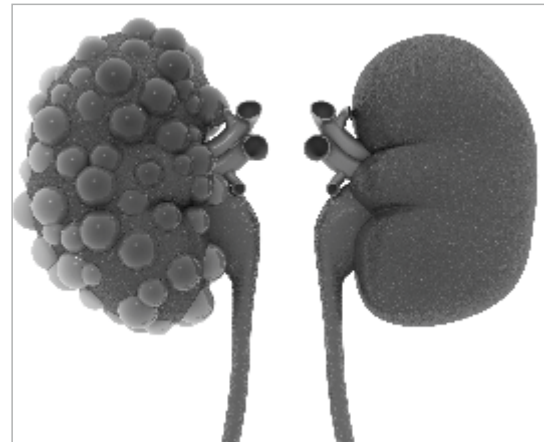


**SEQUENTIAL COMPRESSION DEVICE ( SCD) MACHINE**

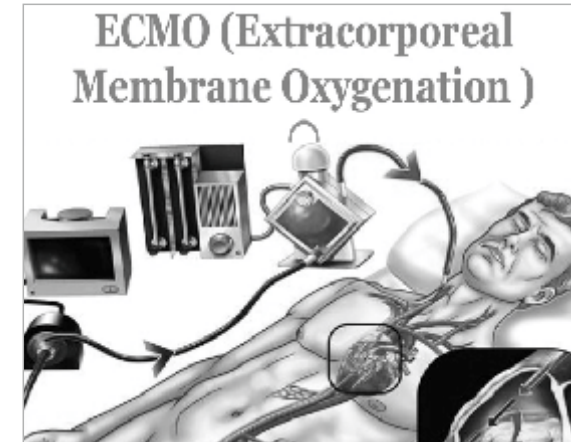
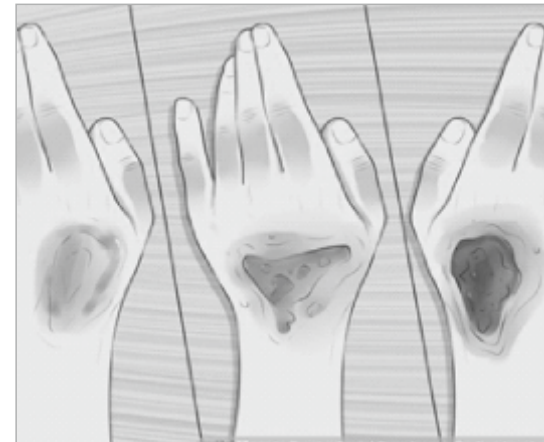
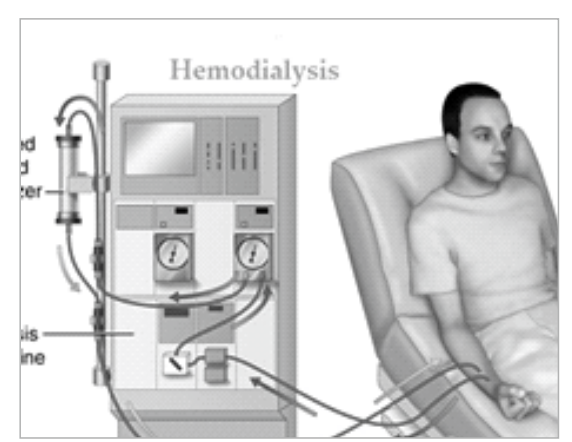
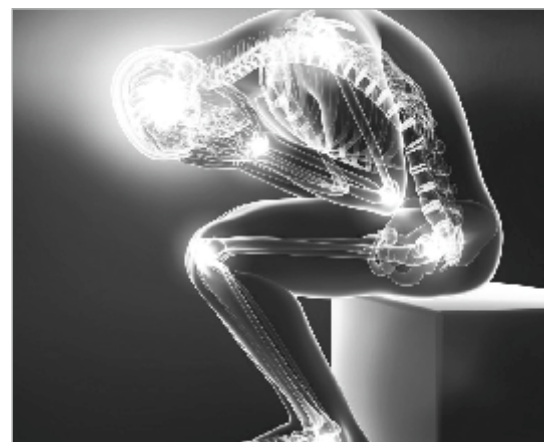
**UNIQUE FEATURES**

- Allows the system to detect each patient's individual vascular refill time to deliver customized therapy
- Regularly re-evaluates each patient's refill time and automatically adjusts for changes in body position
- Ensures customized compression cycles to move blood from the lower extremities as quickly as the veins refill.
- Adjusts level and frequency of compression without nursing intervention
- Delivers clinically proven sequential, gradient, circumferential compression (to the leg, foot or both simultaneously) to prevent deep vein thrombosis (DVT) and pulmonary embolism (PE)

- CLINICAL APPLICATIONS**
- Deep vein thrombosis (DVT)
  - Pulmonary embolism (PE)



- Renal Support, including (haemodialysis, haemofiltration or haemodiafiltration)
- Pain management and support
- Paediatric intensive care services



- Burns services (adults and children)
- Adult & Paediatric respiratory extra corporeal membrane oxygenation (ECMO) services
- Plastics/Burns



MRI IV INFUSION PUMP



- Designed for the continuous delivery of fluids and medications for patients within the MRI environment
- Helps replace 'work around' solutions like running long lines from conventional pumps through a sealed MRI door or wave guide
- Allows clinicians to safely and reliably run both volumetric and syringe dosed infusions
- Is a valuable tool to help decrease the amount of time a patient spends in the MR scanner which may lead to improved throughput and care
- Provides a comprehensive safety solution at the patients 'point of care'

PORTABLE ULTRASOUND

- Is a handheld, pocket-sized ultrasound tool that provides real-time black-and-white anatomic and color-coded blood flow images
- Intuitive user interface that can be controlled using the thumb
- Intelligent workflow
- Voice annotation
- USB docking stations
- Gateway software with service tools and remote diagnostics



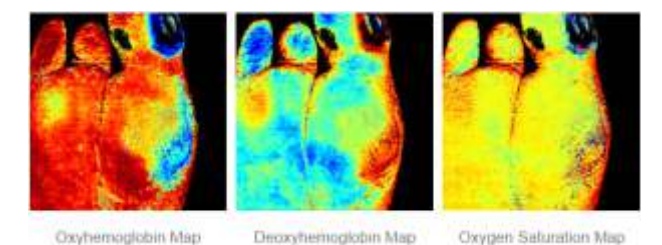
WIRELESS PATIENT MONITOR



- It is designed to allow patient mobility along with continuous monitoring
- Oxygen saturation (SpO2) and pulse rate monitoring with alarm detection during challenging conditions
- Respiration rate monitoring with increased patient tolerance
- Small, lightweight, and wearable for untethered monitoring and ambulation
- Short-range communication with secured Bluetooth and upgradable to WiFi for direct communication with patient remote monitoring system

TISSUES OXYGENATION IMAGING SYSTEM

- The device is used for vascular procedures, wound care and in patients post amputation
- The contact-free device uses hyperspectral imaging to assess oxygenation and point to areas of high and low hemoglobin oxygenation (O2Sat, Oxy, and De oxy)
- The different areas are filled in different colors for a quick and intuitive assessment
- It's battery operated and easily held with two hands while imaging the patient, following which one can review the scans



Best Care When You Need It The Most

# DEPARTMENT OF EMERGENCY CARE



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## Dr. Srinivas Samavedam

MD, DNB, FRCP, FNB, EDIC, FICCM

Diploma in Healthcare Quality Management  
Head Critical Care

Dr Srinivas Samavedam is Director of Critical Care in the Department of Critical Care Medicine at Virinchi Hospitals. He is a nationally recognized practitioner with more than 15 years of experience in Internal Medicine and Critical Care. He has been practising evidence-based medicine for treating critically ill patients with different types of diseases. He has hands-on experience in Internal Medicine, Critical care, ECMO, Advanced modes of Ventilation. He has worked as a Director, Critical Care, and Director of training for ISCCM and NBE courses in Critical Care, Care Hospitals, Hyderabad. He has been the Chairperson of Hospital Infection Control Committee; Member of Medical Advisory Committee and Member of Clinical Pathways Committee. He has also worked as a Consultant in Internal Medicine & Critical Care, Image Hospitals, Hyderabad and Manipal Hospital, Bangalore, respectively. He is a faculty and National Executive Member of Indian Society of Critical Care Medicine (ISCCM).

## FOREWORD

*Virinchi Hospital's Emergency department evaluates, cares, and treats the patient while there are challenges such as limited time acuity illness and severity. Emergency Room is quickly accessible at the facility with least wait time. Our Physicians attend to the patient and make effective therapeutic decisions based on limited information.*

### *Prehospital Emergency Care*

*Our ACLS ambulances are well equipped with ventilator, vitals monitor, defibrillator, and resuscitation cart to support critical to very critical conditions.*



**Dr. Avinash Kusuma**

M.B.B.S., D.E.M

**Emergency Physician**

Dr. Avinash Kusuma is an Emergency Physician in the Department of Emergency Medicine at Virinchi Hospitals. He has overall five years' experience in emergency medicine. Previously he has worked as Resident in the rheumatology department at Yashoda Hospital Hyderabad; Jr. Registrar in ICU Yashoda Hospital Secunderabad and Emergency Physician at Ozone Hospital Kothapet. He is trained and experienced in managing all medical, surgical, poisoning and neurological emergencies. He has hands-on experience in the management of cardiac arrest (CPR), intubations, central lines and conducting Basic Life Support and ACLS training sessions for new doctors.

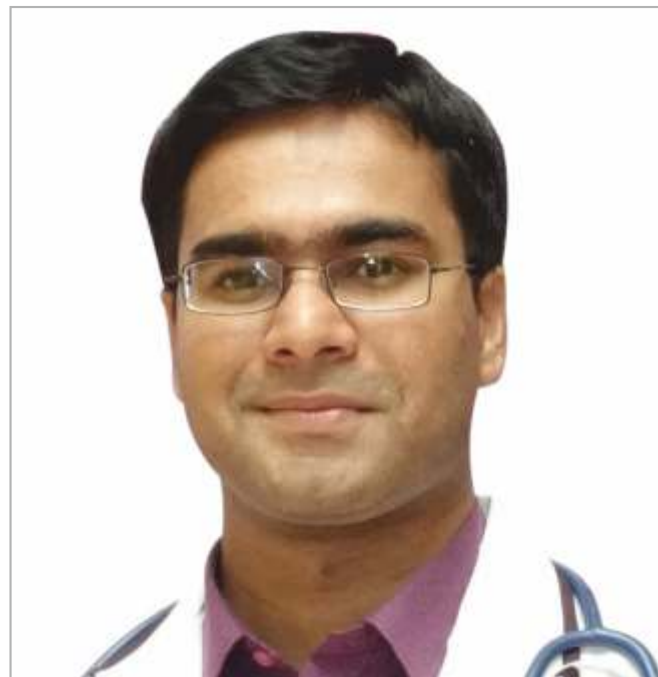


**Dr. Suchisree Mathur**

M.B.B.S., D.E.M

**Emergency Physician**

Dr. Suchisree Mathur is an Emergency Physician in the Department of Emergency Medicine at Virinchi Hospitals. She has overall four years' experience as an Emergency Medicine Resident and Emergency Registrar at Apollo Hospitals and Yashoda Hospitals, respectively. She is trained and experienced in managing all medical, surgical, poisoning, trauma, cardiac and neurological emergencies and has experience working in fast-paced and busy emergency departments in the past.



**Dr. Abbas Asad Syed**

M.B.B.S., D.E.M

**Emergency Physician**

Dr. Abbas Asad Syed is an Emergency Physician in the Department of Emergency Medicine at Virinchi Hospitals. He has overall six years' experience as a primary care and emergency physician. He has worked as a Primary Care Physician at Get Well Polyclinic, Hyderabad and Emergency Physician at Yashoda Hospital, Hyderabad. He has ICU experience of over 3 years in Princess Durrushehvar Hospital. He is trained and experienced in managing all medical, surgical, poisoning and neurological emergencies. He has hands-on experience in the management of cardiac arrest (CPR), intubations, central lines and conducting Basic Life Support and ACLS training sessions for new doctors.



**Dr. Praveen Kumar**

M.B.B.S., M.E.M

**Emergency Physician**

Dr. Praveen Kumar is a Consultant Emergency Physician in department of Emergency Medicine at Virinchi Hospitals. Prior to joining Virinchi Hospitals, she worked as Emergency Physician at Mallareddy Narayana Multi Specialty Hospital. He has one year of experience as physician in his field.

Dr. Praveen completed his M.B.B.S. from MNR Medical College in 2012 and passed Masters Emergency Medicine from Society for Emergency Medicine in India (SEMI) by 2016.

He was AHA accredited as instructor for Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) in 2015. He was also certified NIHSS 'A' stroke scale in same year. Dr. Praveen has special interest in playing various sports. He is an avid book reader, anything related to medicine.



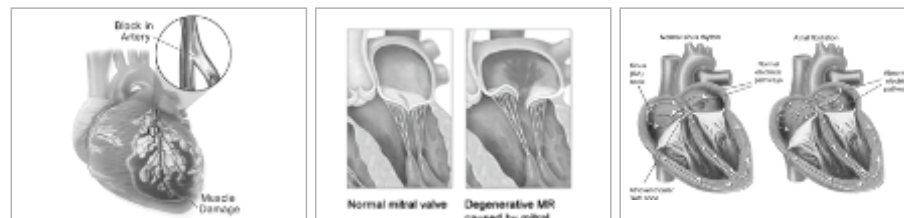
**CARDIAC MONITOR**

### UNIQUE FEATURES

- Advanced clinical solution to summarize and visualize data
- Portable design allows you to take monitoring with you
- Ambient light adjustment for readability in nearly any environment
- Connectivity options help you make the most of your EMR

#### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Cardiovascular emergencies
- Arrhythmia and ischemia detection
- Organ dysfunction
- Diagnosis of abnormal pulses for exploring potential chronic diseases



#### Medical Emergencies

##### Cardiovascular

- Abdominal Aortic Aneurysm (AAA)
- Accelerated Hypertension
- Acute Myocardial Infarction/ Acute Coronary Syndrome
- Aortic Dissection
- Arrhythmias
- Chest Pain (Ischemic Heart Disease)
- Congestive Cardiac Failure
- Mitral valve prolapse
- Pulmonary Thromboembolism

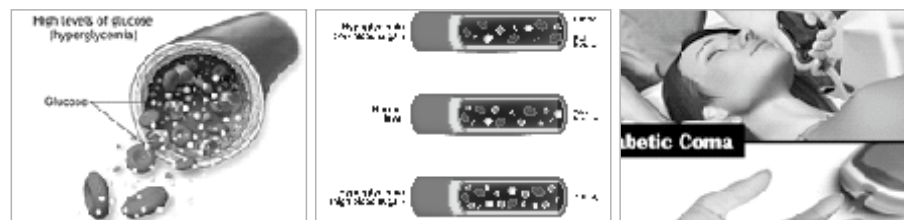
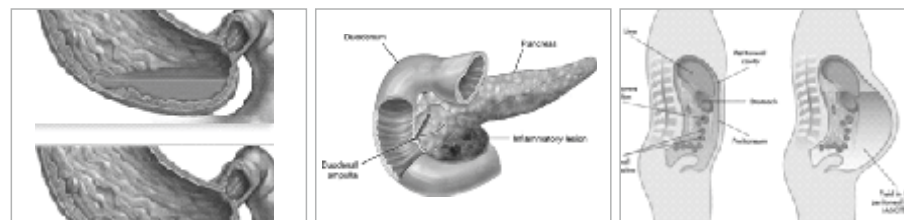
- Hematemesis
- Nonspecific abdominal pain
- Pancreatitis
- Peptic Ulcer disease
- Vomiting

##### Metabolic / Endocrine

- Diabetic Coma
- Diabetic Ketoacidosis (DKA)
- Hyperglycemia, Hyperglycemic crisis
- Hyperosmolar Hyperglycemic State (HHS)
- Hypoglycemia

##### Gastrointestinal

- Acute Cholecystitis, Biliary Colic, Chronic Cholecystitis
- Acute Gastroenteritis with/without dehydration
- Alcoholic Liver Disease (ALD)
- Ascitis
- Dysentery
- Gastrointestinal Bleeding



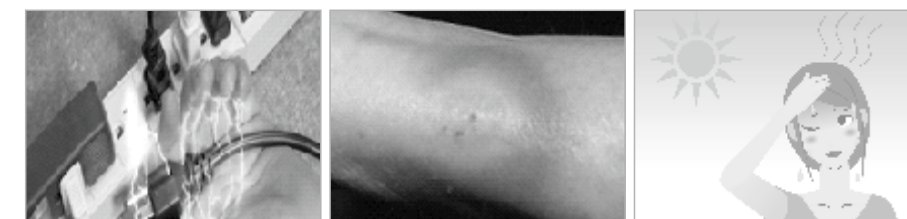
**PORTABLE VENTILATOR**

### UNIQUE FEATURES

- An on-airway flow sensor provides more choices for ventilation
- Built-in oxygen monitoring and alarms alert users to changes or disruptions when using supplemental oxygen
- The Cylinder Use Time Calculator helps estimate how long oxygen will last when on the go
- A patented gas generator runs cool and quiet, is gas efficient and provides consistent volume delivery
- Advanced features such as Alarm Quickset, custom presets and custom backup ventilation make this an exceptional portable ventilator

#### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- ☑ Acute respiratory failure
- Acute lung injury
- Hypoxemia
- Severe asthma
- Hypotension



#### Environmental

- Electrical Injuries
- Hypothermia/ Hyperthermia
- Snake Bites
- Animal Bites
- Insect Bites
- Heat Stroke

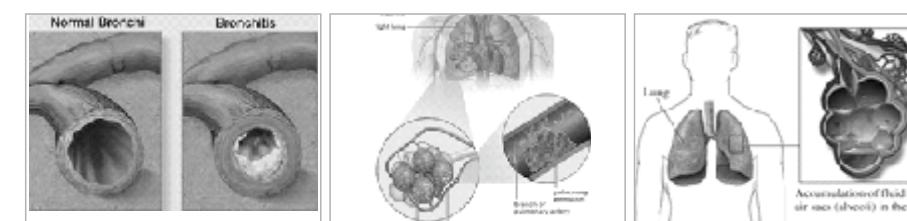
- Hemoptysis
- Pleural Effusion
- Pneumonia
- Pneumonitis
- Pulmonary Aspiration
- Pulmonary Embolism
- Respiratory Failure
- Spontaneous Pneumothorax



#### Vector borne diseases

- Chikungunia
- Dengue
- Japanese Encephalitis & others
- Malaria
- Swine Flu

- #### Psychiatric
- Anxiety disorders
  - Alcohol and Drug Abuse
  - Stress disorder
  - Depression
  - Acute Psychiatric illness



#### Respiratory system

- Acute Respiratory Distress Syndrome (ARDS)
- Acute Respiratory Infections
- Allergic Bronchitis
- Bronchial Asthma
- Chronic Obstructive Pulmonary Disorder (COPD)



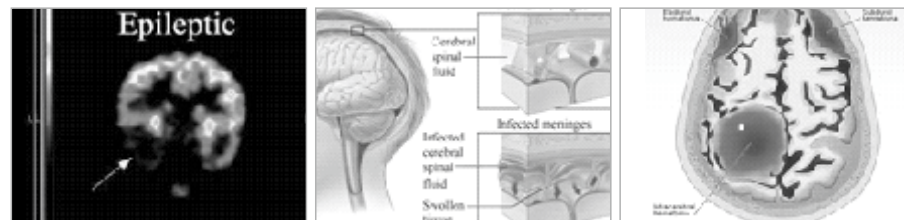
## DEFIBRILLATOR

### UNIQUE FEATURES

- It collects and trends data for up to 8 hours of continuous monitoring
- Intuitive controls and clear voice prompts guide you through the steps of defibrillating the patient
- Small, lightweight and easy to carry
- Signals its readiness with an active, flashing hourglass that shows the results of automated self tests

### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Ventricular fibrillation
- Non-perfusing ventricular tachycardia (VT)
- Atrial fibrillation



### Neurologic

- Acute Confusional States
- Cerebro-Vascular accident (CVA)
- Encephalitis
- Epilepsy
- Febrile convulsions
- Headache
- Meningitis
- Spinal Injury
- Transient Ischemic Attack (TIA)
- Vertigo
- Intracranial hemorrhage
- Subdural haemorrhage (SDH)
- Subarachnoid haemorrhage (SAH)
- Extradural haemorrhage (EDH)



### Haematologic

- Bleeding disorders
- Porphyria
- Severe Anaemia
- Sickle cell Disease

### Communicable diseases (infectious diseases)

- Chicken Pox
- Cholera
- Diphtheria
- Measles
- Mumps
- Rabies



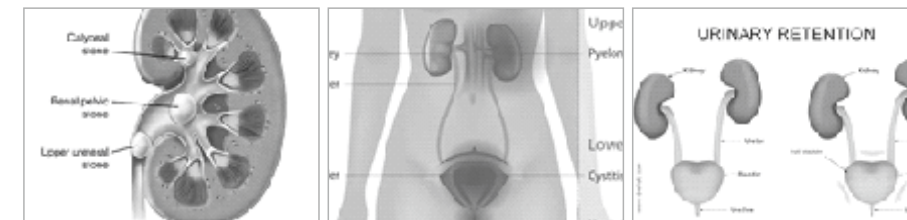
## VENTILATOR

### UNIQUE FEATURES

- Supports Invasive & Non-invasive ventilation with leakage compensation
- The standard configuration includes several ventilation modes and options like Pressure Regulated Volume Control (PRVC) and Volume Support (VS) can easily be added on
- Edi Signal provides useful information on respiratory drive, volume requirements and the effect of ventilator settings
- For continuity of care with no loss of treatment information, it is available for Magnetic resonance imaging (MR) and for Hyperbaric oxygen therapy (HBO)
- Y sensor measurement for neonatal/paediatric and adult patients enables measurement of pressure and flow as close to the patient's airway as possible

### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Acute respiratory distress syndrome
- Chronic obstructive pulmonary disease



### Nephrologic & urologic

- Acute Nephritis
- Acute Renal Failure/ chronic Renal Failure
- Dialysis related emergencies
- Fluid overload states
- Hypertensive Nephropathy
- Nephrolithiasis, Uretic Calculi
- Nephrotic Syndrome
- Pre-dialysis Hyperkalemia
- Urinary retention
- Urinary Tract Infection (UTI)

- Barotrauma
- Foreign body in ear
- Infections

### Nose

- Epistaxis
- Foreign body

### Throat

- Foreign Body in Bronchus (OT)
- Foreign Body in Oesophagus(OT)
- Quinsy
- Tonsillitis / Laryngitis



### Eye

- Eyelid laceration
- Foreign Body
- Injuries
- Sudden loss of vision

### Ear

- Acute Mastoiditis
- Acute suppurative otitis media (ASOM)/ Serous otitis media (SOM)/ Chronic suppurative otitis media (CSOM)





**EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO)**

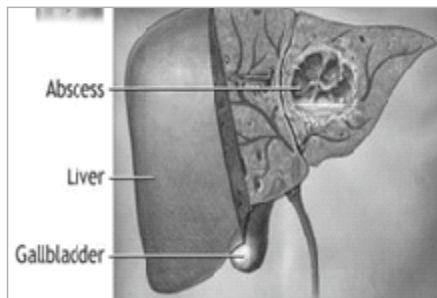
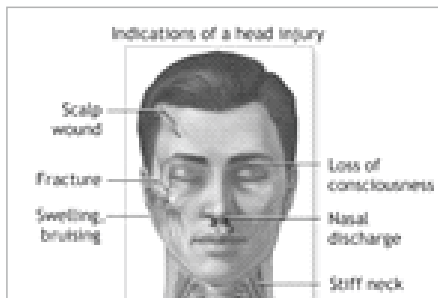
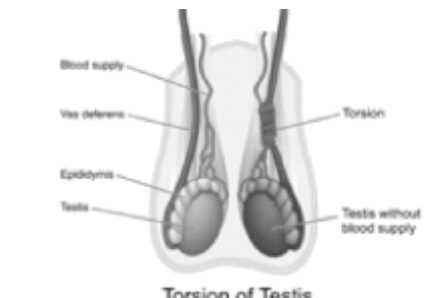
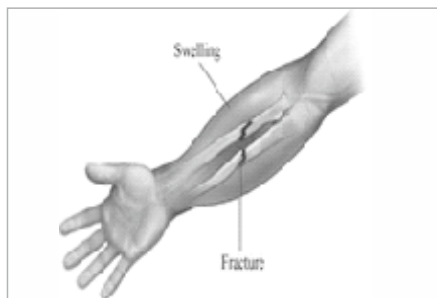
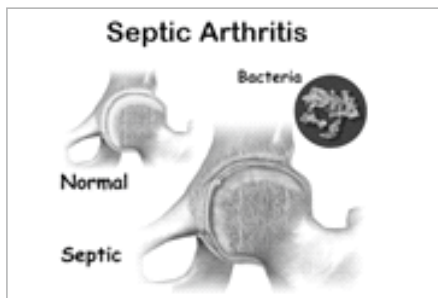
### UNIQUE FEATURES

- The ECMO System makes available new therapy options using extracorporeal circulation and incorporates improved usability and additional safety
- Is light enough to be carried by one person and compact enough to be transported
- ECMO combines the complex technology needed for cardiopulmonary surgery with clear and concise handling necessary for safe and effective patient management
- All controls and monitors are managed from a single panel for user-friendly operation

### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Cardiopulmonary disease
- Acute hypoxemic respiratory failure
- Cardiac arrest
- Cardiogenic shock

- Acute respiratory distress syndrome



### Orthopedic

- Acute Gout, Septic Arthritis
- Acute Osteomyelitis & other inflammatory conditions of Joints/ bones
- Fractures, Dislocations, Sprains & strains
- Road Traffic Accident / Polytrauma

### Others

- Shock
- Non Specific Pyrexia (Fever)
- Anaphylactic Reactions
- Septicemia

### Surgical Emergencies General Surgery & other Surgical Specialities

- Abscesses
- Acute Abdomen
- Acute Appendicitis
- Acute Cholecystitis
- Acute limb ischemia
- Acute Urinary Obstruction
- Assault Injuries
- Benign prostatic hyperplasia (BPH) with Urinary Retention
- Benign/ Malignant Tumors ( To investigate and decide further)
- Burns
- Cellulitis, Erysipelas
- Chest Trauma
- Compartment syndrome
- Complications of Varicose veins
- Crush syndrome
- Head Injury
- Hemorrhoids
- Intestinal Obstruction
- Large Bowel emergencies
- Liver Abscess
- Mesenteric Ischemia / infarction
- Penetrating injuries
- Perforation
- Road Traffic Accidents
- Ruptured abdominal aortic aneurysm
- Testicular Torsion



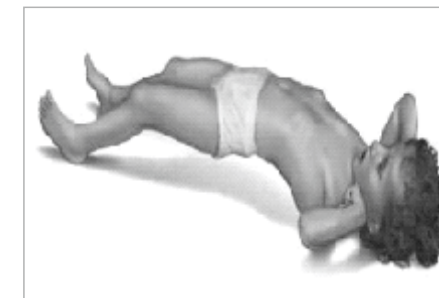
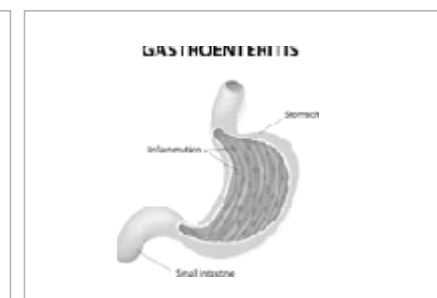
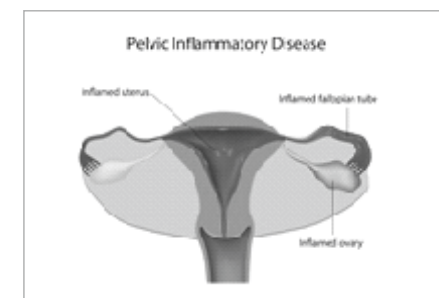
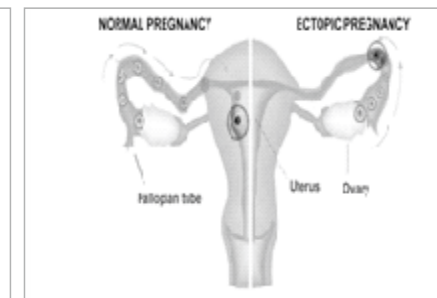
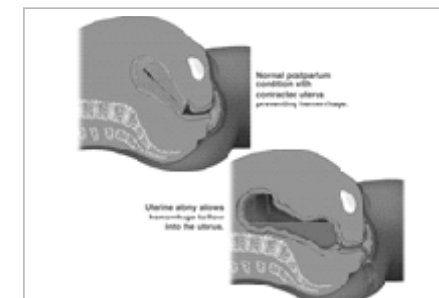
**HEMODYNAMIC MONITOR**

### UNIQUE FEATURES

- It is scalable & adaptable to both Operation theatre & Intensive care unit
- Presents patient hemodynamic information clearly and colour-based indicators communicate patient status at a glance
- Screen options include the real-time physiology screen (both intermittent and continuous), the cockpit screen, the goal positioning screen, graphical trend screens and the physio-relationship screen
- Helps the user to track and manage key parameters, and create and monitor customized protocols

### DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Acute heart failure (AHF)
- Sepsis
- Stroke
- Trauma



### Gynecological Emergencies

- Cardiac arrest in pregnancy
- Ectopic pregnancy
- Emergency delivery (Normal/ Cesarean)
- HELLP syndrome
- Ovarian torsion/ Ovarian cyst rupture
- Pelvic inflammatory disorder (PID)
- Postpartum hemorrhage
- Pre-eclampsia / Eclampsia
- Spontaneous abortion
- Thromboembolic disease in pregnancy
- Vaginal bleeding in pregnancy

### Pediatric Emergencies

- Acute asthma
- Childhood infectious diseases
- Difficulty Breathing
- Febrile convulsions
- Fractures, sprains and strains
- Gastroenteritis/food poisoning

- Head injuries
- High or Persistent Fever
- Infestations
- Otitis media (middle ear infection) and related conditions
- Pediatric trauma
- Severe Allergic Reactions
- Severe Pain
- Heat Stroke
- Superficial injuries



**ULTRASOUND SYSTEM**

**UNIQUE FEATURES**

- Technology has improved penetration capabilities & excellent detailed resolution in difficult-to-image patients
- Allows visualization of low velocity micro circulation while evaluating organ perfusion of small vasculatures
- Fully integrated fusion capabilities allow clinicians to achieve fast & effective fusion of CT/MR/PET with live ultrasound
- Excellent ergonomics may help reduce repetitive stress injuries
- Minimally invasive procedure which uses no ionizing radiation

**DIAGNOSTIC AND THERAPEUTIC APPLICATIONS**

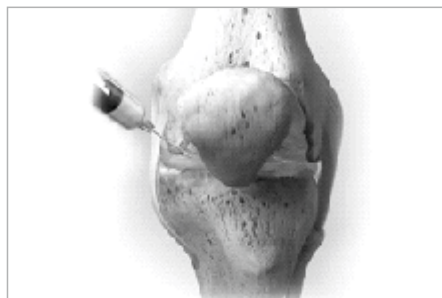
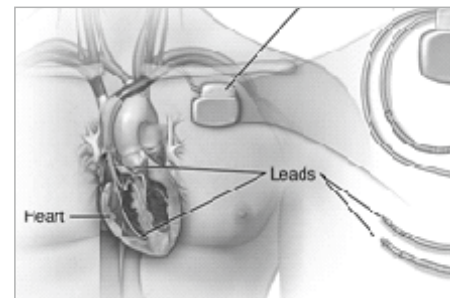
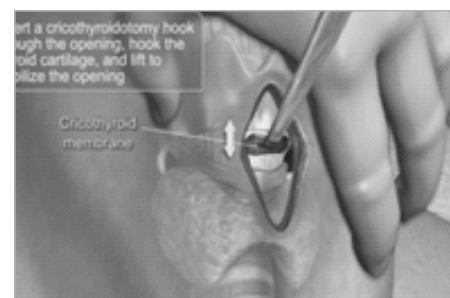
- Chest pain mapping:**
- Pericardial effusion
  - Severe pulmonary embolus
  - Heart ischemia

**Abdominal Pain mapping:**

- Gallbladder disease
- Abdominal aortic aneurysm

**Other emergencies mapping:**

- Appendicitis
- Testicular torsion
- Abscesses



- Antihypertensive therapy
- Cardiopulmonary resuscitation
- Chest decompression of tension pneumothorax
- Closed manipulation and reduction
- Cricothyroidotomy
- Emergency oxygen therapy
- Endotracheal intubation
- Epistaxis control
- Escharotomy
- Fibrinogen replacement therapy
- Focused Assessment Solography in Trauma (FAST), and extended region
- Hemorrhage control
- Implantable Cardioverter Defibrillator (ICD) Therapy
- Intraosseous cannulation
- Intravenous cannulation
- Joint aspiration
- Paracentesis
- Pediatric resuscitation
- Pediatric trauma resuscitation



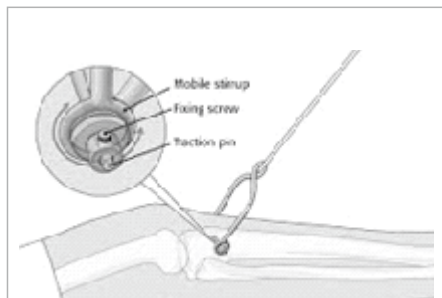
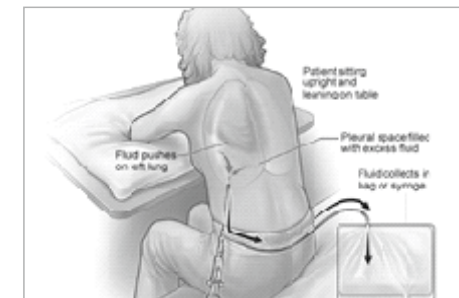
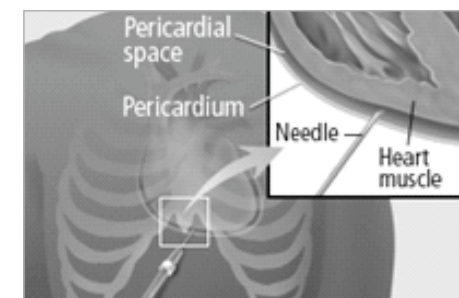
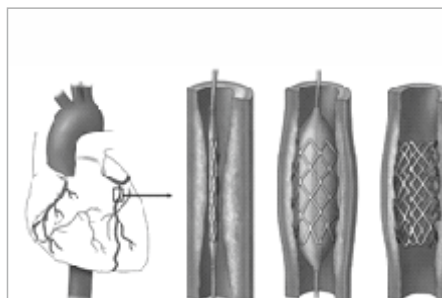
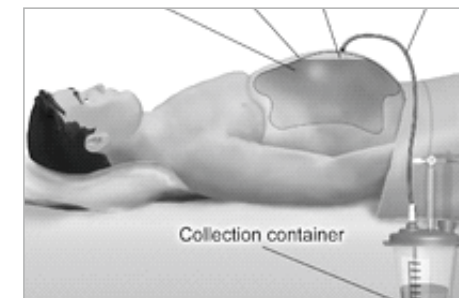
**SEQUENTIAL COMPRESSION DEVICE ( SCD)**

**UNIQUE FEATURES**

- Delivers clinically proven sequential, gradient, circumferential compression (to the leg, foot or both simultaneously)
- Allows the system to detect each patient's individual vascular refill time to deliver customized therapy
- Regularly re-evaluates each patient's refill time and automatically adjusts for changes in body position
- Ensures customized compression cycles to move blood from the lower extremities as quickly as the veins refill.
- Adjusts level and frequency of compression without nursing intervention

**DIAGNOSTIC AND THERAPEUTIC APPLICATIONS**

- Deep Vein Thrombosis (DVT)
- Pulmonary embolism (PE)



- Pelvic stabilization
- Percutaneous transluminal coronary angioplasty
- Pericardiocentesis
- Plaster of paris (POP) application
- Procedural sedation & analgesia
- Psychological debriefing (PD)
- Rapid sequence intubation
- Renal replacement therapy
- Skeletal traction
- Supraglottic airway intubation
- Suprapubic catheterization
- Thoracocentesis
- Thoracotomy
- Tracheal intubation
- Traction sutures
- Transcutaneous cardiac pacing
- Trauma resuscitation
- Vasopressor therapy

## SUPRAGLOTTIC AIRWAY DEVICE



- Anatomically molded supraglottic airway device that can be rapidly inserted to quickly manage an airway in patients that are difficult to intubate, in situations where intubation is not available, or as a quick response adjunct in resuscitation attempts
- The pack contains an O2 supraglottic airway, a gastric suction tube, gel lubricant and a neck strap to secure it in one place
- The device comes in several sizes to accommodate patients from 30 to 100 kilograms

## MOBILE ICU WITH OXYGEN CONCENTRATOR

- The mobile intensive care unit is the world's first life support system with a built-in oxygen concentrator
- It extracts oxygen from the air to deliver 0.85 FiO2 concentrations for ventilated patients, without the need for O2 tanks
- The system is 50% smaller and 60% lighter than standard transport life support systems currently in use
- The system attaches to a patient stretcher and is compact enough to fit in any vehicle, rotary, or fixed wing aircraft



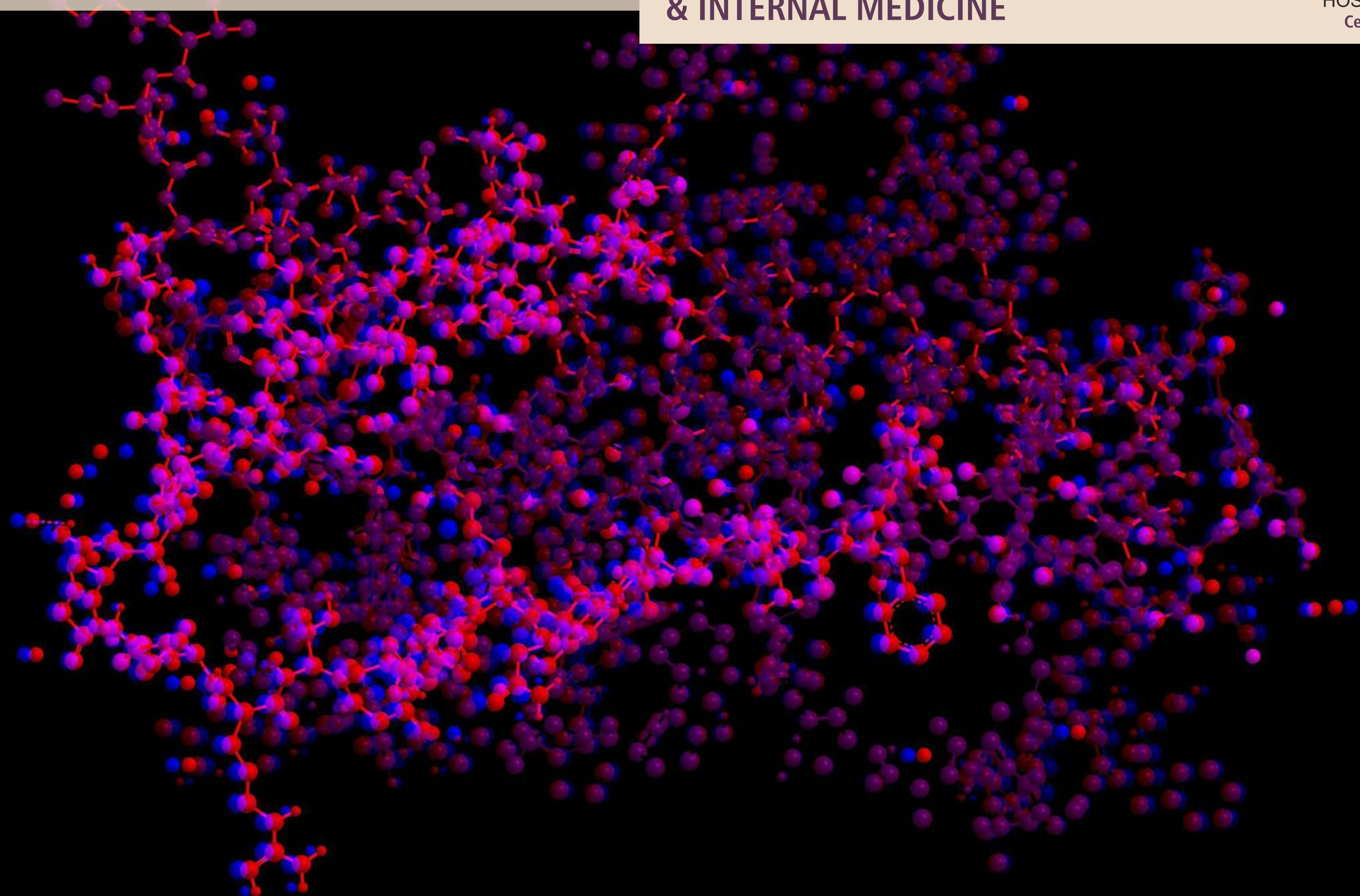
## VASCULAR CLAMP



- It is a haemorrhage control device for use in the extremities, axilla, inguinal, scalp and neck
- The device seals the edges of a wound closed to mitigate further blood loss until the wound can be surgically repaired
- Studies show the clamp to be superior to wound packing in terms of patient survival, survival time and total blood loss
- Applied in seconds with minimal pain to the patient, the clamp is ideal for emergency medical personnel

Your Hormones affect Everything

DEPARTMENT OF  
ENDOCRINOLOGY, DIABETOLOGY  
& INTERNAL MEDICINE



Virinchi Hospitals, Virinchi Circle, Road #1, Banjara Hills, Hyderabad-500 034, India.

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**Dr. G. Vasundhara Devi**  
MBBS, MD Internal Medicine  
Sr. Consultant Physician & Diabetologist

Dr. Vasundhara Devi is a Sr. Consultant in department of General Medicine and Diabetology at Virinchi Hospitals. She has more than 20 years of experience in her field. She began her professional career as a Consultant Physician with R.R. Hospitals in 1997. During her entire career, she has been associated with some of the top hospitals in Hyderabad like Century Hospitals, Icon Hospitals, Astra Clinics, and others.

Dr. Vasundhara Devi was graduated from Kurnool Medical College. She is experienced as a Senior Registrar at Kuwait Heart Centre, Kuwait. She has presented posters on clinical cardiology at annual poster conferences held by Kuwait medical department.

She attended national and international conferences as part of her academic interest to be updated with latest advancements in department of General Medicine and Diabetology.

## FOREWORD

*Virinchi Hospitals' endocrinology department offers in-depth diagnosis to understand the functional status of every system and provide treatment against all forms of conditions.*

*We help the affected individual to best manage the phase of their conditions and provide personalized treatment plans with excellent patient care.*

*Also, patients can receive access to a multidisciplinary team including endocrinologists, diabetic educators, dieting and nursing practitioners. Our goal is to help the individuals to receive early, specialty care and education, and get them on the right track with their effective management measures.*



## Dr. Dilip Gude

MBBS (Osmania), MPH (USA), MD, DNB, MNAMS (Gen Med)  
Fellowship in Diabetology (Gold Medalist), Fellowship in Critical Care  
**Sr. Consultant Physician and Diabetologist**

Dr. Dilip Gude is a Chief Consultant Physician and Diabetologist in the Department of Internal Medicine & Critical Care at Virinchi Hospitals. He has more than five years' experience in internal medicine and critical care. He has worked as Head Internal Medicine and Critical Care at Durrushehvar Hospital; Academic in charge and Asst. Professor in the Department of Internal Medicine and Critical Care at Owaisi Hospital, Deccan Medical College. He has won All India Gold medal in Diabetology fellowship (Manipal University/Indian Medical association) in 2014. He has also won All India Best Young Faculty award in 2013 conducted by EET-CRS Academy Awards for Excellence in Education. He was the topper in Braun Internal Medicine Scholarship in 2012. He is a founder of South Asian Research Society for Metabolic Disorders (SARS – MD). He is the Author of the book – A Bridge over the Impossible. He has authored more than 110 national and international Pubmed indexed medical publications. He is well versed in all aspects of critical care medicine including central line placements, intubations, chest tube placements, bedside tracheostomy, etc.



## Dr. Ahrar Ahmed Feroz

M.B.B.S., M.D. (Internal Medicine)  
**Consultant Physician & Diabetologist**

Dr. Ahrar Ahmed Feroz is a Consultant General Physician and Diabetologist at Virinchi Hospitals. He began his professional career in the year 2001 with Deccan College of Medical Science as DMO; worked there for couple of years. Later, he completed M.D. (General Medicine) in same college by 2007. He continued to work there for six years as Associate professor in Department of General Medicine. Before joining Virinchi Hospitals, he worked as Consultant Physician in Olive, Apollo DRDO, and Care Hospitals.



**Dr. Shalini Patlolla**  
M.D., D.M. (Endocrinology)  
**Consultant Medical Endocrinologist**

Dr. Shalini Patlolla is Consultant Endocrinologist at Virinchi Hospitals with four years of experience. Prior to Virinchi Hospitals, she worked as Asst. Professor in department of Endocrinology and metabolism at Sri Venkateswara Institute of Medical Sciences, Tirupati.

She under graduated in 2009 from Osmania University and passed M.D. in Paediatrics from same University in 2013. Later, she passed D.M. in Endocrinology from Sri Venkateswara Institute of Medical Sciences in 2016.

During her educational career, she won lot of accolades for her research projects and presentations in department of Endocrinology.



**Dr. Ashwini Reddy**  
M.S., M.Ch (SGPGI)  
**Consultant Endocrine & Breast Surgeon**

Dr. Ashwini Reddy is Consultant Endocrinologist and Breast Surgeon at Virinchi Hospitals. Prior to Virinchi Hospitals, she worked with SGPGI, Lucknow as Senior Resident in the department of Endocrine Surgery for three years. Her professional career began as Resident with KIMS, Hubli in department of Surgery. Dr. Ashwini has an overall experience of six years during which she performed many surgeries like Thyroid surgery for Benign Lesions, Thyroid Cancer, Adrenal Surgery, Thymectomy, Benign Breast Disorders, and Breast Cancer Surgery are few of them.

As a part of social campaign, she often visits remote villages and conduct health camps. She also plays the role of health advocate and strive to make tertiary care accessible to all.



128-SLICE CT SCAN

### UNIQUE FEATURES

- Sensitive detection technology (Gemstone), which is by far the best innovation and the first new detector material in the past two decades, as far as high definition scanning with less noise is concerned.
- High-definition imaging with the Gemstone clarity detector (Gemstone Spectral Imaging (GSI)) helps in quantitative tissue characterization, anatomical analysis and functional imaging.
- Recovery time is four times faster compared to other detectors and the primary speed is nearly 100 times faster than any other detectors to date.
- Overcomes the biggest challenges like calcium blooming and beam hardening to get accurate perfusion and plaque characterization.
- Low-dose and high-resolution cardiac imaging

### DIAGNOSTIC APPLICATIONS

- Diagnosis of Endocrine tumours
- Detection of adrenocortical carcinoma
- Determining the location and size of thyroid cancers and whether they have spread to nearby areas
- Diagnosis of Pituitary tumours



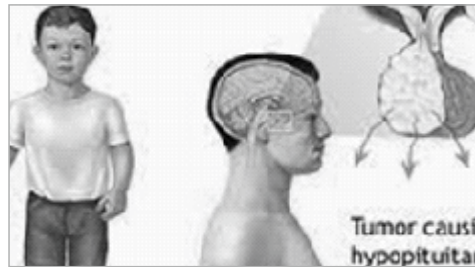
MAGNETIC RESONANCE IMAGING INGENIA 3T

### UNIQUE FEATURES

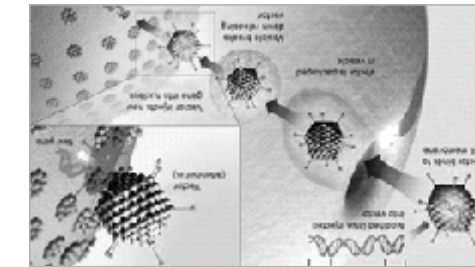
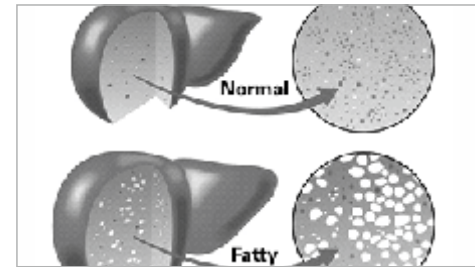
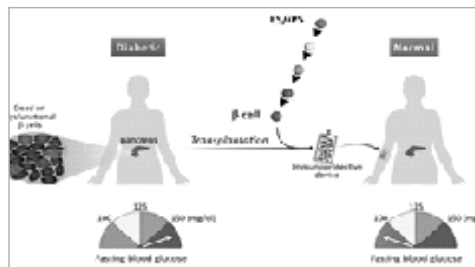
- Increased bore space to reduce anxiety in claustrophobic patients.
- Smart software to reduce retakes, increase consistency and exam speed.
- Digital coil design greatly reduces coil weights and leads to less patient repositioning in many exams.
- The ambient light ring on the magnet façade and adjustable, in-bore lighting enhance the openness of the system.
- Patient-perceived gradient acoustic noise is reduced by more than 80%.

### CLINICAL APPLICATIONS

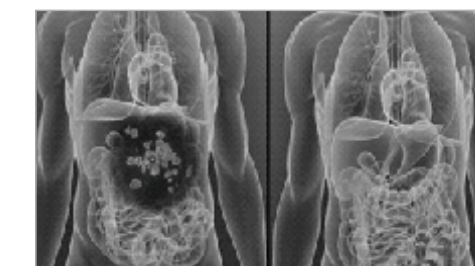
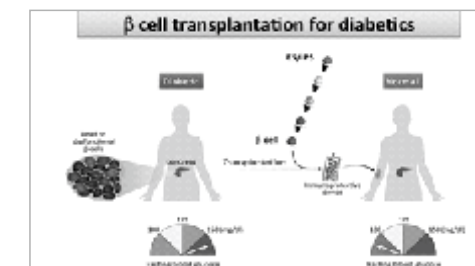
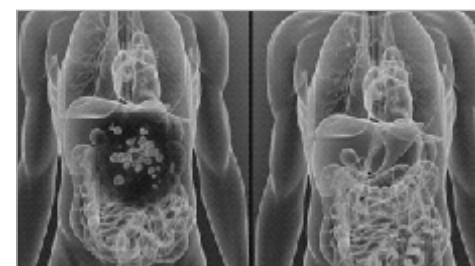
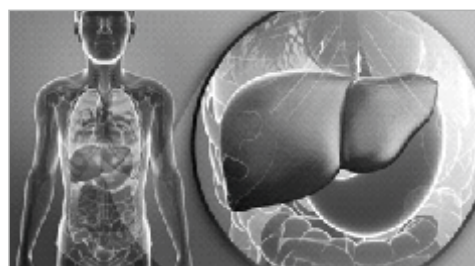
- Cardiology
- Musculoskeletal System
- Hepatology and gastroenterology
- Oncology
- Urology, Andrology & Gynaecology
- Vascular System
- Pulmonology
- Lymphatic System



- Hormone replacement therapy (HRT)/menopausal hormone therapy
- Insulin therapy
- Ablation
- Surgeries
  - Hypophysectomy
  - Adrenalectomy
  - Thyroidectomy
- Growth hormone and hydrocortisone replacement therapies
- Adrenal Venous Sampling
- Parathyroid Venous Sampling
- Calcium Stimulated Venous Sampling
- Petrosal Venous Sampling
- Total Body Venous Sampling
- Daycase infusions



- Hormone Replacement Therapy (HRT) / Menopausal Hormone Therapy
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- Calcium Stimulated Venous Sampling
- Petrosal Venous Sampling
- Total Body Venous Sampling
- Daycase Infusions





## ULTRASOUND

### UNIQUE FEATURES

- Anatomical Intelligence Ultrasound (AIUS)
- The pure wave crystal technology improved penetration & excellent detailed resolution in difficult-to-image patients.
- New Micro CPA feature allows visualization of low velocity micro circulation while evaluating organ perfusion or small vasculatures
- Fully integrated fusion capabilities allow clinicians to achieve fast & effective fusion of CT/MR/PET with live ultrasound.
- Excellent ergonomics may help reduce repetitive stress injuries
- Uses no ionizing radiation

**DIAGNOSTIC APPLICATIONS**

- Thyroid Ultrasound
- Pancreatic ultrasound
- Adrenal glands Ultrasound



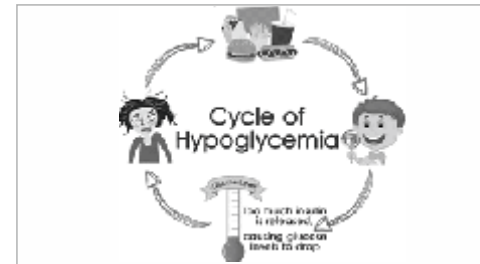
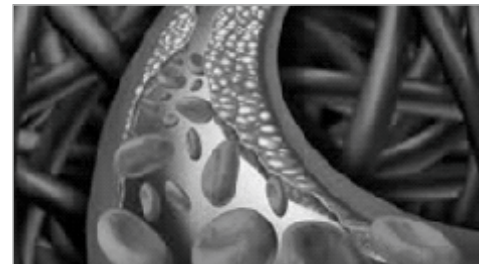
## DIGITAL RADIOGRAPHY

### UNIQUE FEATURES

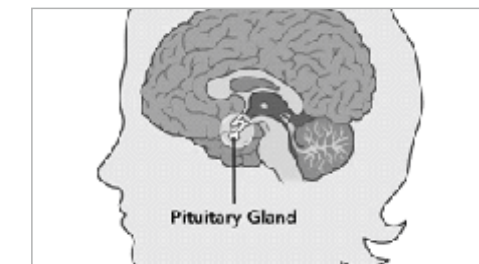
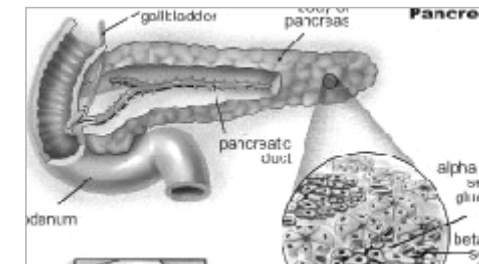
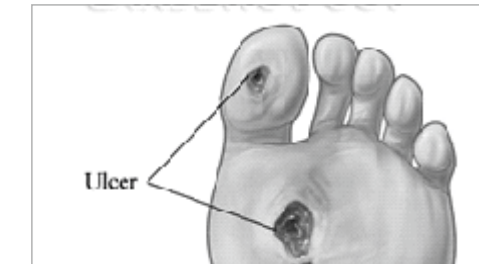
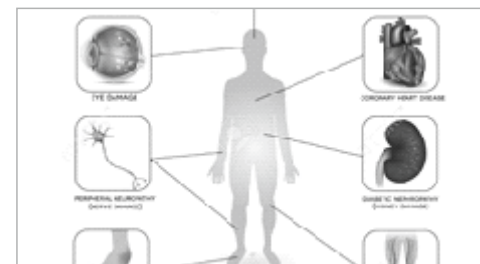
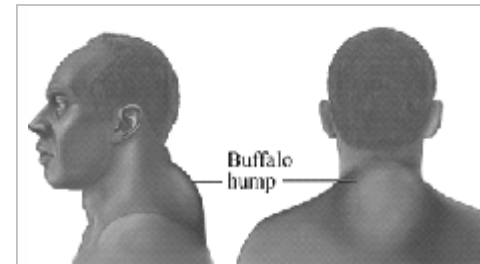
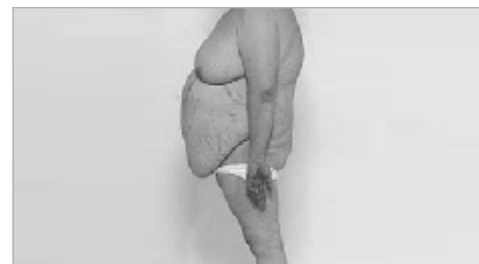
- Time efficiency through bypassing chemical processing and the ability to digitally transfer and enhance images.
- Digital flat panel detector (FDP) & imaging software with excellent digital image processing unit offers remote diagnosis solutions
- Greater productivity and more options to enhance images
- Diagnose with confidence while lowering radiation dose
- Elimination of lost films and fewer repetitions

**DIAGNOSTIC APPLICATIONS**

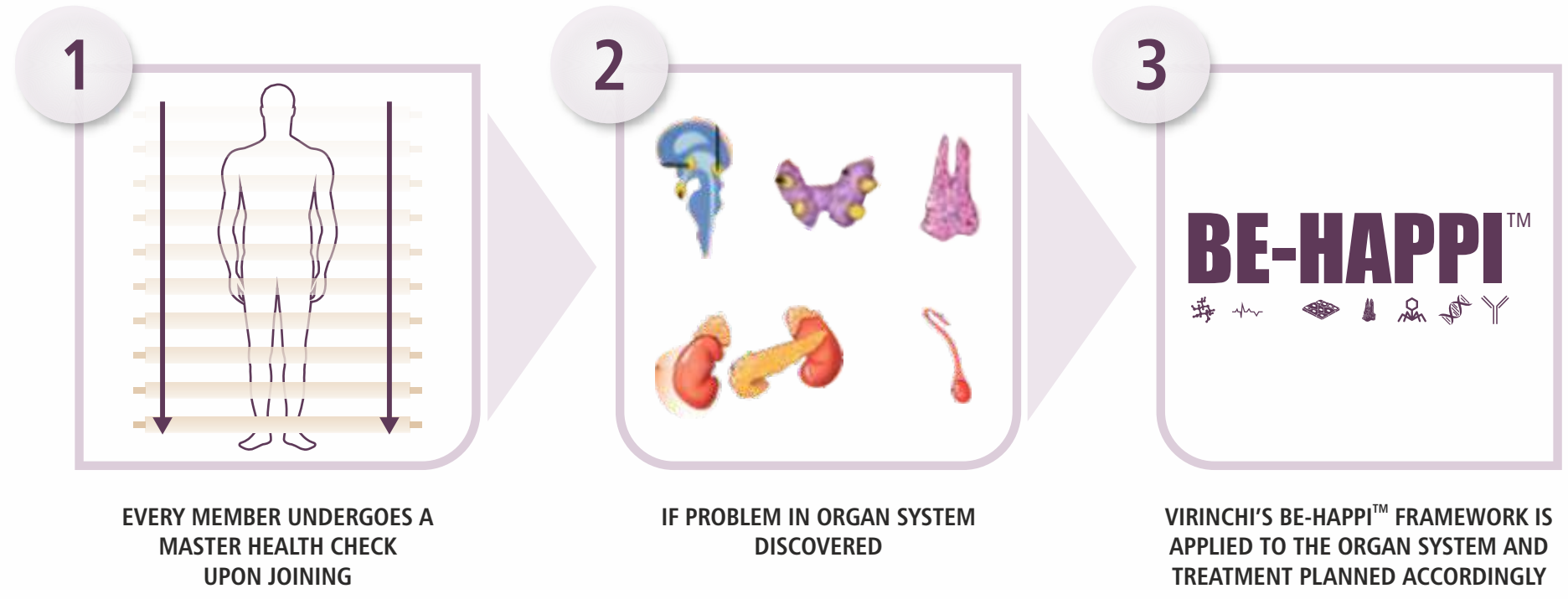
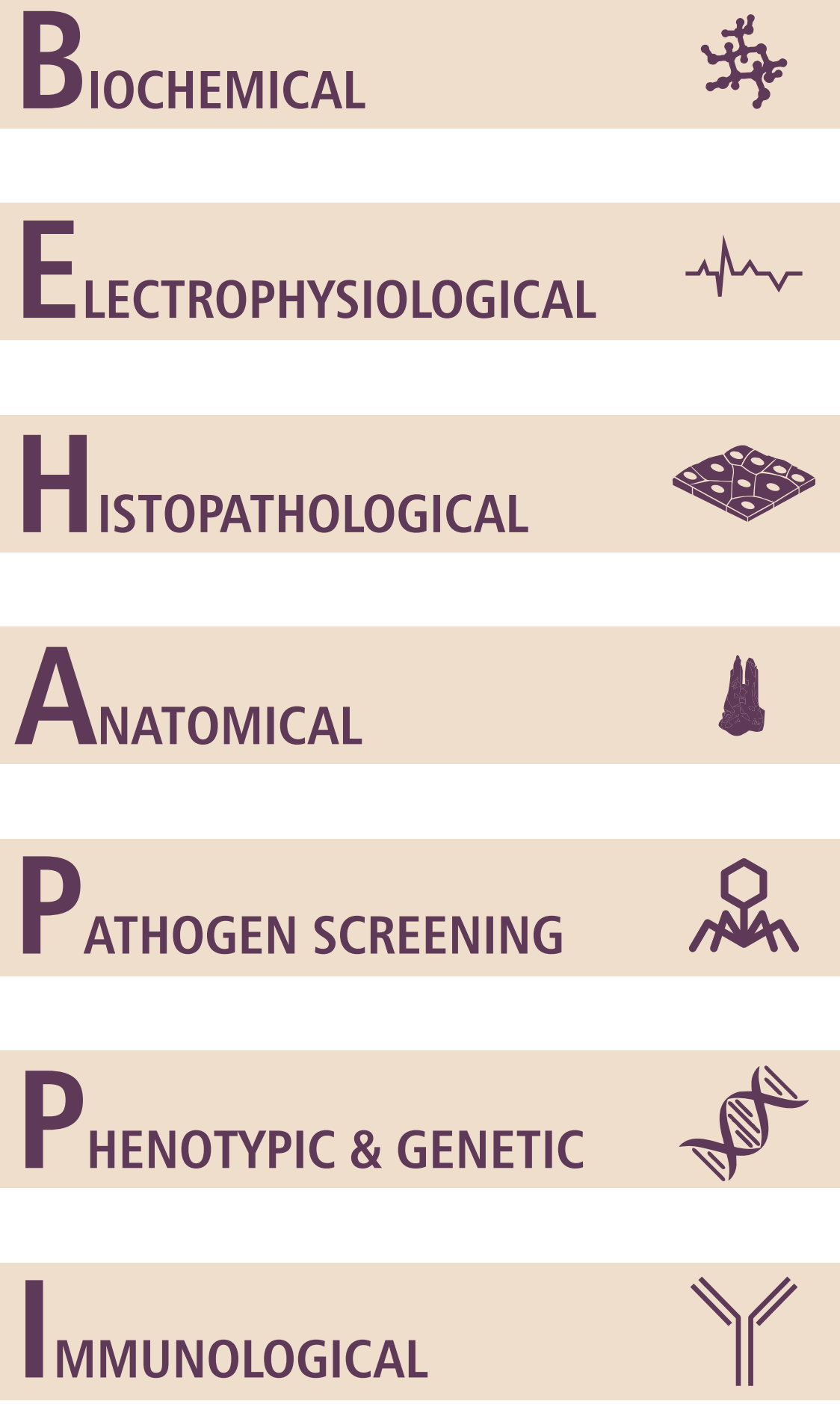
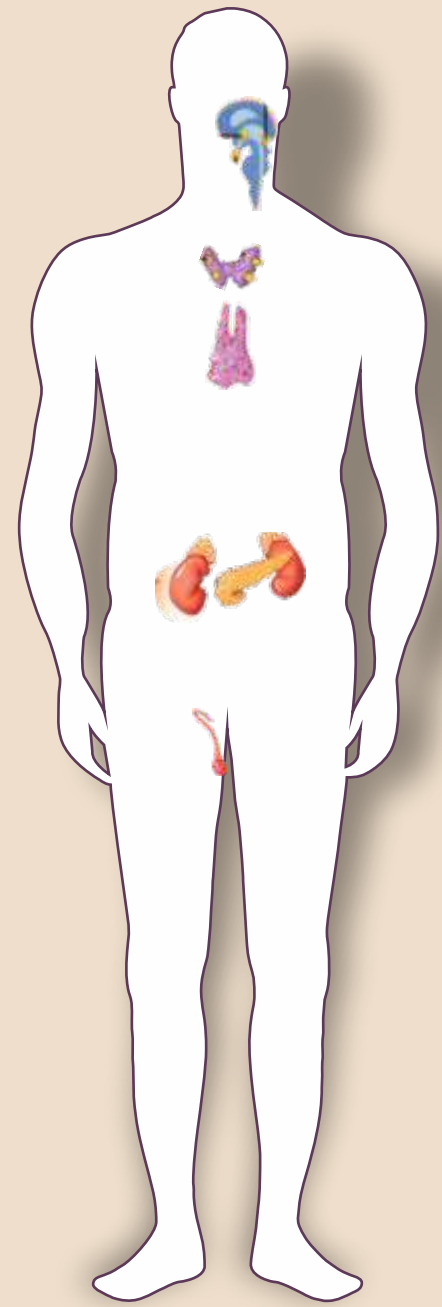
- X-Ray test for Adrenal Gland Tumor
- Thyroid X-Ray
- Pancreas X-Ray



- Hyperlipidemia
- Hyperparathyroidism
- Hypocalcemia
- Hypercalcemia
- Hypocortisolism
- Hypercortisolism
- Hypoglycemia
- Hypogonadism
- Hypokalemia, hyperkalemia
- Hypophosphatemia
- Hypopituitarism
- Hypothyroidism, hyperthyroidism



- MEN1 (multiple endocrine neoplasia type 1)
- Osteogenesis imperfecta
- Osteopenic states
- Osteoporosis
- Paget's disease
- Pituitary tumors
- POEMS syndrome
- Prolactinoma
- Thyroid cancer
- Thyroid nodules
- Thyroiditis
- Vitamin D deficiency
- Type 2 diabetes
- High blood pressure/heart disease
- Osteoarthritis of weight-bearing joints
- Sleep apnea/respiratory problems
- Gastroesophageal reflux disease (hiatal hernia and heartburn)
- Depression
- Infertility
- Urinary stress incontinence
- Asthma
- GERD
- Depression
- Non-Alcoholic fatty liver disease



Biomarkers are biological indicators that provide us with a means of understanding the relationship between measurable biological processes and clinical outcomes for evaluating health and wellness. Further, the study of biomarkers enables us to devise treatment options for all disorders and diseases since they enhance our understanding on physiology and anatomy of an individual.

Proper functioning of every organ and system in our body is essential for us to live a healthy and good quality of life as we progress through various phases of our life. Any deviation from performing one function may result in disordered physiological processes and will be associated with either symptomatic or asymptomatic disorder. If the disorder is manifested in the form of symptoms and signs, then it can be identified accurately with the help of specific diagnostics tests. However, asymptomatic disorders that typically do not show any clinical symptoms and signs could gradually lead to secondary complications affecting one or multiple systems that may be difficult to understand and treat

Therefore it is very essential to understand the health of all the organs and systems of our body irrespective of respective/overall disorderliness with or without any symptoms in order to understand thoroughly whether any function is impaired or progressing towards impairment with the help of comprehensive diagnostic tests. Virinchi's proprietary BE-HAPPI™ evaluates the health status of every organ and organ system from a biochemical, electrophysiological, histological and cytological, anatomical, pathogenic, phenotypic and genotypic, immunological perspectives. The influences of these factors on biomarker levels also indicate disorder's onset and/or its progression either as an independent or comorbid consequence.

With advanced and sophisticated technology housed in world-class infrastructure, and strong rooting in evidence-based medicine, Virinchi is well-positioned to undertake this comprehensive analysis to derive accurate and predictable diagnosis, thus enabling its physicians to devise individual-specific predictive, preventive and reactive therapies and interventions.

## BIOCHEMICAL



Many of the biological molecules including nucleic acids, proteins, lipids, fats and naturally occurring small chemicals that are formed due to metabolic and physiological activities serves as important contributors to understand the health of every organ and system in our body; and also help us to evaluate the nature and degree of disorderliness across systems and organs with the help of analytical, cytological, histochemical and immunological methodologies.

### PARAMETERS TESTED @ VIRINCHI

5-hydroxyindoleacetic acid (5-HIAA), 8-oxoguanine (8oxoG), 8-hydroxy-2'-deoxyguanosine (8oxodG), Adiponectin (ADIP), Adrenal cortex Mineralocorticoids (e.g. aldosterone) steroids, Adrenal Corticotropin Hormone (ACTH), Adrenal medulla Noradrenaline (norepinephrine) tyrosine derivative, Adrenaline (epinephrine) tyrosine derivative, Aldosterone, Amylin peptide, Androgens (e.g. testosterone), Angiotensin, Angiotensinogen protein, antidiuretic hormone (ADH), Antimüllerian Hormone, Asprosin, Betatrophin, Bone Osteocalcin peptide, Brain natriuretic peptide (BNP), Calciferol (vitamin D 3) steroid derivative Skin, Calcitonin peptide, Calcitriol steroid derivative, Cancer antigen 19-9 (CA-19-9), Catecholamines (epinephrine and norepinephrine), Cholecystokinin (CCK), Cholesterol (CHOL), Chromogranin, Compound F Hydrocortisone, Copeptin, corticosteroid-binding globulin (CBG), corticotropin releasing hormone (CRH), Cortisol (CORT), C-peptide, Creatine kinase-MB (CK-MB), Cytochrome P450 oxidoreductase (POR), Dehydroepiandrosterone (DHEA), Dehydroepiandrosterone sulfate (DHEAS), Dihydrotestosterone(DHT), Dihydrotestosterone Androstan-3-one, Electrolyte Panel, Epinephrine, Erythropoietin (EPO), Estradiol, Estrogen, Estrone, F2-isoprostanes, Fibroblast Growth Factor 19 (FGF19), Follicle stimulating hormone (FSH), Free fatty acids (FFA), Free Triiodothyronine (T3), Gastrin, Gastrin-releasing peptide (GRP), Ghrelin, Glucagon, Glucocorticoid receptor (GR), Glucocorticoid steroids, GnRH, Growth Hormone, Growth hormone-releasing hormone (GHRH), Guanine nucleotide regulatory protein, Haptoglobin (HP), HCG  $\alpha$  and  $\beta$ , Hepsidin, HGH: Somatotropin (STH), High-density lipoprotein (HDL), Histamine, HLA-DR3, Human chorionic gonadotropin (HCG) protein, Incretins, INSR, Insulin, Insulin-like Growth Factor 1, Insulin-like growth factor binding protein 5 (IGFBP5), Insulin-like Growth Factor-binding Protein 3 (IGFBP-3), Interferon inducible T cell  $\alpha$  chemoattractant (ITAC), Interferon- $\gamma$ , Interleukin 12 subunit p40, Interleukin-13, Interleukin-2, Interleukin-3, Iodine, Leptin, Low-density lipoprotein (LDL), Luteinizing hormone (LH), Macrophage derived chemokine, Matrix metalloproteinase 7 (MMP-7), Melatonin tryptophan derivative, Neurokinin A, Neuron-specific enolase (NSE), Neuropeptide K, Neuropeptide Y, Neurotensin, Norepinephrine, Nucleosomal binding protein 1 (NSBP1), Osteocalcin, Oxytocin, Pancreatic polypeptide (PP), Parathyroid Hormone (PTH), Parathyroid hormone-related protein (PTH-rP), Peptide YY, Phosphatoin protein, Pregnancy-associated plasma protein A (PAPP-A), Pregnenolone, Progesterone (PRG), Proinsulin, Prolactin (PRL), Renin, Retinoic acid receptor- $\gamma$  (RAR $\gamma$ ), Retinol Binding Protein 4, Secretin, Serotonin, Sex Hormone-Binding Globulin(SHBG), Sodium-iodide symporter, Somatostatin, Somatostatin peptides 14, Somatostatin peptides 28, Stem cell factor, Substance P (SP), Tamm-Horsfall urinary glycoprotein, TeBG (Testosterone-Binding Globulin), Testosterone Free (Direct), Testosterone Total, Thrombopoietin, Thyroglobulin (TG), Thyroid-stimulating hormone (TSH), Thyrotropin-releasing hormone (TRH), Thyroxine T4 Direct, Thyroxine T4 Free, Thyroxine T4 Total, Thyroxine T4 tyrosine derivative, Thyroxine-binding globulin (TBG), Total Triiodothyronine (T3), Triglycerides (TG), Triiodothyronine (T3) Reverse, Triiodothyronine T3 Uptake, Tumor necrosis factor alpha (TNF- $\alpha$ ), Vasoactive intestinal peptide(VIP), 2-amino adipic acid (2AA), Albumin/Globulin Ratio, A1c (Glycohemoglobin), Alanine Aminotransferase (ALT or SGPT), AlbuminSerum, Aldosterone:Renin Ratio, Alkaline Phosphatase, Alpha-Fetoprotein (AFP), Aspartate Aminotransferase (AST or SGOT), Bilirubin Total, Blood Urea Nitrogen (BUN), BUN/CreatinineRatio, Calcium, Cancer Antigen 125 (CA-125), Cancer Antigen 15-3 (CA 15-3), Cancer Screening Panel, Carbon Dioxide, Carcinoembryonic Antigen (CEA), Chloride Serum, Cholesterol/HDL Ratio, Complete Blood Count (CBC), C-reactive protein (CRP), Creatinine Serum, Estriol (E3), Fluids & Electrolytes, Folic Acid (Folate), FreeThyroxine Index (FTI) T-7, GGT Gamma-glutamyl transpeptidase, Globulin Total, Glucose, Iron and Total Iron-binding Capacity, Lactate Dehydrogenase (LDH) Protein, Phosphorus, Potassium, Prostate Specific Antigen (PSA), Sodium, Urinalysis Complete, Uric acid, Vitamin A, Vitamin B12, Vitamin D 25-hydroxy

## ELECTROPHYSIOLOGICAL



Electrodiagnostic biomarkers provide information on electrical activity (action potential) due to native or altered electrophysiology of cells and tissue or their response towards electrical stimuli (evoked potential). Typically, electrocardiography (ECG), electroencephalography (EEG), and electromyography (EMG) are employed to measure the electrical activity values and help to diagnose, evaluate, and treat the individual with impairments of the neurologic or neuromuscular or muscular systems.

### PARAMETERS TESTED @ VIRINCHI

CFTR function by nasal potential difference (NPD) testing- acute recurrent pancreatitis (ARP); Insulin oscillations; Bursting electrical activity observed in islets; Dynamics of membrane potential(ER\_Calcium feedback); Glucose-induced electrical activity recorded from a  $\beta$ -cell(oscillatory electrical activity); Hyperstimulation (elevated glucose)-electrical hyperexcitation and chronically elevated ca+2; Diverse pattern of modulation of P3 latencies-equiprobable (50/50) auditory Go/NoGo; Ca2+-dependent action potentials in human tumoral pituitary cells

## HISTOPATHOLOGICAL



Cytopathology and Histopathology observations of cells and tissue allow the understanding of gross structural, physiological and molecular changes at the cell and tissue level respectively. These microscopic observations with grading and staging are vital to understand the response of cells to due to external stimuli or DNA level changes which either might result into a transient change or pathological consequence requiring suitable surgical or medical or radiological therapy.

### PARAMETERS TESTED @ VIRINCHI

Adipsin (complement factor D), Anti-angiogenic Pigment Epithelial Derived Factor (PEDF), Arterial stiffness, Blood retinal barrier leakage, Endothelial dysfunction, Inhibin, Plasminogen activator inhibitor (PAI)-1, Resistin Retinal damage, Synaptophysin

## ANATOMICAL



Imaging techniques offer sensitive and precise visualization and also digitization of anatomical features of organs and systems of the body. It helps the patient or individual to undergo a gamut of pain free investigations, non-invasively. And these biomarkers can be measured using either radiological or non-radiological modalities such as, X-ray, CT, Ultrasonography, Electroencephalography, Magnetoencephalography, and Magnetic Resonance Imaging in order to provide us with either qualitative or quantitative measure of the anatomical features and physiological processes such as blood flow.

### PARAMETERS TESTED @ VIRINCHI

Spatial distribution of thyroid functional attributes-scintigraphy ("scanning"); Degrees of echogenicity of the tissues; Differential tissue attenuation by an x-ray beam; Image of iodine distribution-fluorescent thyroid scanning; Nodules and masses evaluation-scintigraphy; Gland size & location of thyroid tissue-scintigraphy; functional status of thyroid nodules-Radionuclide scanning; Size of cystic nodules-Ultrasonography; Isoechoic parathyroid gland—Sonogram; Typical hypoechoic adenoma-Sonogram; Extrathyroidal feeding vessel (in Parathyroid Adenoma)- Doppler imaging; Increased T2 signal in adenoma- T2-weighted MRI; Intra- and parasellar anatomy (Pituitary)-intraoperative MRI (IMRI); Superimposition of tissue stiffness-Endoscopic ultrasound in pancreatic lesions; Pancreatic arterial perfusion (in acute pancreatitis)-Computed Tomography; Diffusely heteroechoic and enlarged gland-Thyroid sonography in Graves disease; Atrophic pancreas, dilated main pancreatic duct-Axial non-contrast CT; Dense calcifications-Axial non-contrast CT; Presence of intracellular lipid in adrenal adenomas-chemical shift MRI; Macroscopic fat-attenuation (Adrenal myelolipoma)- CT; Pituitary macroadenoma-MRI

## PATHOGEN SCREENING



Pathogen screening helps to find out either presence or absence of all the relevant pathogenic microorganisms including - bacteria, fungi, viruses, mycoplasma and protozoans. This identification process allows the healthcare provider with specific information on every possible mode that can be implemented towards prevention, treatment and eradication. It also allows the physician to decide pathogen specific medication in suitable dosage and form for effective and safe elimination without causing any adverse effects to the affected patient.

### PARAMETERS TESTED @ VIRINCHI

Actinomyces, Bacillus anthracis, Bordetella bronchiseptica, Bordetella pertussis, Burkholderia pseudomallei, Campylobacter jejuni, Candida, Chlamydia trachomatis, Clostridium perfringens, Escherichia coli, Klebsiella pneumoniae, Listeria monocytogenes, Neisseria meningitidis, Proteus mirabilis, Pseudomonas aeruginosa, Pseudomonas fluorescens, Salmonella enterica, Shigella flexneri, Shigella sonnei, Staphylococcus spp, Streptococcus spp, Tetrahymena pyriformis, Vibrio species, Yersinia enterocolitica

## PHENOTYPIC & GENETIC



Changes brought about to the DNA, RNA and their respective derivatives due to germline or somatic mutations influence an individual's overall existence and susceptibility towards a wide variety of disease causing infectious agents. Understanding the underlying molecular details with the help of advanced/next generation sequencing technologies provides insights into either devising a therapeutic or corrective intervention.

### PARAMETERS TESTED @ VIRINCHI

AAAS, ABCD1, ADAM metallopeptidase domain 12 (ADAM12), AIRE, APE1, APE2, BMAL1, BRCA1, BRCA2, cAMP, CDKN1B, CgA, CgB, Coiled-coil domain containing 15 (CCDC15), CRHR2, CTGF, CTLA-4, Cyclin-dependent kinase inhibitor 1B (p27Kip1), CYP11A1, CYP11B1, CYP17A1, CYP19A, CYP21A2, CYP27B1, DNMT3a, DNMT3b, E2F, E-cadherin, FGF23, FGFRL2, GADD45, GFBP-3, GNRH2, H0XA10, HSD17B3, HSD3B1, HSD3B2, Leptin receptor (LEPR), Ligand-gated ion channel 5 (P2RX5), MBD1, MBD2, MBD3, MBD4, MCF2, MCF-7, MeCP2, Melanocortin 2 receptor accessory protein (MRAP:B27, C21orf61, FALP, FGD2, GCCD2), MEN1, MEN2, MLTF, Nuclear receptor subfamily 0 group B member 1 (NROB1), Nei like DNA glycosylase 1 (NEIL1:FGP1, NEI1, Hfpg1), Nei like DNA glycosylase 3 (NEIL3:FGP2, FPG2, NEI3, ZGRF3, hFGP2, Hnei3), Neuroplilin-1 (NP1), NTG1 bifunctional N-glycosylase/AP lyase (NTG1:FUN33; ogg2; SCR1), Nth like DNA glycosylase 1 (NTHL1), Nuclear receptor subfamily 5, group A, member 1 (NR5A1), Period circadian clock 1 (PER1), Phosphatase and tensin homolog (PTEN), Polynucleotide kinase 3'-phosphatase (PNKP), Prolactin receptor (PRLR), Pro-opiomelanocortin (POMC), Purinergic receptor P2X, Ras association domain-containing protein 1 (RASSF1A), Reelin (RELN), RET ret proto-oncogene (PTC; MTC1; HSCR1; MEN2A; MEN2B; RET51; CDHF12; CDHR16; RET-ELE1), Retinoic acid receptor b (RARb), Solute carrier family 5 member 5 (SLC5A5), Steroidogenic Acute Regulatory Protein (STAR)

## IMMUNOLOGICAL



The immunologic Biomarkers provide insights into the body's response towards cancer, infectious diseases, immunization, immunodeficiency, allergies, asthma, autoimmunity, and others. These features can be studied from variety of biological specimens by using highly advanced and high throughput immune assay systems. And these biomarkers also help to understand the extent of disease progression and probability of positive prognosis for a wide range of diseases.

### PARAMETERS TESTED @ VIRINCHI

Thyroglobulin Antibody, Thyroid Antibodies, Thyroid Antithyroglobulin Antibody, Thyroid Peroxidase Antibodies

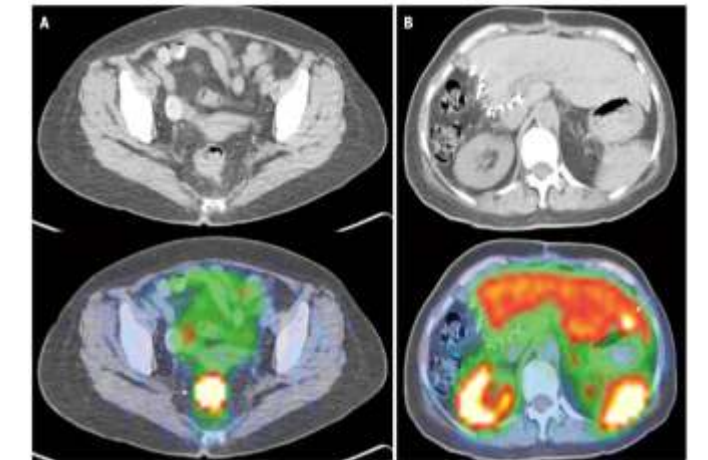
## NEEDLE-FREE DIABETES CARE



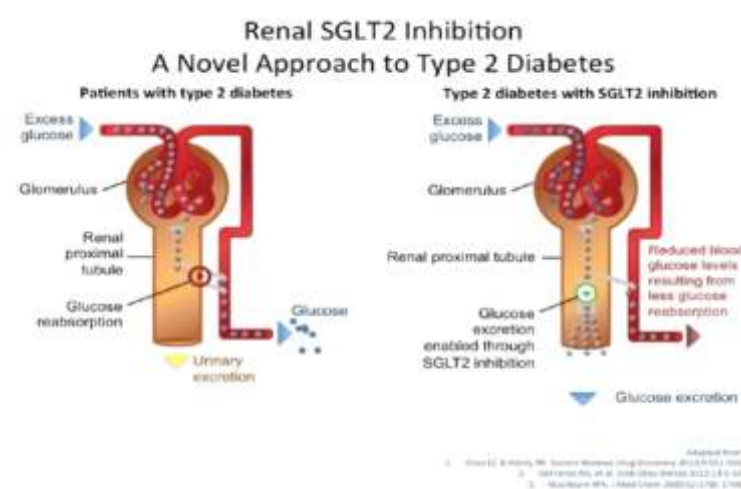
- Transdermal biosensor reads blood analytes through the skin without drawing blood.
- The technology involves a handheld electric-toothbrush-like device that removes just enough top-layer skin cells to put the patient's blood chemistry within signal range of a patch-borne biosensor.

## RADIO ACTIVE PROBE FOR DETECTION OF NEUROENDOCRINE TUMORS

- Ga 68 dotatate, a positron emitting analogue of somatostatin, works by binding to somatostatin receptors - it helps to locate tumors in adult and paediatric patients suffering from rare neuro endocrine tumors.



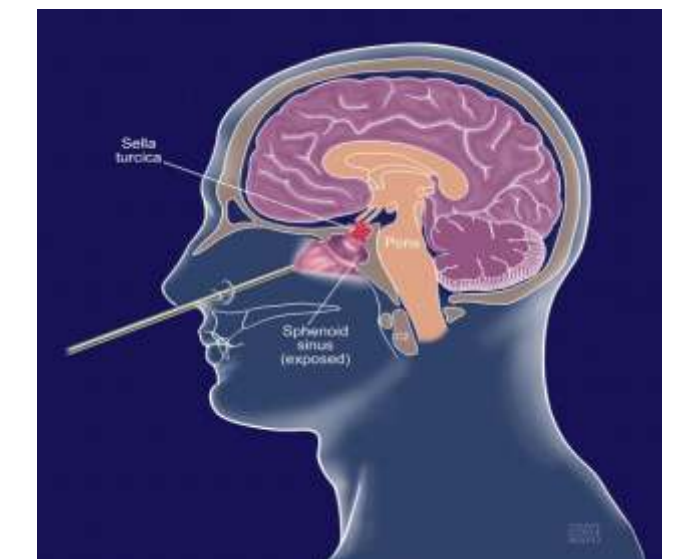
## SGLT2 INHIBITORS



- SGLT2-inhibitors are a new class of oral antidiabetics, reduce hyperglycemia by increasing urinary glucose excretion independently of insulin secretion or action.
- Dapagliflozin is the first highly selective SGLT2-inhibitor approved by the European Medicine Agency

## ADVANCES IN ENDOSCOPIC PITUITARY SURGERY

- New endoscopic technique for skull base tumors
- The surgery is usually performed by both a neurosurgeon and an otorhinolaryngologist
- Advantageous in visualizing areas in the sella that we could not see previously, enhancing the opportunity for a complete pituitary tumor resection
- Works more like an ashlight, bringing the light and visualization to the tumor
- Helps bringing light and visualization to the tumor

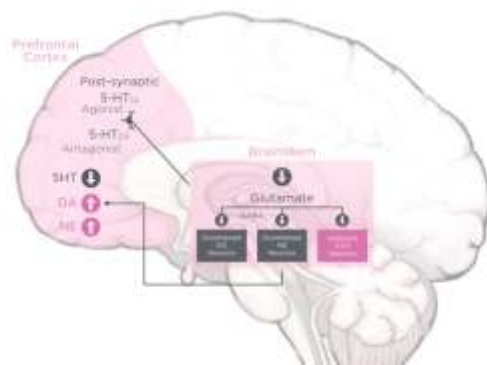


## ENZYME REPLACEMENT THERAPIES

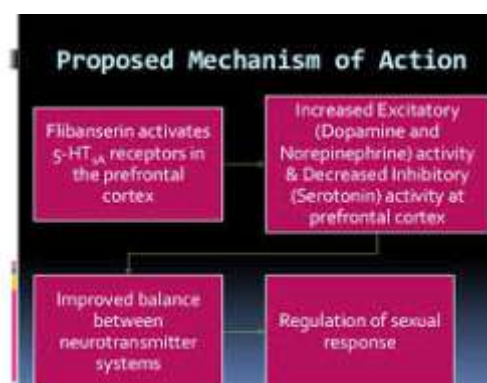


- Gaucher disease occurs in people who do not produce enough of an enzyme called glucocerebrosidase.
- It is an injection that replaces the missing enzyme in patients with a confirmed diagnosis of Type 1 (non-neuropathic) Gaucher disease
- Taliglucerase alfa is indicated for long-term enzyme replacement therapy (ERT) for adults and children with a confirmed diagnosis of Type 1 Gaucher disease, a rare genetic disorder.

## FLIBANSERIN

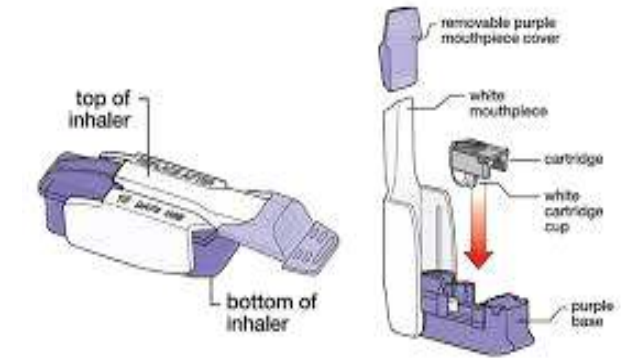


- Flibanserin is used to treat acquired, generalized hypoactive sexual desire disorder (HSDD) in premenopausal women.
- HSDD is characterized by low sexual desire that causes marked distress or interpersonal difficulty and is not due to a co-existing medical or psychiatric condition, problems within the relationship, or the effects of a medication or other drug substance.



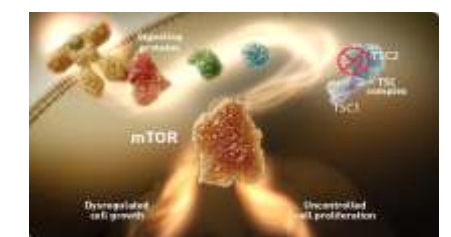
## HUMAN INSULIN INHALATION POWDER

- Human Inhalation Powder, a rapid-acting inhaled insulin to improve glycemic control in adults with diabetes mellitus.
- It is a rapid-acting inhaled insulin that is administered at the beginning of each meal.
- Insulin lowers blood glucose levels by stimulating peripheral glucose uptake by skeletal muscle and fat, and by inhibiting hepatic glucose production.
- Insulin inhibits lipolysis in adipocytes, inhibits proteolysis, and enhances protein synthesis.



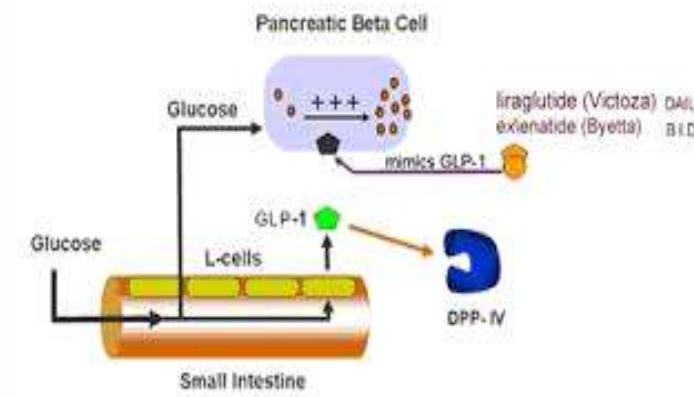
## EVEROLIMUS

- Everolimus is used for the treatment of adult patients with progressive, well-differentiated non-functional, neuroendocrine tumors (NET) of gastrointestinal (GI) or lung origin with unresectable, locally advanced or metastatic disease
- By inhibiting mTOR, it blocks the effects caused by the loss of the TSC1/TSC2 and reduces cell growth, proliferation, and angiogenesis.



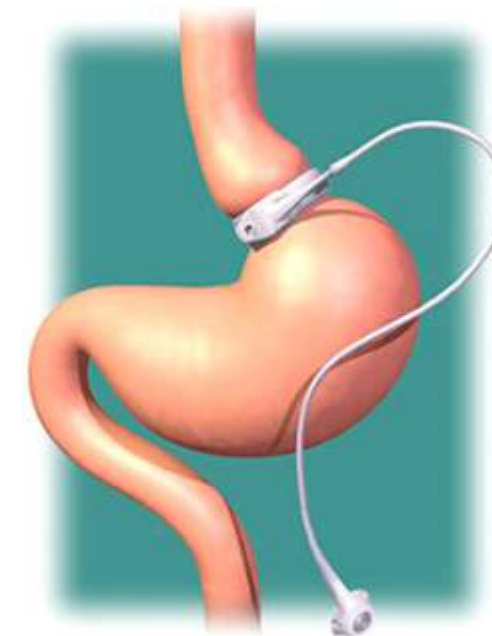
Being a literally sweet person is not a good thing.

## LIRAGLUTIDE



- Liraglutide is an injection to treat type-2 diabetes by lowering blood sugar levels along with diet, exercise, and selected other diabetes medicines
- It is not recommended as initial therapy in patients who have not achieved adequate diabetes control on diet and exercise alone
- Liraglutide [rDNA origin] injection is used as a treatment option for chronic weight management in addition to a reduced-calorie diet and physical activity
- The drug is approved for use in adults with a body mass index (BMI) of 30 or greater (obesity) or adults with a BMI of 27 or greater (overweight) who have at least one weight-related condition such as hypertension, type 2 diabetes, or high cholesterol (dyslipidemia)

## LAPAROSCOPIC ADJUSTABLE GASTRIC BAND



- Is a surgically implanted device that helps adults who are at least 18 years old eat less and lose weight.
- Consists of a silicone band, tubing, and an access port
- The inner surface of the silicone band is inflatable and is connected by the tubing to the access port.
- It limits the amount of food that can be eaten at one time and increases the time it takes for food to be digested, helping people to eat less.
- Used for patients with a BMI of 30-40 with one or more obesity-related medical conditions, such as high blood pressure, heart disease, diabetes or sleep apnea