EMERGENCY MANAGEMENT SYSTEM

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.

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RIGHT TO SCIENCE CLUB

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Urology, Andrology Nephrology & Transplant Care

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Happy is the one who is relieved

DEPARTMENT OF UROLOGY AND ANDROLOGY

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FOREWORD

The department of Urology and Andrology is dedicated to the on going care and management of men's health in a holistic manner and deals particularly with problems relating to the male reproductive system and urological problems.

Primary focus of the department is on the physiology and pathophysiology of male reproductive functions, disturbed sexual dysfunctions and overall male reproductive and sexual health with an emphasis on medical and surgical management measurements.

The team of experts provide superior consultations and services against different urological diseases to provide unparalleled and comfortable experience to the patients. The specialists are inventive in implementing new methods of delivering care, making it less invasive & expensive and more effective than other traditional modes of care from simplest to the most complex conditions.

The department also offers microsurgical reconstruction, microvascular surgery, genital reconstruction and genitourinary prosthetics.

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Dr. Vaddi Surya Prakash

M.S., FRCSEd, M.Ch, DNB (Uro)

Sr. Consultant Urologist, Andrologist and Transplant Surgeon

Dr. Vaddi Surya Prakash is a Senior Consultant Urologist, Andrologist and Transplant Surgeon in the Department of Urology at Virinchi Hospitals. He has overall 15 years' experience in his field. Prior to joining Virinchi Hospitals, he worked as Assistant Professor, Department of Urology, NIMS, Hyderabad and Head, Department of Urology and Renal Transplantation, Narayana Medical College & Hospital, Nellore. He underwent advanced laparoscopic surgery and robotic surgery training at IRCAD, Strasbourg, France. His areas of interest include laparoscopic urology, advanced endurology, uro-oncology and reconstructive urology. He specializes in Laser treatment for prostate enlargement, treatment for stricture urethra disease and urolithiasis. According to Dr. Prakash, minimally invasive treatments including robotic surgery, stem cell therapy, and molecular medicine would change the future of urology and Virinchi Hospitals is well equipped with futuristic technology and expertise to ensure such advanced treatments in urology.

MEET OUR EXPERTS

Dr. C. Satish Kumar Reddy

MBBS, MS, M.Ch (Urology)

Jr. Consultant Urologist

Dr. C. Satish kumar Reddy has done his M.B.B.S from NARAYANA MEDICAL COLLEGE, NELLORE, A.P., M.S. (GENERAL SURGERY) from NARAYANA MEDICAL COLLEGE, NELLORE, A.P. & M.Ch (UROLOGY) from OSMANIA MEDICAL COLLEGE, TELANGANA. He achieved 1st rank (in STATE LEVEL) in super specialty entrance in 2013 & had secured 2nd highest marks in final exams in 2016.His major areas of interest include: Endourology, Laproscopy & Renal transplantation. He also presented few papers in state and south zone conferences

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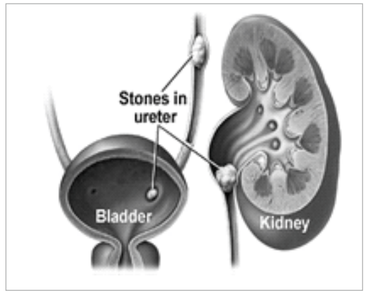
3 TELSA-MAGNETIC RESONANCE IMAGING

UNIQUE FEATURES

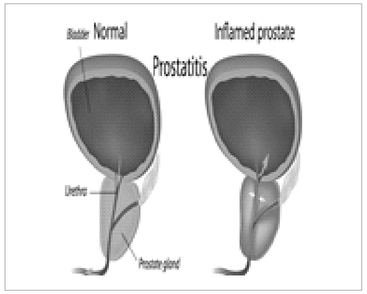
- Increased bore space to reduce anxiety in claustrophobic patients.
- Smart software to reduce retakes, increase consistency and exam speed.
- Digital coil design greatly reduces coil weights and leads to less patient repositioning in many exams.
- The ambient light ring on the magnet façade and adjustable,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

DIAGNOSTIC APPLICATIONS

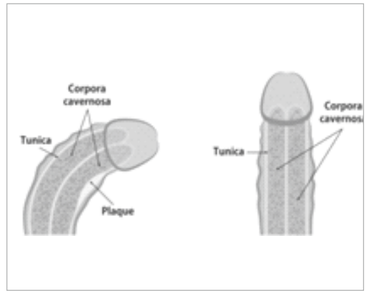
- Prostate MRI
- Diagnosis of Testicular Cancer
- Testicular MRI
- Urethral MRI
- MR urography



- Urinary tract infection
- Slow urine stream
- Spraying or dribbling of the urine stream
- Ureteral stones
- Overactive bladder
- Decreased urine output
- Blood in the urine (haematuria)
- Incontinence
- Hormone (testosterone) deficiency



- Benign prostatic hyperplasia (BPH)
- Prostatitis
- Prostate cancer
- Peyronie's disease
- Pelvic floor dysfunction



TREATMENTS AND THERAPIES OFFERED

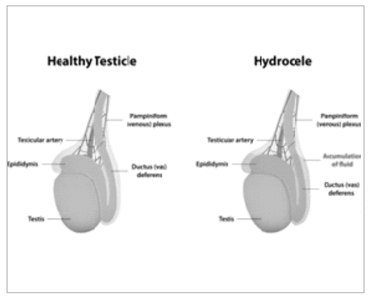
ULTRASOUND SYSTEMS

UNIQUE FEATURES

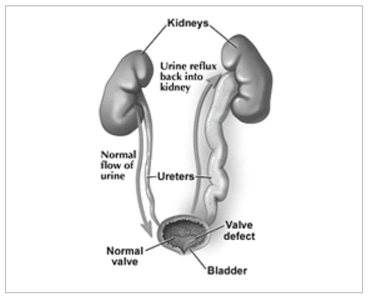
- Anatomical Intelligence Ultrasound (AIUS)
- The pure wave crystal technology improved penetration & excellent detailed resolution in difficult-to-image patients.
- New Micro CPA feature allows visualization of low velocity micro circulation while evaluating organ perfusion or small vasculatures
- Fully 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

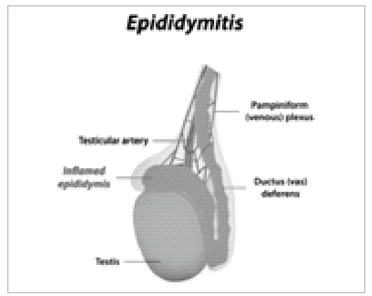
Testicular and scrotal ultrasound
Ultrasound of the male genital tract
Prostate Ultrasound
Urethral ultrasound



- Interstitial cystitis/Painful bladder syndrome (PBS)
- Inguinal Hernia and hydroceles
- Hypospadias and chordee
- Posterior urethral valves (PUV)
- Varicocele
- Hydronephrosis
- Seminal Vesiculitis
- Vesicoureteral reflux (VUR)
- Urinary extravasation



- Bladder exstrophy
- Prune belly (Eagle-Barret Syndrome)
- Erectile dysfunction (Impotence)
- Male Breast cancer
- Epididymitis



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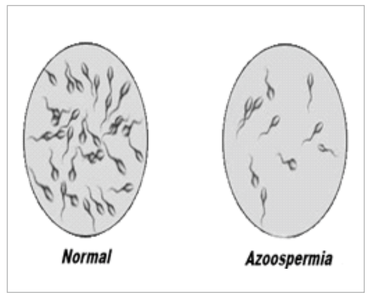
128-SLICE DUAL ENERGY SPECTRAL CT SCAN

UNIQUE FEATURES

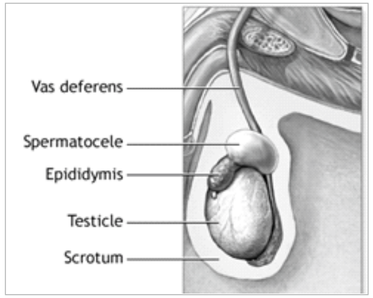
- The 128 slice CT has sensitive detection technology (Gemstone), which is by far the best innovation and the first new detector material in the past two decades, as far as high definition scanning with less noise is concerned.
- High-definition imaging with the Gemstonetm clarity detector (Gemstone 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.

DIAGNOSTIC APPLICATIONS

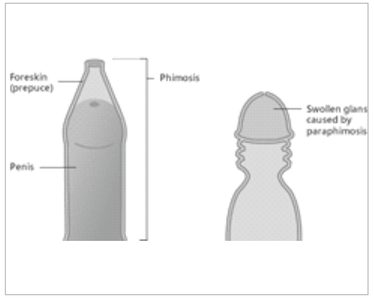
- Diagnosis of male genitourinary disorders
- Diagnosis of Prostate Cancer
- Recurrent rectal carcinoma
- CT urography



- Spermatorrhea
- Azoospermia
- Oligozoospermia
- Necrozoospermia
- Vas deferens obstruction
- Scrotal edema
- Low libido issues
- Ejaculatory disturbances
- Scrotal elephantiasis



- Spermatocele
- Scrotal injury
- Balanoposthitis
- Phimosis
- Paraphimosis



TREATMENTS AND THERAPIES OFFERED

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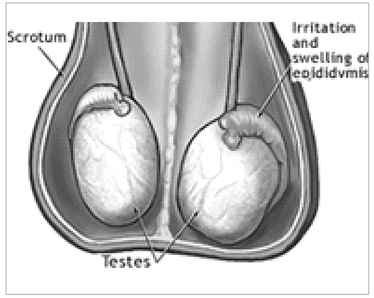
DIGITAL RADIOGRAPHY

UNIQUE FEATURES

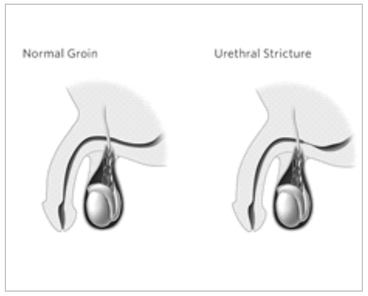
- Time efficiency through bypassing chemical processing and the ability to digitally transfer and enhance images.
- Digital flat panel detector (FDP) & imaging software with excellent digital image processing unit offers remote diagnosis solutions
- Greater productivity and more options to enhance images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

DIAGNOSTIC APPLICATIONS

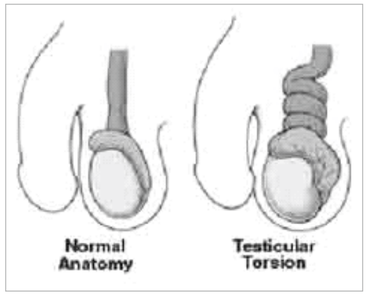
- Imaging of Male Urinary Tract
- Detection of enlarged Prostate
- Ureter, and bladder X-ray



- Penile cancer
- Penile constriction by a foreign body
- Penile injury or penile trauma
- Priapism
- Epispadias
- Urethral carcinoma
- Urethral stricture
- Urethral trauma
- Urethritis
- Cryptorchidism
- Fournier gangrene



- Orchitis
- Testicular cancer
- Testicular torsion



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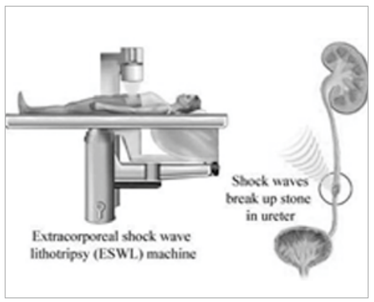
LASER 120W SYSTEM

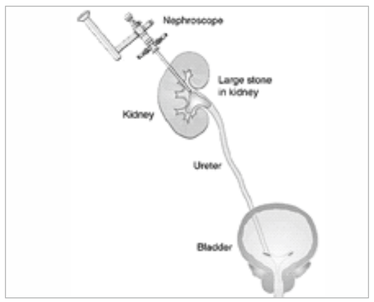
UNIQUE FEATURES

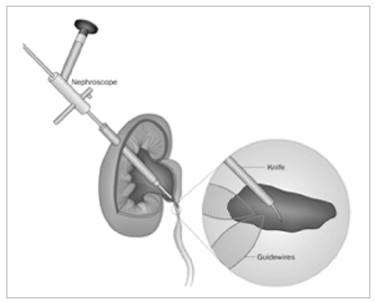
- Delivers high power for smooth incision
- Reduced charring & minimal thermal damage
- Safe & precise
- Significantly reduces bleeding and postoperative complications
- Bipolar X-ray laser
- Used to break stone of any size & composition

THERAPEUTIC APPLICATIONS

- Benign Prostatic Hyperplasia
- Bladder stones
- Ureteral stones
- Strictures
- Bladder tumours







TREATMENT OF STONES IN URINARY TRACT

- Medical expulsive therapy
- Extracorporeal shock wave lithotripsy (ESWL)
- Ureteroscopic lithotripsy (URSL)
- Percutaneous nephrolithotomy (PCNL), Mini-PERC (mini PCNL)
- Retrograde intra renal surgery (RIRS)

PELVI URETERIC JUNCTION OBSTRUCTION

- Laparoscopic pyeloplasty
- Endopyelotomy
- Ureterocalicostomy

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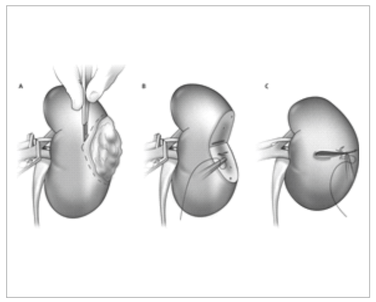
LITHOCLAST

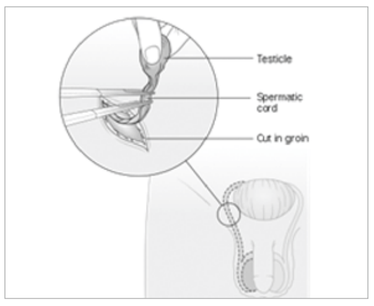
UNIQUE FEATURES & BENEFITS

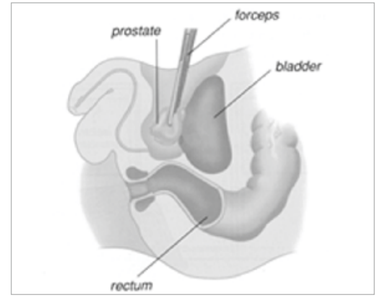
- Effectively disintegrates hard & large stones not only from kidney & bladder but also from ureter much faster than ever before
- It is a gold standard in intra corporeal lithotripsy (stone removal) based on ballistic principle which provides easily manageable and highly effective stone fragmentation of all types of stones, regardless of their composition with single high pressure impact and effective suction system
- Stone catcher device designed to reduce setup time
- Prevention of stone fragment blockages in the ultrasound hand piece and the ultrasound probe.
- Pneumatic effect for fast coarse fragmentation
- Powerful ultrasonic lithotripsy for fine fragmentation and pulverization
- Simultaneous use of both technologies for multiplied action

THERAPEUTIC APPLICATIONS

- Bladder Stones
- Ureteral stones







UROLOGIC CANCERS:

- **Kidney tumors**
  - Laparoscopic radical nephrectomy
  - Laparoscopic partial nephrectomy
  - Radical nephrectomy + IVC Thrombectomy
  - Targeted therapy in advanced tumors
- **Bladder Tumors**
  - Endoscopic Transurethral resection of bladder tumor (TURBT)
  - Endoscopic intravesicular therapy
- **Testicular tumors**
  - Inguinal orchiectomy
  - Adjuvant chemoradiation
- **Penile Cancer**
  - Partial & Radical Penectomy
  - Ilio inguinal block dissection
- **Prostate Cancer**
  - Laparoscopic radical prostatectomy
  - Hormonal & Chemotherapy

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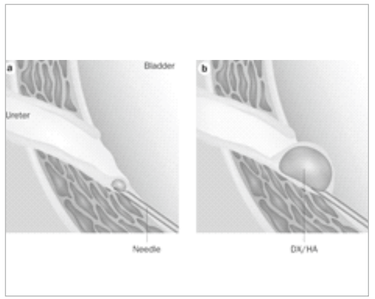
TURIS SYSTEM

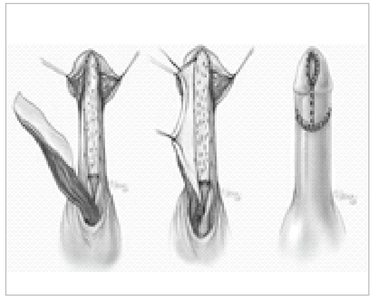
UNIQUE FEATURES

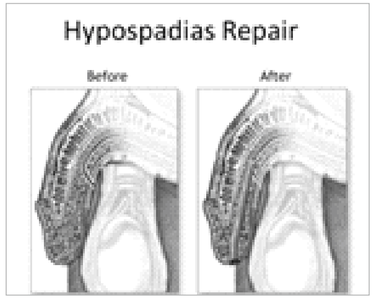
- Advanced bipolar HF with the unrivalled speed of ultrasound
- Allows controlled clean cut regardless of tissue types and conditions
- Special "High Power Cut Mode" for instant plasma ignition and start of cutting
- Unique bipolar resection function
- High performance and adjustable with tissue-adaptive power output
- More efficient and faster with continuous plasma activation and with the large loop due to improved ignition respectively

THERAPEUTIC APPLICATIONS

- Benign prostate enlargement
- Routine penile procedures
- Circumcision
- Penoscrotal fusion/chordee repair







- **PEDIATRIC UROLOGY:**
- Treatment of vesicoureteral reflux
  - Endoscopic Deflux
  - Laparoscopic Reimplantation
- Hypospadias surgery
- Disorder of Sexual differentiation
- Pediatric urological cancer
- Pediatric stone disease
- Voiding dysfunction
- Nocturnal enuresis

STRICTURE URETHRA:

- Endoscopic urethrotomy
- Endoscopic laser procedure
- Urethroplasty
  - Buccal graft urethroplasty
  - Skin flap urethroplasty
  - End to end anastomotic urethroplasty

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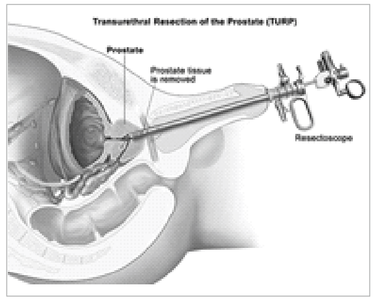
URODYNAMIC SYSTEM

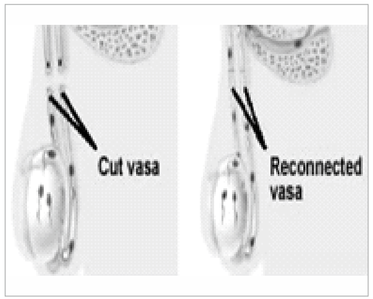
UNIQUE FEATURES & BENEFITS

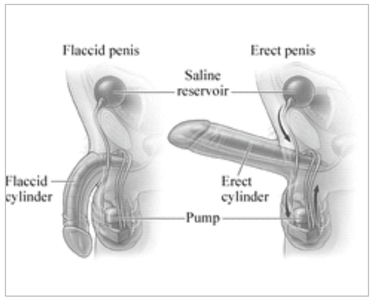
- The model is upgradable according to the patients needs
- Ergonomically designed plastic enclosure
- Conducts the tests as per ICS standards
- Report templates as per customer needs

DIAGNOSTIC AND THERAPEUTIC APPLICATIONS

- Uroflowmetry
- Filling Cystometry
- Pressure-Flow study
- Urethral Pressure Profiles (UPP)
- Valsalva Leak Point Pressure (VLPP)
- Postvoid residual measurement
- Urinary incontinence
- Benign prostatic hyperplasia (BPH) with obstruction
- Detrusor muscle weakness and/or instability
- Urinary Tract Infection (UTI)
- Chronic prostatitis
- Urethral stricture
- Malignancy: prostate or bladder







PROSTATE HEALTH

- **Benign Prostatic Hyperplasia (BPH)**
  - Medical management
  - Transurethral resection of the prostate (TURP)
  - Bipolar TURP
  - Bipolar enucleation
  - Holmium Laser Enucleation of the prostate (HoLEP)

SEXUAL HEALTH

- **Erectile dysfunction**
  - Medical Therapy
  - Injections
  - Vacuum Devices
  - Penile prosthesis surgery

MALE INFERTILITY

- Medical management
- Sperm retrieval techniques: TESA (Testicular spermaspiration), PESA (Percutaneous epididymal sperm aspiration)
- Vaso-Epididymal Anastomosis (V.E.A.)
- Vasectomy reversal

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UROLOGY & ANDROLOGY: BIOMARKER BIG DATA FOR PERSONALIZED MEDICINE

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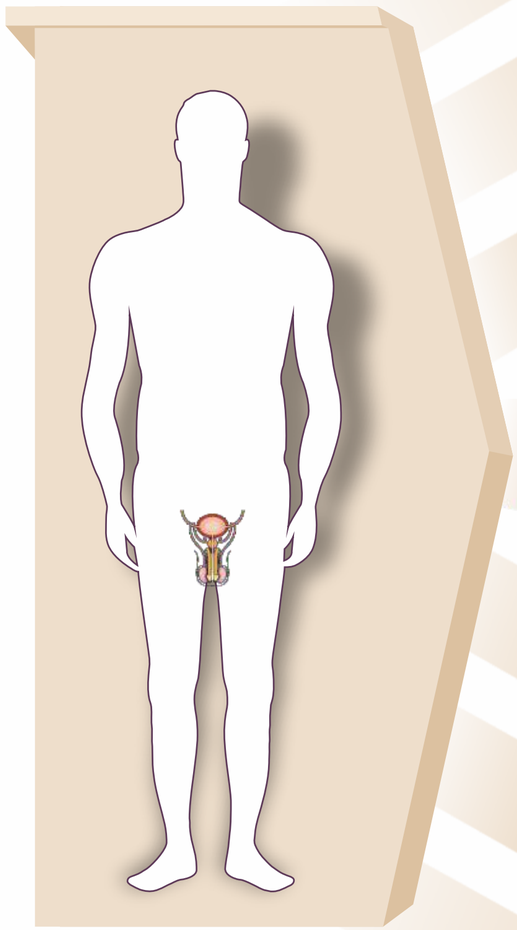

BIOCHEMICAL

ELECTROPHYSIOLOGICAL

HISTOPATHOLOGICAL

ANATOMICAL

PATHOGEN SCREENING

PHENOTYPIC & GENETIC

IMMUNOLOGICAL

VIRINCHI'S PROPRIETARY BE-HAPPI™ DIAGNOSTICS FRAMEWORK

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UROLOGY & ANDROLOGY: BIOMARKER BIG DATA FOR PERSONALIZED MEDICINE

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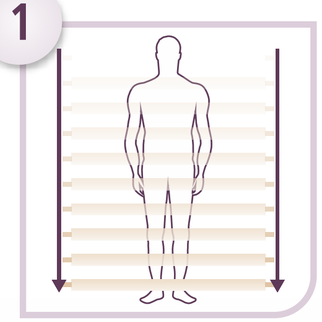
1



EVERY MEMBER UNDERGOES A MASTER HEALTH CHECK UPON JOINING

2

IF PROBLEM IN ORGAN DISCOVERED

3

BE-HAPPI™

VIRINCHI'S BE-HAPPI™ FRAMEWORK IS APPLIED TO THE ORGAN SYSTEM AND TREATMENT PLANNED ACCORDINGLY

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.

VIRINCHI'S PROPRIETARY BE-HAPPI™ DIAGNOSTICS FRAMEWORK

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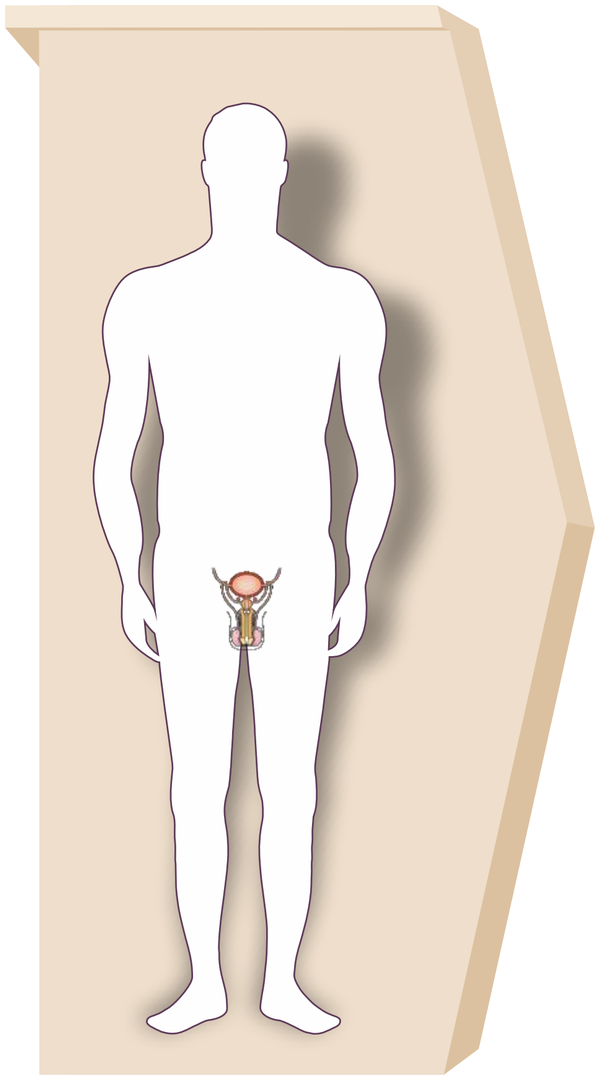

BIOCHEMICAL

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 serve 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

Alanine Amino Transferase (ALT), Albumin, Albumin/Globulin Ratio, Alkaline Phosphatase (ALP), Alphafetoprotein(APF), Aminopeptidase A, Ammonia, Aquaporin-1, Aspartate Amino Transferase (AST), Basic Metabolic Panel, Bilirubin, Bladder tumor Antigen (BTA), Blood Urea Nitrogen (BUN), BUN/Creatinine Ratio, C reactive protein(CRP) , Calcium, Carbon Dioxide, Carnitine, Casts, CD133, Chloride, Comprehensive Metabolic Panel, copeptin (CPP), Creatinine Clearance (24 Hour Urine and Blood), Crystals, Cystatin C, Decanoylcarnitine, Elastase-a1 -Antitrypsin complex E-a1 -Pi, Epidermal growth factor(EGF), Epithelial Cells, Erythropoietin Test, Estimated Glomerular Filtration Rate (eGFR), Fetuin A, Fluoride, Globulin, Glomerular Filtration Rate(GFR), Glucose, Glutarylcarnitine, Glycerophosphocholine, GP51 = glycoprotein 51, Hematocrit, Hemoglobin, Heparin binding protein, High density lipoprotein(HDL), Interferon-gamma(IFN gamma), Ketones, Linoleic acid, Lipid Panel, Liver fatty acid binding protein, Macrophage inflammatory protein (MIP- 1; CCL4), Macrophage inflammatory protein(MIP-1β), Magnesium, Mercury Poisoning, Microalbumin, Microalbumin: Creatinine Ratio, Mucus, Myopodin, N-acetyl-β-(D)-glucosaminidase (NAG), Nitrite, Nuclear matrix protein 22 (NMP22), Occult Blood, Oleic acid, Osmolality, Blood, Osmolality, Urine, Palmitic acid, Palmitoyl sphingomyelin, Parathyroid Hormone, Intact, Phosphorus, Platelet-derived endothelial cell growth factor/thymidine phosphorylase, Porphobilinogen PBG Test, Porphyrins Test, Potassium, prostaglandin E2 (PGE2), Protein and Creatinine, Random Urine, Protein, Total, Red Blood Cells (RBC), Renal Function Panel (Kidney Function Test), Sodium, Soluble triggering receptor expressed on myeloid cells-1, Sphingomyelin, TNF-α=tumor necrosis factor-α, Triglyceride, Urinalysis , Urinary interleukin-6 (uIL-6), Urine endothelin-1 (ET-1), Urine migration inhibitory factor, Urobilinogen, uromodulin, Uroplakin III, Vascular endothelial growth factor (VEGF), Vasorin, White Blood Cells (WBC), α-1 microglobulin/serum prostatic Antigen, α2-macroglobulin

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

Detrusor–sphincter coordination, Electromyography of external urethral sphincter, Genital sympathetic skin response (SSR), Urethral sphincter and/or pelvic floor muscle activity

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 due to external stimuli or DNA changes which either might result into a transient change or pathological consequence requiring suitable surgical or medical or radiological therapy.

PARAMETERS TESTED @ VIRINCHI

Characteristic atypical stromal cells in fibroepithelial polyp, Endosalpingiosis in muscularis propria, Pseudoinfiltrative pattern in Nephrogenic adenoma of urinary bladder(NAUB), Von Brunn's nests in the lamina propria

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

Apparent Diffusion Coefficient, Bladder outlet anatomy - Intravesical prostatic protrusion (IPP) USG, Bladder outlet anatomy - Prostatic urethral angle (PUA), Bladder wall Anatomy, Degree of water diffusion, Detrusor wall thickness (DWT) / Bladder wall thickness (BWT), Diffusion Weighted Imaging (DWI) of Prostate, DW-MRI of benign lymph nodes, Dynamic Contrast Enhanced Uptake (DCE) MRI of Prostate, MR spectroscopy imaging pf Metabolites, Permeability surface area product, Plasma Flow, Plasma Mean Transit Time, Plasma Volume , T2 - weighted imaging of Prostate, T2WI Bladder Imaging, Vascular density & Diameter

PATHOGEN SCREENING

Many physiological processes and features such as respiration, changes in growth rate, feeding, excretion, age, energy expenditure, vital signs, cognitive function, etc. are simple to complex measurable indicators and serve as valuable tools to evaluate the impact of either external or internal agents on the physiological processes.

PARAMETERS TESTED @ VIRINCHI

Candida, Chlamydia, Citrobacter, Enterococci , Escherichia coli, Essential STD/HIV testing package, Hep B Panel with Qual Hep B S abs, Klebsiella , Mycoplasma hominis, Neisseria gonorrhoeae, P aeruginosa , Proteus mirabilis, S aureus , Salmonella species , Staphylococcus saprophyticus, Trichomonas vaginalis

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 or resistance 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

ABMP, ADAM Metallopeptidase Domain 10(ADAM10), APC a, ATF3, CA10, CEP290, CREBBP, CXCR1, CXCR2, DBC1, DKK3, DKP4, E-cad, EDNRB, EOMES, Eotaxin (CCL11), EYA1, FRAS1, GALNT1, GATA3, GLI3, GLIS2, GPC3, Heparin binding growth factor-like growth factor(HB-EGF), HNF1b, HOXA9, HSPA1B, HSPB9, h-TERT, HYAL1, Hypoxia-inducible factor-1-₫, IGFBP3, IRF8, JAGGED1, KAL1, MKS1, MKS3, MLL3, MMP-9/TIMP-2, Monocyte chemotactic protein-1(MCP-1 /CCL2), MYO3A, NEK8, NID2, NKX6-2, NPHP6, NPHP8, NPTX2, NPY2R, p14, PAX2, PEX1, PKHD1, PMF1, PODXL, POU4F2, PROK2, PROK2R, RARB, RASFF1A, RPGRIPIL, SALL1, SALL4, SDCCAG8, SFRP1, SFRP4, SFRP5, SIGIRR, SIX1, SIX5, SOX11 or PENK, SOX9, TACSTD2, TBX3, TERT a, TERT b, TIRAP, TLR1, TLR2, TLR4, TLR5, TMEM67, TNFRSF25, TRAM, TRIF, TTC21B, TWIST1, VDAC1, VIF-1, VIM, ZNF154

IMMUNOLOGICAL

The immunologic Biomarkers provide insights into the body's response towards cancer, infectious diseases, immunization, immunodeficiency, allergies, asthma, autoimmunity, and other immune disorders. 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

Anti-human gamma globulin, Fimbria-specific or D-mannose-specific Antibodies, Hepatitis C Antibody, Herpes 1&2 IgG Abs, HIV 1/2 Antigen/Antibody, Humoral Antibodies, Secretory IgA, Syphilis RPR

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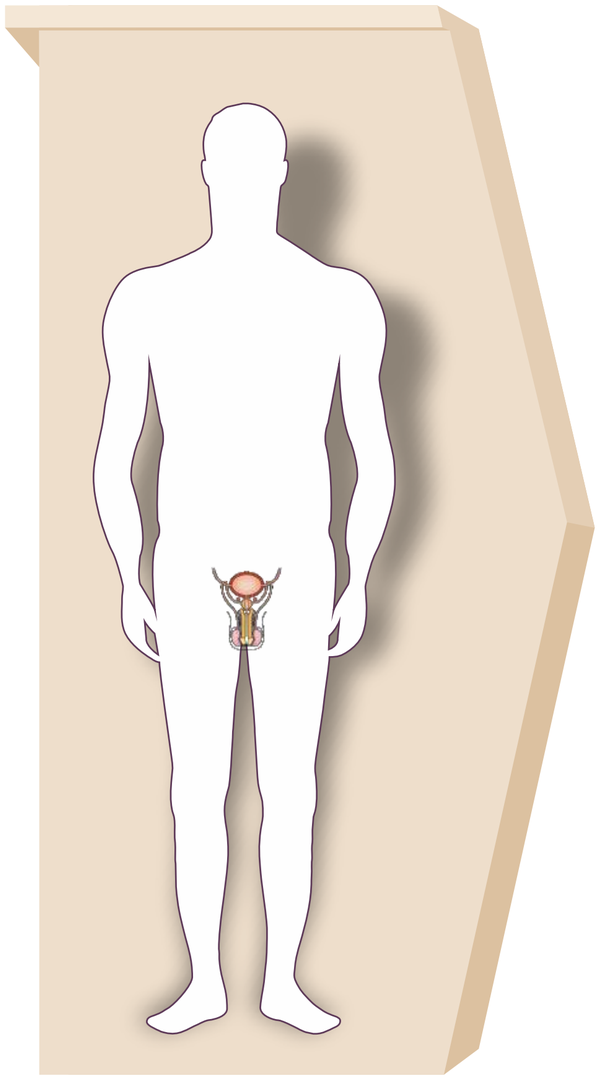

BIOCHEMICAL

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 serve 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

Albumin serum, Alkaline phosphatase serum, Additional Semen Tests, Aspartate Aminotransferase (AST or SGOT), Ammonia, Alanine Aminotransferase (ALT or SGPT), Apolipoprotein O, A/G Ratio, ATP synthase subunit g, Betamicroseminoprotein (MSMB), Bilirubin total, Biochemical analysis of semen , Blood Type (ABO Grouping & RHO Typing), BUN, BUN/Creatinine ratio, Calcium serum, Calgranulin-B, Carbon dioxide total, CBC with Differential (Complete Blood Count CBC), Chloride serum, Cholesterol total, Cholesteryl ester (CE), Chromogranin-A, Complete Blood Count (CBC), Comprehensive Metabolic Panel (CMP), C-Reactive protein Cardiac, C-reactive protein high sensitivity cardiac risk assessment (CRPhs), Creatinine serum, Cystatin C, Cystatin M, Cystatin S, Cystatin SA, Cytochrome c oxidase, Defensin, Dehydroepiandrosterone Sulfate (DHEAS), Early prostate cancer antigen-2 (EPCA-2), eGFR, Elastase , Electron-transfer-flavoprotein: beta polypeptide, Endoglin, Enoyl-CoA hydratase, Eosonophils, Eosonophils (absolute), Estradiol, Estradiol Ultrasensitive test, Fibrinogen, Filamin-B, Follicle stimulating hormone (FSH) , Free fatty acid (FFA), Free Mono- unsaturated fatty acids (MUFA), Free Poly-unsaturated fatty acids (PUFA), Free T3, Free Testosterone, Globulin total, Glucose serum, Glutathione S-transferase, HDL cholesterol, Heat shock protein 1, Hematocrit, Hemoglobin, Hemoglobin A1c, Hexosylceramide (HexCer), Homocysteine, Human Growth Hormone (hGH)/Growth Hormone (GH), IGF-1 (Insulin Like Growth Factor), Immature granulocytes, Immature granulocytes (absolute), Interleukin 8 (IL-8), Interleukin-10, Interleukin-6 , Kallikrein proteases-PSA, Ki-67, LAT1 (CD98), LDL cholesterol Cal, Lipid Panel, Lipocalin-1, Luteinizing hormone (LH) , L-xylulose reductase, Lymphocytes, Lymphocytes (absolute), Lyso-phosphatidylcholine (LPC), Lyso-phosphatidylethanolamine (LPE), Lyso-phosphatidylinositol (LPI), Lyso-phosphatidylserine (LPS), Lysozyme-like protein 4 precursor, Macrophage Migration Inhibitory Factor , MCH, MCHC, MCV, Mesencephalic Astrocyte-Derived Neurotrophic Factor, Mitochondrial pyruvate carrier 1-like Synaptojanin-2 Binding Protein, Monocytes, Monocytes (absolute), Nerve growth factor, Neuron-specific enolase, Neutrophils, Neutrophils(absolute), Nucleoside Diphosphate Kinase, Peroxidase-positive leukocytes , Peroxiredoxin, Phosphatidic acid (PA), Phosphatidylcholine (PC), Phosphatidylethanolamine (PE), Phosphatidylglycerol (PG), Phosphatidylinositol (PI), Phosphatidylserine (PS), Phosphoglycerate mutase 1, Platelets, Potassium serum, Profilin I, Progesterone, Prolactin, Prolactin-induced protein (PIP) , Prostate and testis expressed protein 1 precursor, Prostate-specific antigen (PSA), Prostate-specific membrane antigen (PSMA), Prostatic acid phosphatase (PAP), Protein kinase C inhibitor, Protein S100-A14, Protein total serum, RBC, RDW, S100 Protein, Semen analysis, Semen culture , Semen fructose , Semenogelin, Serine protease (kallikrein-3), SOD3 extracellular superoxide dismutase, Sodium serum, SP-10: a testis-specific acrosomal protein, Sphingomyelin (SM), Stefin B (Cystatin B), Succinate dehydrogenase, Testosterone total, Thyroid Panel, TNF receptor-associated factor 6, E3 Ubiquitin protein ligase, Total cholesterol/HDL ratio, Transforming growth factor-β, Triacylglycerol, Triglycerides, TSH, Uric Acid, Urinalysis , Urokinase-type plasminogen activator system, Vital staining , VLDL cholesterol Cal, WBC, α1-antichymotrypsin (ACT), endogenous protease inhibitor, α2-macroglobulin (A2M), α-Methylacyl-CoA racemase

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

Degree of CNS insult-Somatosensory Evoked potentials (SSEPs), Changes in sweat gland activity-Sympathetic skin response, "sympathetically mediated electrical activity-Corpus Cavernosum EMG", Polysynaptic reflex-Evoked Cavernous Activity of penis, Penile nerve conduction velocity (penile neuropathies), Bulbocavernosus reflex response, Somatosensory evoked potential (SSEP)-electrical stimulation of the penis

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 due to external stimuli or DNA changes which either might result into a transient change or pathological consequence requiring suitable surgical or medical or radiological therapy.

PARAMETERS TESTED @ VIRINCHI

AFP, Amplification of 12p, CD30, GPC3, OCT3/4, PLAP, POUF1, Stem cell factor receptor (c-KIT), Telomerase

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

Varicocoeles-Scrotal ultrasound, Epididymal abnormalities-Scrotal ultrasound, Structural penile abnormalities-Penile ultrasound, Malfunction of the venous occlusive mechanism-Penile ultrasound, Arterial inflow-Penile ultrasound, Detection and characterisation of prostatic cysts-MRI, Dilatation in the proximal seminal duct-Scrotal US, Testicular volume-testicular US, Patency of the seminal tract-vesiculodeferentography, Intratesticular cysts-testicular US

PATHOGEN SCREENING

Many physiological processes and features such as respiration, changes in growth rate, feeding, excretion, age, energy expenditure, vital signs, cognitive function, etc. are simple to complex measurable indicators and serve as valuable tools to evaluate the impact of either external or internal agents on the physiological processes.

PARAMETERS TESTED @ VIRINCHI

Chiamydia trachomatis, Gonorrhea culture, Hepatitis B, Hepatitis C, Herpes simplex virus (HSV), Human Immunodeficiency Virus (HIV), Human papillomavirus (HPV), Neisseria gonorrhoeae, Trepanoma pallidum, Trichomonas vaginalis

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 or resistance 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

B7-H3 (Cd276), ACPP protein, ADAM19, ALB, BRCA1/BRCA2, CACNA2D1, Calmodulin 3, CD59, CDNK2A, Cofilin 1(CFL1), CSRP2 , CST4 , CTAM, DNMT3A2, EN2, ERG, EZH2, HOXB13, KIAA1143, KLF12, LINE-1, Macrophage inhibitory cytokine-1 (MIC-1), Membrane-associated progesterone receptor component 2, MGMT, MIP-1α, MUT, P25/26, PCA3, PCDH17, TCF21, PDE11A, PSCA, PSF1, PSGR, PTGS2, RAB11B, Ras-related protein, RASSF1α, RPRM, SAMSN1, SERPINA1 (ALPHA-1-ANTITRYPSIN), SERPINA5, SERPING1, SERPINF1, SFRP1 , SLC18A2, SPAST (Spastin), Sperm protein associated with the nucleus on the X chromosome B/F, Sperm protein associated with the nucleus on the X chromosome C , Sperm protein associated with the nucleus on the X chromosome D, SPOP (speckle-type POZ protein), SPRY4, STX18 (Syntaxin 18), SUX2 , Testis-Specific Histone Variant, TIG1, Tissue inhibitor of MMPs (TIMP 1, 2), TMEM204, TMPRSS2:ERG, TRPM4, XPO6, Y chromosome DNA (Yc DNA), ZAG, ZNF671

IMMUNOLOGICAL

The immunologic Biomarkers provide insights into the body's response towards cancer, infectious diseases, immunization, immunodeficiency, allergies, asthma, autoimmunity, and other immune disorders. 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

Antibody M IgM Serum Quantitative IgM Serum, Antihuman sperm monoclonal antibody MHS-5, Chicken Pox Titers VZV, Hepatitis A Total (IgM - IgG), Hepatitis B Immunity Test Hep B Titer, Hepatitis B Surface Antibody, Hepatitis C Antibody, HIV 1/2 Antigen/Antibody, Immunoglobulin-A , MMR Antibodies MMR Titer, Sperm agglutination, Syphilis RPR, Varicella Zoster Virus Antibodies: IgG

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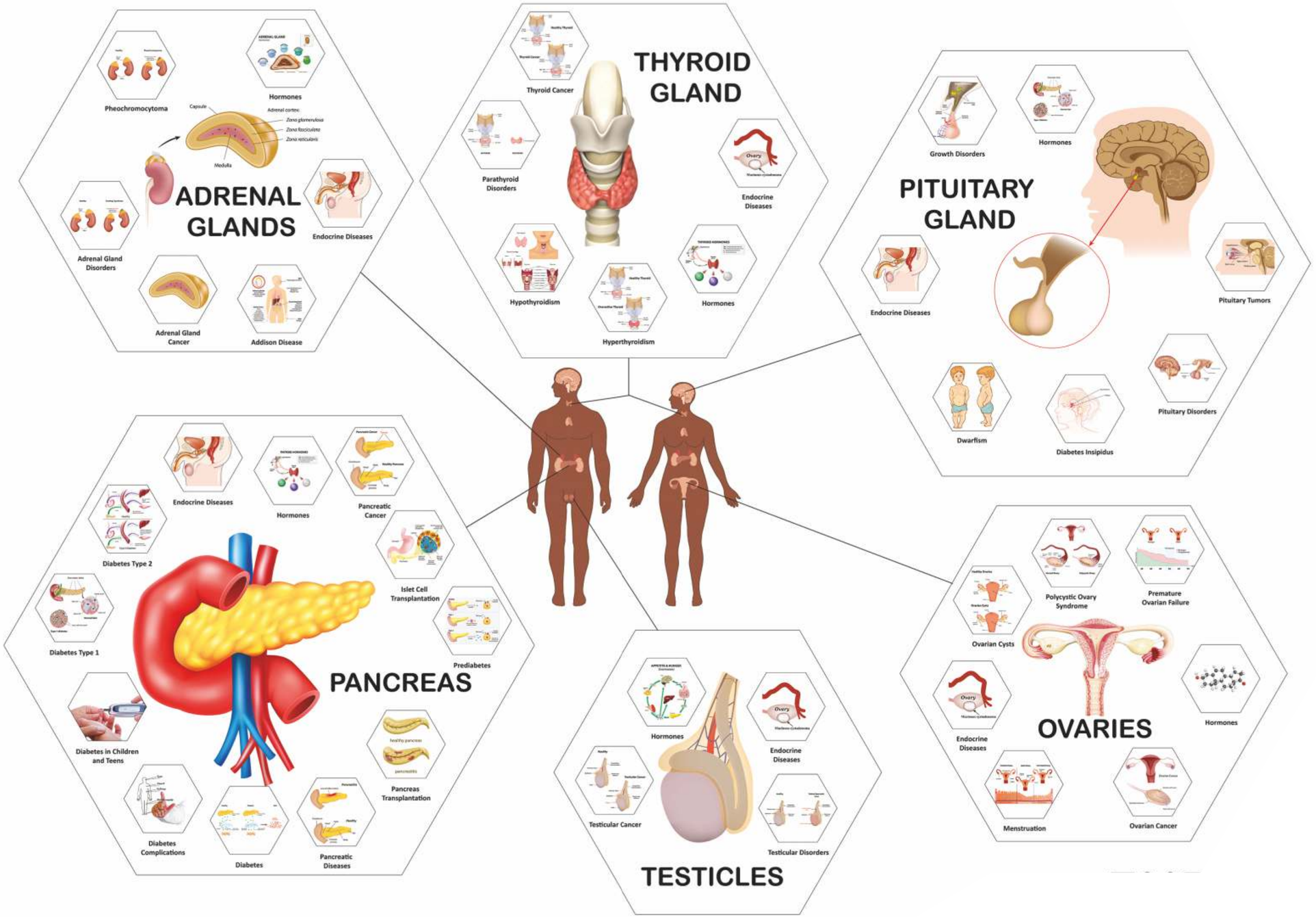

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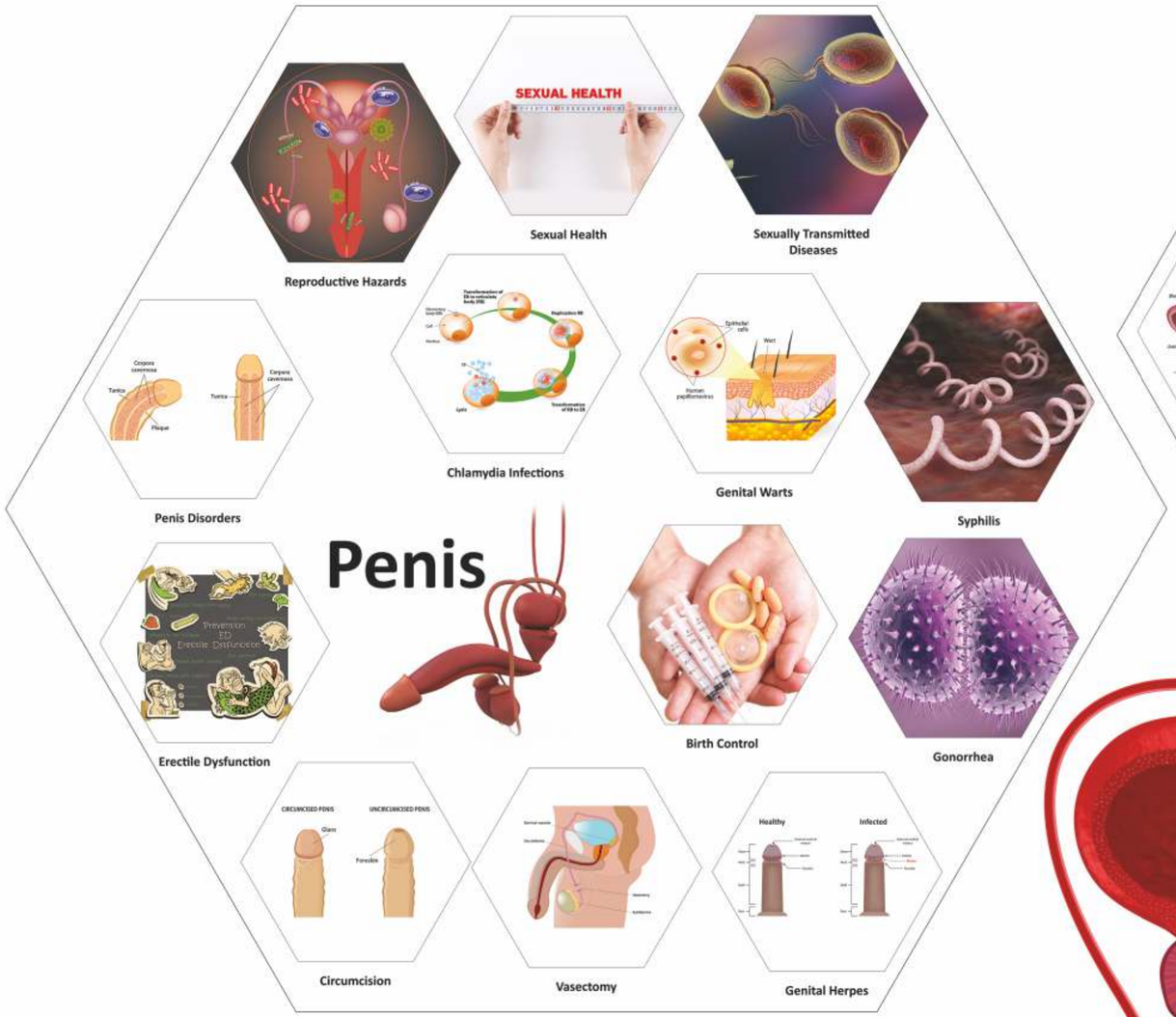

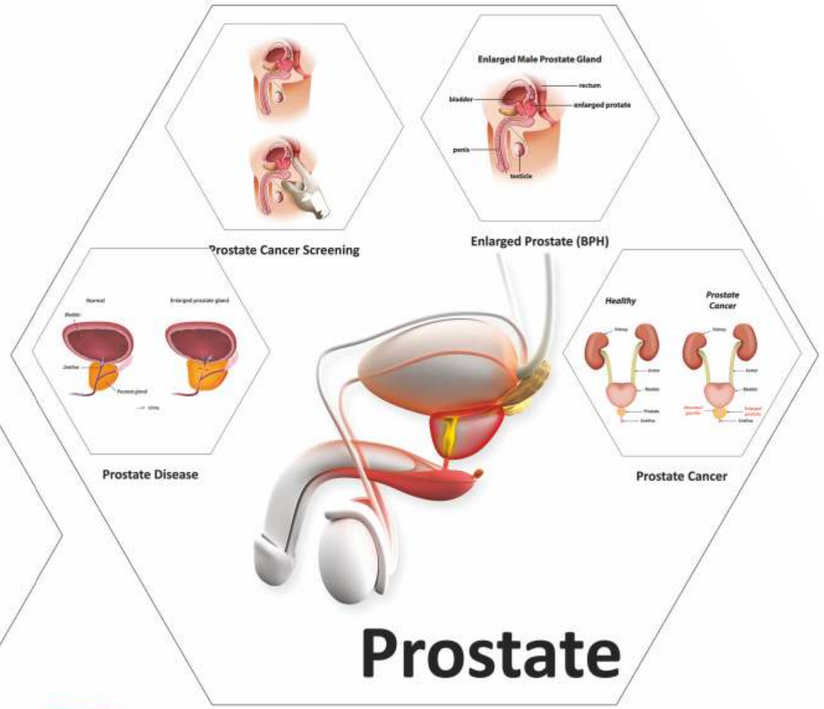

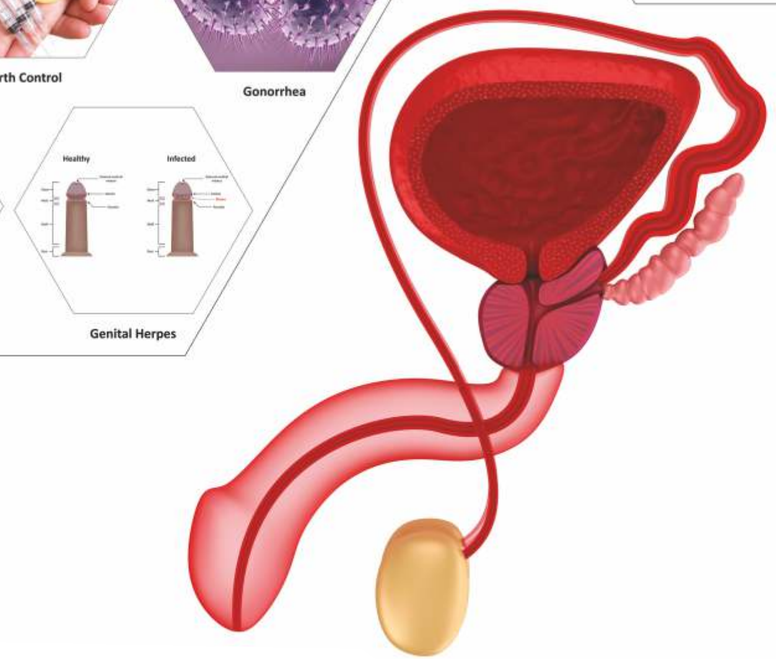

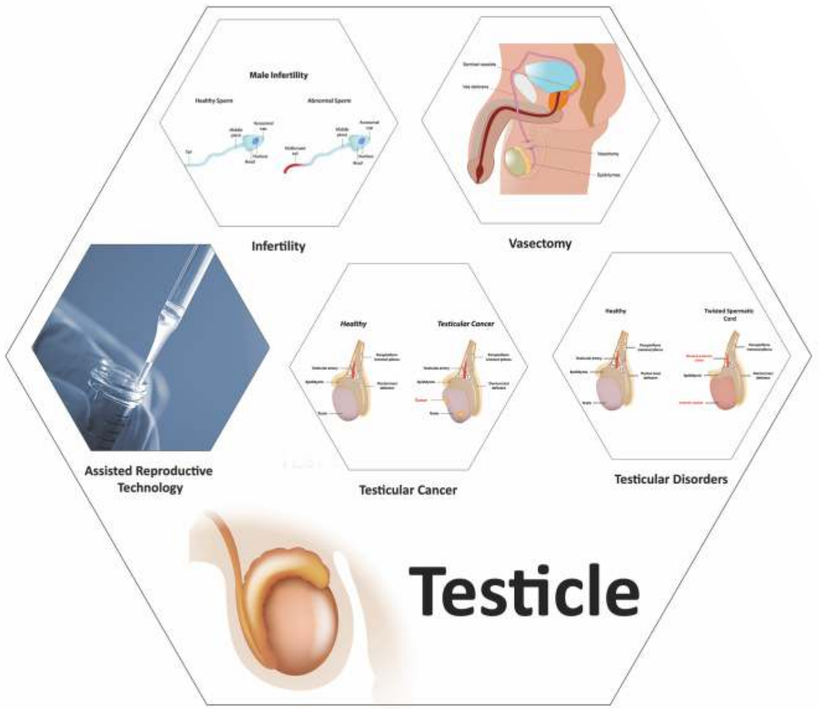

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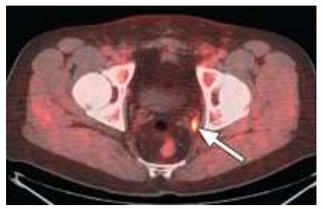
ATEZOLIZUMAB

- Atezolizumab is specifically indicated for the treatment of patients with locally advanced or metastatic urothelial carcinoma
- It is a programmed death-ligand 1 (PD-L1) blocking antibody. PD-L1 may be expressed on tumor cells and/or tumor-infiltrating immune cells and can contribute to the inhibition of the anti-tumor immune response in the tumor microenvironment.
- Binding of PD-L1 to the PD-1 and B7.1 receptors found on T cells and antigen presenting cells suppresses cytotoxic T-cell activity, T-cell proliferation and cytokine production.

CAPROMAB PENDETIDE

- Specifically targets prostate cancer cells that have spread to tissue outside of the prostate gland
- It consists of a novel murine monoclonal antibody that, when conjugated to a linker-chelator and radiolabeled, binds distinctly to Prostate Specific Membrane Antigen (PSMA)
- PSMA is expressed on metastatic prostate cancer tissue
- Combined with a CT or MRI scan, this fusion imaging study helps to determine the location and extent of metastatic lymph node disease



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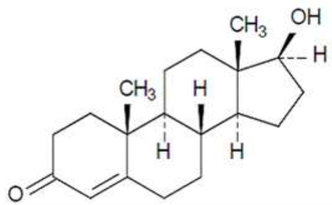
MALE INFERTILITY OXIDATIVE SYSTEM

- Male infertility oxidative system's ORP measure is based upon the principle of oxidation-reduction potential which measures the giving and taking of electrons. Oxidation-reduction potential (ORP) is an overall measure of the oxidative stress to which a biological component is subjected
- It is a rapid in vitro diagnostic semen analysis test utilizing an electrochemical technology for the qualitative measurement (millivolts [mV]) of static Oxidation-Reduction Potential (sORP) in human semen
- The system is intended for professional use in conjunction with standard semen analysis parameters (ejaculate volume, total sperm, sperm concentration, total motility, progressive motility, and morphology) as an aid to assess semen quality

TESTOSTERONE NASAL GEL



- It is a prescription medicine that contains testosterone and is used to treat adult males who have low or no testosterone due to certain medical conditions
- It is the only FDA-approved, nasally-administered testosterone, and it is indicated for the treatment of hypogonadism, or Low T
- The nasal gel is used as testosterone replacement therapy (TRT)

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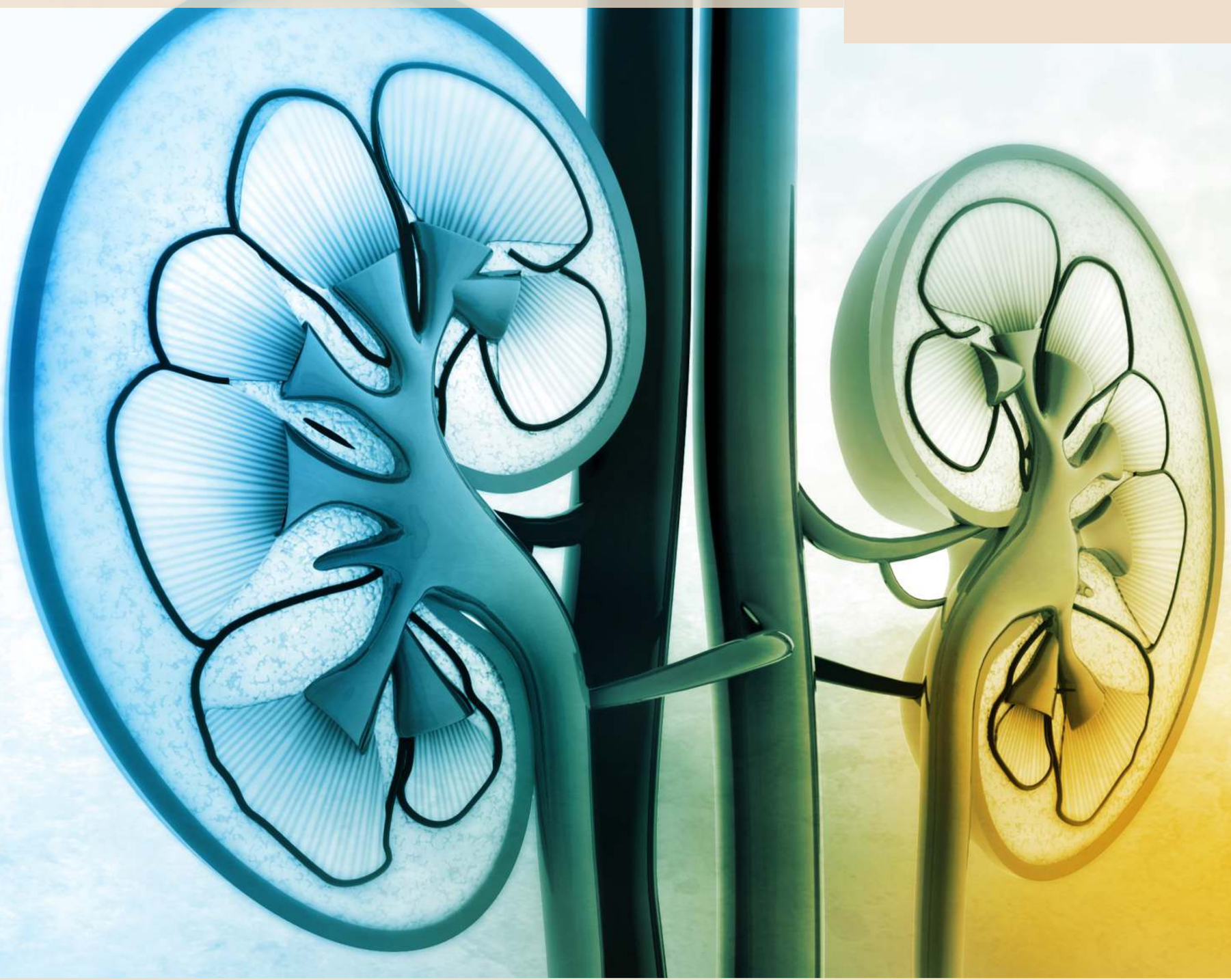

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Dr. Ratan Jha

MD, DTCD (Gold Medalist), DM (Nephrology),
DNB (Nephrology)

Sr. Consultant Nephrologist & Renal Transplant Physician

Dr Ratan Jha is a Senior Consultant Nephrologist at Virinchi Hospitals with overall 27 years' experience. Prior to joining Virinchi Hospitals, he worked as a Consultant Nephrologist at Medwin Hospitals for about 23 years. He was Director of DNB (Nephrology) programme at Medwin Hospitals for over 10 years and has been actively involved in patient care activities, teaching and research programs in nephrology encompassing dialysis, transplantation and clinical care.

Dr Jha received his medical undergraduate training from the 1st medical college of the country: Medical College Calcutta & was awarded MBBS degree by Calcutta University. He was awarded Gold Medal for securing 1st position in Diploma in TB & Chest Disease from Delhi University.

Subsequently, after specialising in Medicine, he received MD (General Medicine) Degree from Patna Medical College, a premier institute of north India. He pursued his career in kidney disease at Sanjay Gandhi PGIMS Lucknow, the leading research institute of the country and received post-doctoral degree of D.M. (Nephrology). He received his DNB (Nephrology) degree from National Board in First Attempt and was conferred fellowship by Indian Society of Nephrology in 2011 in Hyderabad.

He has contributed many chapters in several books; gave 70 platform presentations in various national and international conferences; published 68 papers in various national and international journals and attended several workshops on dialysis, CAPD, renal transplantation and clinical nephrology.

Renal Tubular Acidosis, Lupus nephritis, Hepatitis B&C, Acid-Base Electrolyte Disorder are his areas of interest. He prefers doing collaborative research in the field of dialysis and transplant and achieving a path breaking milestone or breakthrough through cost-effective approach in clinical care and collaborative research.

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DEPARTMENT OF NEPHRO CARE

FOREWORD

The Virinchi Hospitals' Kidney Care Centre primarily ensures to slow down the progression of variety of kidney diseases and prevent other relevant complications that arise due to impaired function of kidneys and also help in preventing the need for undesired renal replacement therapy, including dialysis or transplant.

The Kidney Care Centre provides advanced procedures and latest surgical techniques to treat all nephrological disorders including haemodialysis, peritoneal dialysis, critical care nephrology, renal transplantation, kidney transplant, conservative care, palliative care etc. The centre is specialized in all forms of kidney disease treatments in order to provide the best clinical care with utmost patient safety and convenience.

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Dr. Surya Prakash

M.S., FRCSEd, M.Ch, DNB (Uro)

Senior Consultant Urologist, Andrologist and Transplant Surgeon

Dr. Vaddi Surya Prakash is a Senior Consultant Urologist, Andrologist and Transplant Surgeon in the Department of Urology at Virinchi Hospitals. He has overall 15 years' experience in his field. Prior to joining Virinchi Hospitals, he worked as Assistant Professor, Department of Urology, NIMS, Hyderabad and Head, Department of Urology and Renal Transplantation, Narayana Medical College & Hospital, Nellore. He underwent advanced laparoscopic surgery and robotic surgery training at IRCAD, Strasbourg, France. His areas of interest include laparoscopic urology, advanced endurology, uro-oncology and reconstructive urology. He specializes in Laser treatment for prostate enlargement, treatment for stricture urethra disease and urolithiasis. According to Dr. Prakash, minimally invasive treatments including robotic surgery, stem cell therapy, and molecular medicine would change the future of urology and Virinchi Hospitals is well equipped with futuristic technology and expertise to ensure such advanced treatments in urology.

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MEET OUR EXPERTS

Dr. Kiran Kumar Mukku

MBBS, MD (General Medicine), DM (Nephrology)

Consultant Nephrologist & Transplant Physician

Dr Kiran Kumar Mukku is a Consultant Nephrologist and Transplant Physician in the Department of Nephrology at Virinchi Hospitals. He has overall 4 years' experience in his field. He has been actively involved in several renal transplants; performed many kidney (renal) biopsies, percutaneous CAPD catheter insertions and renal transplant graft biopsies. He has done quite a large number of DLC Catheter insertions and performed several perma a catheter (tunnelled catheter) insertions and untunneled catheters insertions. His areas of interest include Glomerulopathies and Renal Transplant Medicine.

Dr Kiran sees a bright future prospect in the field of nephrology with the advent of wearable artificial kidneys, kidney transplantation with minimal or no immunosuppression and minimal side effects. Stem cells in kidney regeneration and transplantation, ABO incompatible kidney transplantation in large scale, paired kidney donation would change the way in which transplantation is done. According to Dr Kiran, the Department of Nephrology at Virinchi Hospitals is well equipped with state-of-the-art dialysis unit and supported by modular operation theatres and smart intensive care units for effective management of postop and critically ill patients.

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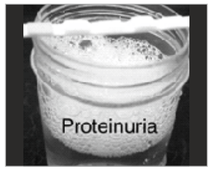
ULTRASONOGRAPHY

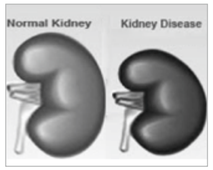
ULTRASONOGRAPHY @ VIRINCHI

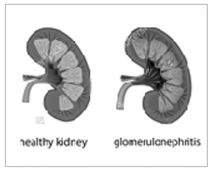
- The technology has improved penetration capabilities and provides excellent resolution in difficult-to-image patients
- Allows visualization of low velocity micro circulation while evaluating organ perfusion of small vasculatures
- Fully integrated fusion capabilities allow clinicians to achieve fast & effective fusion of CT/MR/PET with live ultrasound
- Excellent ergonomics may help reduce repetitive stress induced injuries

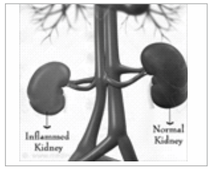
DIAGNOSTIC APPLICATIONS

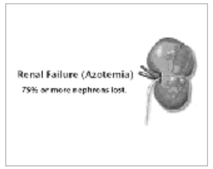
- Signs of injury to the kidneys
- Hydronephrosis
- Polycystic Kidney Disease
- The presence of blockages or kidney stones
- Complications of a urinary tract infection (UTI)
- Cysts or tumors
- Size of the kidneys

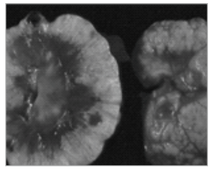












- Acute Kidney Failure
- Acute Phosphate Nephropathy
- Acute Tubular Necrosis
- β-Thalassemia Renal Disease
- Bladder Rupture
- Cortical Necrosis
- Crystal-Induced Acute Kidney injury
- Cystic Kidney Disease, Acquired
- Diabetes Nephropathy
- Diabetes Insipidus
- Continuous Veno-venous Haemodialysis (CVVHD)
- Haemo-filtration
- Slow Efficiency Haemodialysis (SLED)

TREATMENTS AND THERAPIES OFFERED

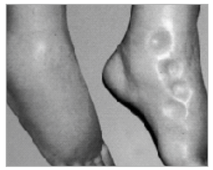
THE DIALYSIS WARD THAT YOU FIND EVERYWHERE

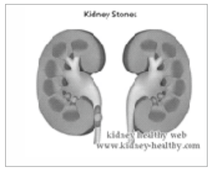
DIALYSIS UNIT @ VIRINCHI

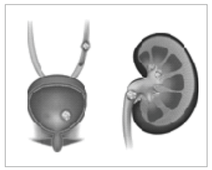
- Provides the most preferred dialysis option through Online Haemodiafiltration
- Monitoring of dialysis dose by OCM (Online Clearance Monitoring and Plasma Sodium Measurement)
- Absolute patient safety through ultrapure dialysis fluid usage

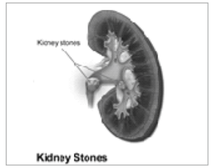
THERAPEUTIC APPLICATIONS

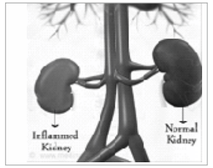
- Severe kidney failure
- When the kidneys are no longer working effectively
- When waste products and fluids buildup in the blood

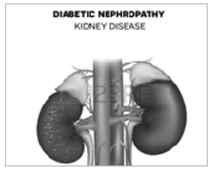












- Gestational Hypertension
- Glomerular Diseases
- Hematuria (Blood in Urine)
- High Blood Pressure and Kidney Disease
- Kidney Stones
- Lupus Nephritis
- Nephrogenic Systemic Fibrosis
- Nephroptosis (Floating Kidney, Renal Ptosis)
- Polycystic Kidney Disease
- Post-Obstructive Diuresis
- Slow Continuous Ultrafiltration (SCUF)
- Continuous Cyclic Peritoneal Dialysis (CCPD)

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28000 Diseases to fight

TREATMENTS AND THERAPIES OFFERED

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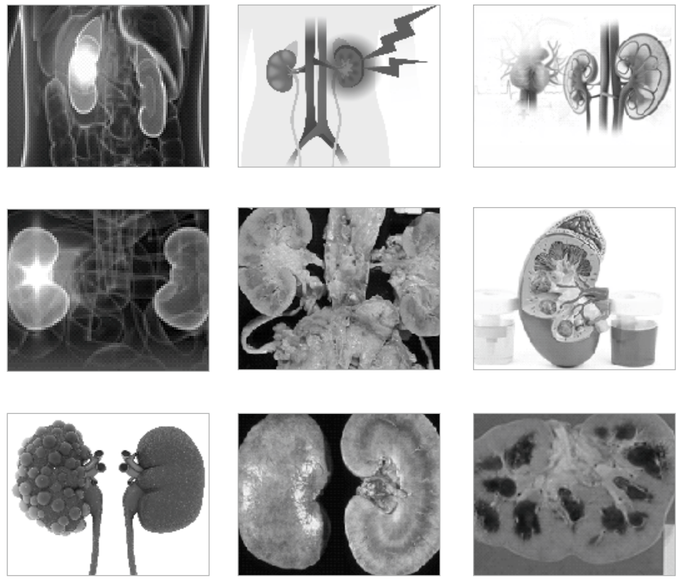
FOR IMPROVED DIALYSIS CARE

NEXT-GENERATION DIALYSIS MACHINE

- Volumetrically controlled ultrafiltration and closed –system hydraulics for precise control of fluid removal
- The Ultrapure dialysate is of high quality and purity which are paramount for successful Dialysis
- OCM : Real time value for the effective in vivo urea clearance (K)
- Continuous Blood Pressure monitoring using BPM (optional) for superior monitoring and prediction of hypotension
- Ultrafiltration and Sodium profiling:6 pre-programmed ultrafiltration profile or balance neutral sodium profile to improve tolerance to fluid removal
- Automated Blood Volume Monitor regulates ultrafiltration rate on the basis of the current Relative Blood Volume to ensure that if the RBV critical value is approached, the ultrafiltration rate is reduced and the RBV does not fall below the critical limit

When is Dialysis Done?
- Severe kidney failure
- When the kidneys are no longer working effectively
- When waste products and fluids buildup in the blood



- Pyelonephritis (Kidney Infection)
- Urinary Incontinence
- Urinary Tract Infection
- Urinary Tract Obstruction
- Urogenital Fistula
- Vasomotor Nephropathy
- Vesicointestinal Fistula
- Vesicoureteral Reflux
- Continuous Ambulatory Peritoneal Dialysis (CAPD)
- Cycler Assisted Intermittent Peritoneal Dialysis

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BIOMARKER BIG DATA FOR PERSONALIZED MEDICINE

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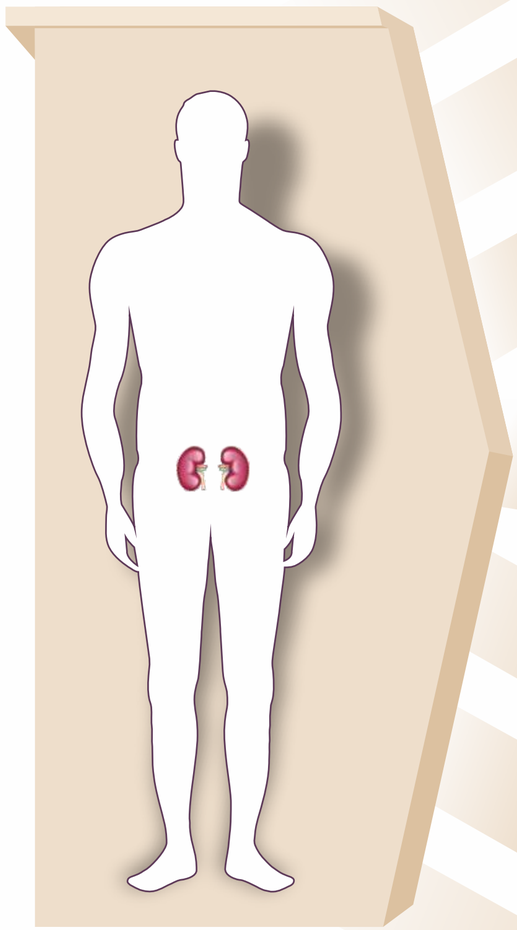

BIOCHEMICAL

ELECTROPHYSIOLOGICAL

HISTOPATHOLOGICAL

ANATOMICAL

PATHOGEN SCREENING

PHENOTYPIC & GENETIC

IMMUNOLOGICAL

VIRINCHI'S PROPRIETARY BE-HAPPI™ DIAGNOSTICS FRAMEWORK

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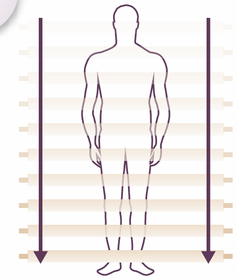
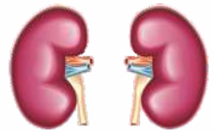


EVERY MEMBER UNDERGOES A MASTER HEALTH CHECK UPON JOINING

2



IF PROBLEM IN ORGAN SYSTEM DISCOVERED

3

BE-HAPPI™

VIRINCHI'S BE-HAPPI™ FRAMEWORK IS APPLIED TO THE ORGAN SYSTEM AND TREATMENT PLANNED ACCORDINGLY

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.

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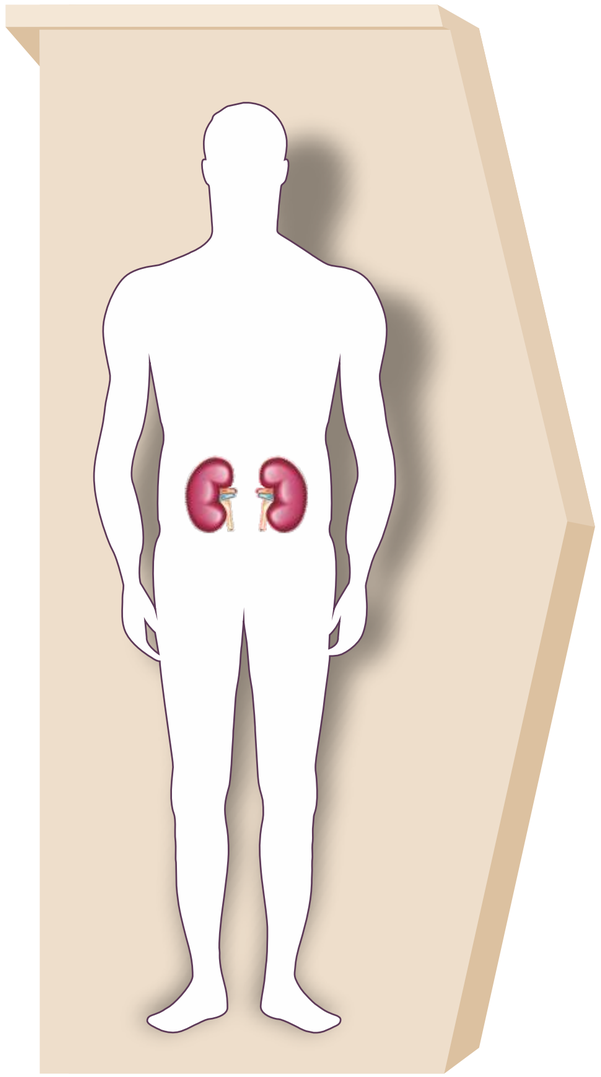

BIOCHEMICAL

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 serve 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

MMP-3, Angiotensinogen II, Apolipoprotein-B, Asymmetric dimethylarginine (ADMA), B2-microglobulin (B2-M), Blood urea nitrogen, Complement factor B (CFB), Complement factor I (CFI), Complete Blood Count (CBC), Comprehensive Metabolic Panel (CMP), Creatinine Clearance , Cysteine-rich protein-61 (CYR-61), EGFR, Erythropoietin (EPO), FH(Fumarate Hydratase), Fibroblast growth factor 23 (FGF-23), Gamma-glutamyl transpeptidase (GGT), Glomerular Filteration Rate (GFR), GST (Glutathione-s-transferase), HDL cholesterol, IGF-binding protein 7 (IGFBP7), Interleukin 18 (IL-18), Kidney injury molecule 1 (KIM-1), Kidney Stone Analysis, Kidney Stone Risk Panel, Lactate dehydrogenase (LDH), LDL, Lipoprotein-a, Liver-type fatty acid–binding protein (L-FABP), Matrix metalloproteinases (MMPs), Microalbumin, MMP-8, Mortality Urinary N-Acetyl-b-O-glucosaminidase, N-acetyl-glucosaminidase (NAG), Neutrophil gelatinase associated lipocalin(NGAL), Non-HDL, pi-glutathione s-transferase (p-GST), Plasma/serum cystatin C (CyC), Serum creatinine, tissue inhibitor of metalloproteinase-2 (TIMP-2), Total cholesterol, Tryglycerides, Urinalysis, Urinary CD14 mononuclear cells, Urinary connective tissue growth factor, Urinary liver-type fatty acid-binding protein, Urinary retinol binding protein 4, Urine Albumin Test, Urine cystatin C, Urine Total Protein Test, Beta-trace protein (BTP)

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

Anion gap; Potential value of defined renal epithelial cell cultures

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 due to external stimuli or DNA changes which either might result into a transient change or pathological consequence requiring suitable surgical or medical or radiological therapy.

PARAMETERS TESTED @ VIRINCHI

Calbindin D-28, Carcinoembryonic antigen(CEA), Clusterin, Cyr61, Exosomal fetuin-A, H-FABP, L-FABP, NHE-3

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

Arterial input function (AIF) - DCE MRI, Axial Perfusion Rate Map - ASL MRI, Cortical R2* Map - BOLD MRI, Cortico medullary sodium gradient - Na MRI, Differential renal function (DRF) - Dynamic MR Urography , Diffusion tensor imaging (DTI), Diffusion weighted imaging (DWI), Echo-planar imaging (EPI), Evaluation of tissue mechanical property – MR elastography , Functional renal MRI, Glomerular filtration – DCE, In vivo renal properties - DCE MRI, Interstitial diffusion – DWI, Intra renal Stenosis Measurement – BOLD, Intra-voxel incoherent motion (IVIM), Longitudinal relaxation time T1, Macro circulation - Doppler Ultrasound scan, Macro/microcirculation- Contrast enhanced ultrasound, Medullary R2* Map - BOLD MRI, Oxygenation & Perfusion - BOLD MRI, Perfusion - ASL, DCE, DWI(IVIM), Renal artery stenosis (RAS) - MR Renography, Renal Oxygen Extraction Fraction, Renal perfusion, Renal T2*, Renal tissue partial pressure of oxygen , Renal vascular hypertension (RVH) - Cine phase-contrast MRI (3D cine PC MRI), Resorption changes - Diffusion-weighted magnetic resonance imaging (DWI or DW-MRI), Resorption changes - Intravoxel Incoherent Motion (IVIM) Imaging, Semiautomatic Tissue Volume, T2* map of Renal Medulla - Bold MRI, Tissue oxygenation - BOLD, Total Kidney Volume , Unilateral ureteral obstruction (UUO)

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 or resistance 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

ABCC6, ANKRD11, AR(androgen receptor)gene, BANP, BAP1, BRD2, CFTR gene, COL4A3, COL4A4, Complement factor H (CFH) gene, CRISPLD2, CUX1, ELMO1, EXOC3, FKBP5, FLCN, GALNT2, hCDC4, IFLTD, INHBA-AS1, JAK2, MCM2, MCP genes, MET, MITF, NPHS2, PKD1 l, PKD2, PRKAG2, SDHA, SDHB, SDHC, SDHD, SLC6A16, STK24, SYNPO2, Thrombomodulin (THBD) genes, TP53BP2, TSC1, TSC2, ZFP36L1

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

Candida species, Chlamydia trachomatis, Enterococcus faecalis (group D streptococci), Herpes simplex virus, HIV, Klebsiella, Proteus mirabilis, Pseudomonas aeruginosa, Salmonella species, Staphylococcus saprophyticus, Streptococcus agalactiae (group B streptococci), Ureaplasma urealyticum

IMMUNOLOGICAL

The immunologic Biomarkers provide insights into the body's response towards cancer, infectious diseases, immunization, immunodeficiency, allergies, asthma, autoimmunity, and other immune disorders. 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

HLA class II Antibodies, IgG antibodies, Panel Reactive Antibody Test (PRA), Streptococcal Antibody Test

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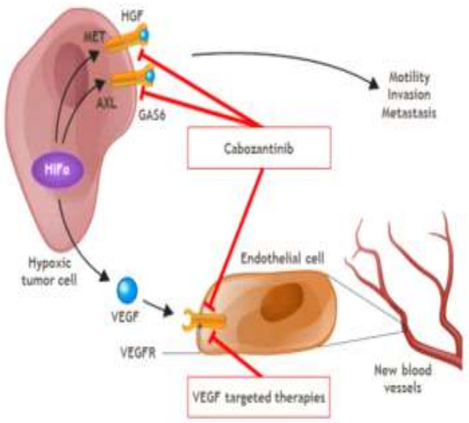
CABOZANTINIB



- Cabozantinib is a kinase inhibitor
- Cabozantinib inhibits the tyrosine kinase activity of MET, VEGFR-1, -2 and -3, AXL, RET, ROS1, TYRO3, MER, KIT, TRKB, FLT-3, and TIE-2
- These receptor tyrosine kinases are involved in both normal cellular function and pathologic processes such as oncogenesis, metastasis, tumor angiogenesis, drug resistance, and maintenance of the tumor microenvironment

BETA 2-MICROGLOBULIN SELECTIVE APHERESIS COLUMN

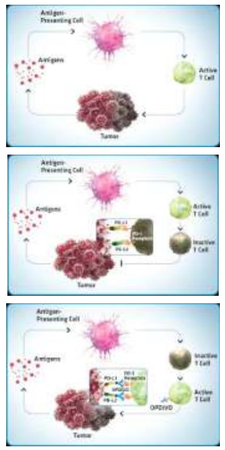
- The Beta 2-microglobulin Apheresis Column is a device that treats dialysis-related amyloidosis, a complication of kidney failure
- Device helps to
  - reduce Beta 2-microglobulin in the blood
  - improve grip/pinch strength and motor nerve terminal latency with carpal tunnel syndrome
  - decrease bone cyst formation and size
  - reduce joint pain/stiffness and nighttime awakening
  - improve activities of daily living
- The probable benefit appears to continue during the course of treatment with the device

RIGHT TO SCIENCE @ NEPHRO CARE

virinchi HOSPITALS Cell Correct

BIOLOGIC THERAPY (IMMUNOTHERAPY) FOR KIDNEY CANCER

- An important part of the immune system is its ability to keep itself from attacking normal cells in the body
- It uses "checkpoints," which are molecules on immune cells that need to be turned on (or off) to start a response
- Cancer cells sometimes use these checkpoints to avoid being attacked by the immune system
- Newer drugs that target these checkpoints hold a lot of promise as cancer treatments
- Nivolumab is a drug that targets PD-1, a protein of T cells that normally prevent them from attacking other cells in the body by blocking pd-1, this drug boosts the immune response against cancer cells



HOME HEMODIALYSIS MACHINE

- Designed to allow patients with kidney failure to perform High Dose Hemodialysis (more frequent or extended duration Hemo Dialysis) at home
- A unique feature is its ability to use the dialyzer (blood filter) and blood set for multiple treatments
- Integrated heparin pump; an integrated water treatment source and online dialysate generation
- Device provides all types of hemodialysis

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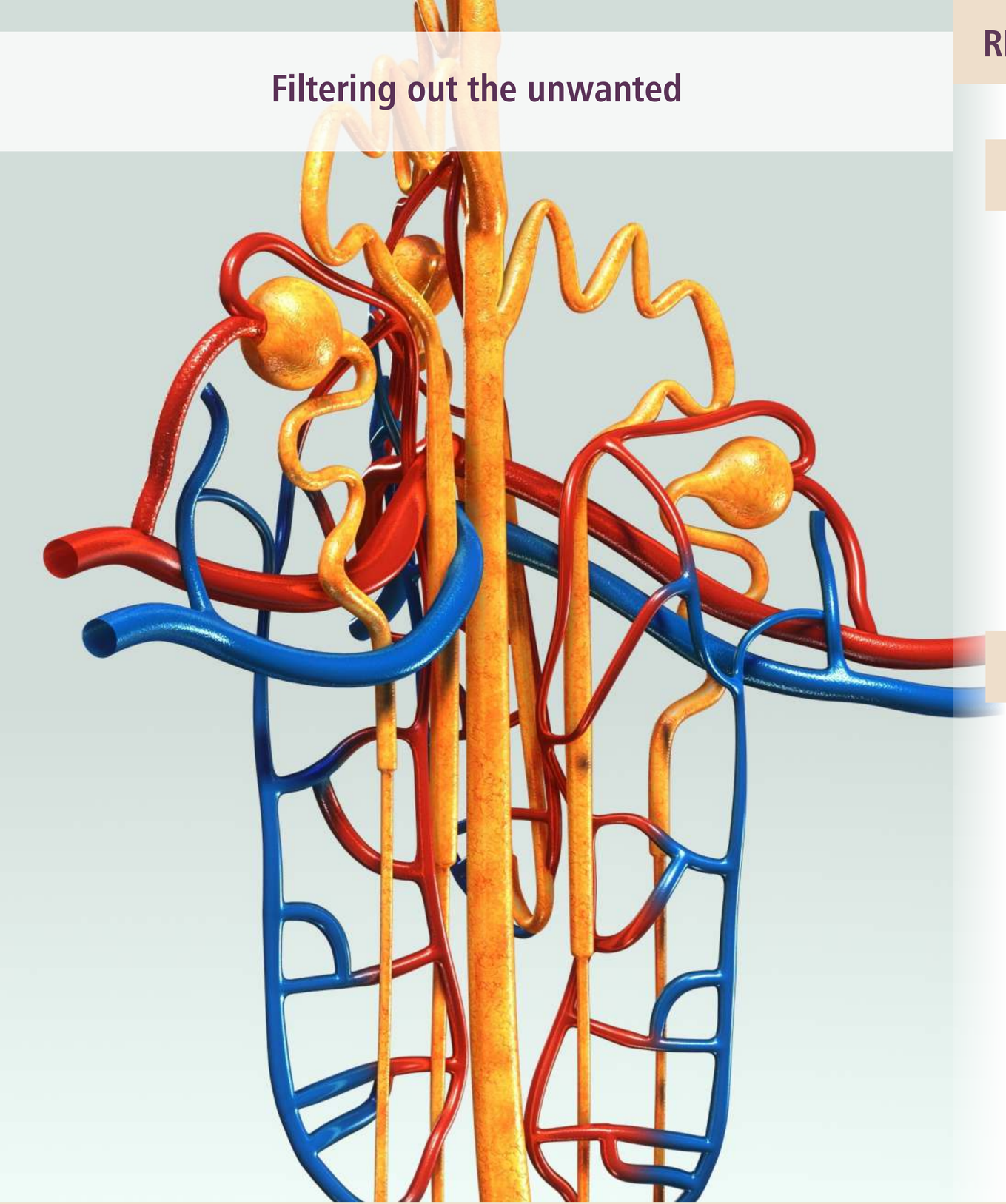
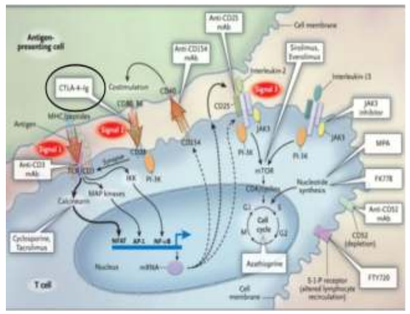


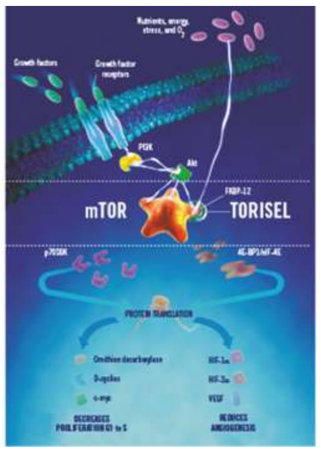
Filtering out the unwanted

BELATACEPT



- Belatacept, compises of a recombinant extracellular domain of human cytotoxic T lymphocyte antigen-4 (CTLA-4) and a fragment of a modified Fc portion of human IgG1
- A selective T-cell (lymphocyte) costimulation blocker, binds to CD80 and CD86 on antigen-presenting cells thereby blocking CD28 mediated costimulation of T lymphocytes

TEMSIROLIMUS



- Temsirolimus is an inhibitor of mTOR (mammalian target of rapamycin)
- Temsirolimus binds to an intracellular protein (FKBP-12), and the protein-drug complex inhibits the activity of mTOR that controls cell division. Inhibition of mTOR activity resulted in a G1 growth arrest in treated tumor cells
- When mTOR was inhibited, its ability to phosphorylate p70S6k and S6 ribosomal protein, which are downstream of mTOR in the PI3 kinase/AKT pathway was blocked
- In vitro studies using renal cell carcinoma cell lines, temsirolimus inhibited the activity of mTOR and resulted in reduced levels of the hypoxia-inducible factors HIF-1 and HIF-2 alpha, and the vascular endothelial growth factor

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Making Organs Live Forever

DEPARTMENT OF TRANSPLANT CARE

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Dr. Surya Prakash

M.S., FRCSEd, M.Ch, DNB (Uro)

Sr. Consultant Urologist, Andrologist & Transplant Surgeon

Dr. Vaddi Surya Prakash is our Senior Consultant Urologist, Andrologist and Transplant Surgeon in the Department of Urology at Virinchi Hospitals. He has 15 years' of experience to date in his field. Prior to Virinchi Hospitals, he worked as an Assistant Professor, Department of Urology, NIMS, Hyderabad and Head, Department of Urology and Renal Transplantation, Narayana Medical College & Hospital, Nellore. He is trained in advanced laparoscopic surgery and robotic surgery from IRCAD, Strasbourg, France. His areas of interest include laparoscopic urology, advanced endurology, uro-oncology and reconstructive urology. He specializes in Laser treatment for prostate enlargement, treatment for stricture urethra disease and urolithiasis. According to Dr. Prakash, minimally invasive treatments including robotic surgery, stem cell therapy, and molecular medicine would change the future of urology and Virinchi Hospitals is well equipped with futuristic technology and expertise to ensure such advanced treatments in urology.

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DEPARTMENT OF TRANSPLANT CARE

FOREWORD

The Department of Transplant Care at Virinchi Hospitals has all the technological, surgical, innovative & clinical expertise to lead clinical & basic transplant research. A multidisciplinary team including cardiologists, hepatologists, nephrologists, pathologists, haematologists, transplant surgeons, radiologists, pulmonary and critical care specialists; psychologists and psychiatrists; anesthesiologists and endocrinologists evaluate & treat both adults & children who need transplant.

After a thorough medical and social evaluation, the entire Transplant Care Committee involved will diagnose if transplant is necessary for the patients' condition. And due to Virinchi's collaboration with other medical institutions/ hospitals, the patient does not usually have to wait for very long to receive an organ.

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Dr. Ratan Jha

MD, DTCD (GoldMedalist), DM (Nephrology),DNB (Nephrology)

Sr. Consultant Nephrologist & Renal Transplant Physician

Dr. Ratan Jha is a Senior Consultant Nephrologist at Virinchi Hospitals with 27 years' of experience to date. Prior to Virinchi Hospitals, he worked as a Consultant Nephrologist at Medwin Hospitals for about 23 years. He was the Director of DNB (Nephrology) programme at Medwin Hospitals for over 10 years and has been actively involved in patient care activities, teaching and research programs in nephrology encompassing dialysis, transplantation and clinical care.

Dr. Jha received his medical undergraduate training from the 1st medical college of the country: Medical College Calcutta & was awarded MBBS degree by Calcutta University. He was awarded Gold Medal for securing 1st position in Diploma in TB & Chest Disease from Delhi University.

Subsequently, after specialising in Medicine, he received MD (General Medicine) Degree from Patna Medical College, a premier institute of north India. He pursued his career in kidney disease at Sanjay Gandhi PGIMS Lucknow, the leading research institute of the country and received post-doctoral degree of D.M. (Nephrology). He received his DNB (Nephrology) degree from National Board in First Attempt and was conferred fellowship by Indian Society of Nephrology in 2011 in Hyderabad.

He has contributed many chapters in several books; gave 70 platform presentations in various national and international conferences; published 68 papers in various national and international journals and attended several workshops on dialysis, CAPD, renal transplantation and clinical nephrology.

Renal Tubular Acidosis, Lupus nephritis, Hepatitis B & C, Acid-Base Electrolyte Disorder are his areas of interest. He prefers doing collaborative research in the field of dialysis and transplant and achieving a path breaking milestone or breakthrough through cost-effective approach in clinical care and collaborative research.

MEET OUR EXPERTS

Dr. Kiran Kumar Mukku

MBBS (JIPMER), MD General Medicine (JIPMER), DM (Nephrology)

Consultant Nephrologist & Transplant Physician

Dr. Kiran Kumar Mukku is a Consultant Nephrologist and Transplant Physician in the Department of Nephrology at Virinchi Hospitals. He has 4 years' of experience in this field. He has been actively involved in several renal transplants; performed many kidney (renal) biopsies, percutaneous CAPD catheter insertions and renal transplant graft biopsies. He has done quite a large number of DLC Catheter insertions and performed several perma a catheter (tunnelled catheter) insertions and untunneled catheters insertions. His areas of interest include Glomerulopathies and Renal Transplant Medicine.

Dr. Kiran sees a bright future prospect in the field of nephrology with the advent of wearable artificial kidneys, kidney transplantation with minimal or no immunosuppression and minimal side effects. Stem cells in kidney regeneration and transplantation, ABO incompatible kidney transplantation in large scale, paired kidney donation would change the way in which transplantation is done. According to Dr Kiran, the Department of Nephrology at Virinchi Hospitals is well equipped with state-of-the-art dialysis unit supported by modular operation theatres and smart intensive care units for effective management of postop and critically ill patients.

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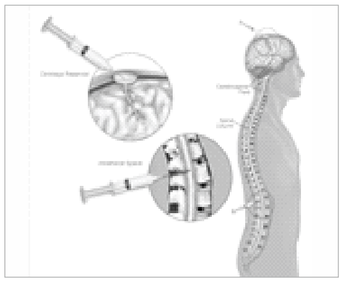
128-SLICE CT SCAN

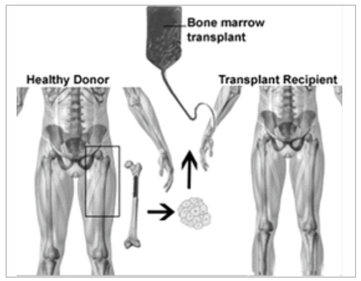
UNIQUE FEATURES

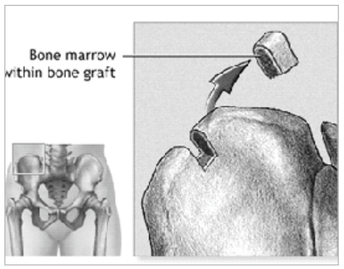
- Has sensitive detection technology (Gemstone), which is by far the best innovation and the first new detector material in the past two decades, as far as high definition scanning with less noise is concerned
- High-definition imaging with the Gemstonetm clarity detector (Gemstone Spectral Imaging (GSI)) helps in Quantitative tissue characterization, anatomical analysis and functional imaging
- Recovery time is four 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

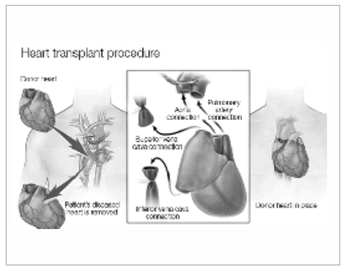
DIAGNOSTIC APPLICATIONS

- To detect abnormalities in the body, such as tumours, abscesses, abnormal blood vessels, etc. when they are suspected by symptoms or identified by other tests.
- To give a surgeon a clear picture of an area of your body before certain types of surgery.
- To pinpoint the exact site of tumours prior to radiotherapy
- To help doctors find the right place to take tissue samples (biopsies).
- To help diagnose acute chest pain
- In non-invasive assessment of coronary artery disease









Bone marrow transplant owing to

- Leukemias
- Severe aplastic anemia
- Lymphomas
- Multiple myeloma
- Immune deficiency disorders
- Some solid-tumor cancers

Heart Transplant owing to

- Dilated cardiomyopathy
- Severe coronary artery disease
- Birth defects of the heart
- Heart Failure
- Pulmonary hypertension
- Valvular heart disease

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TREATMENTS AND THERAPIES OFFERED

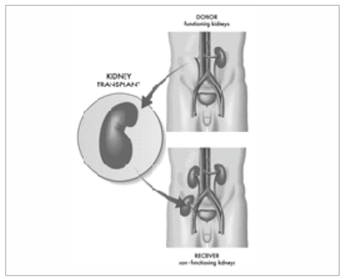
DIGITAL RADIOGRAPHY

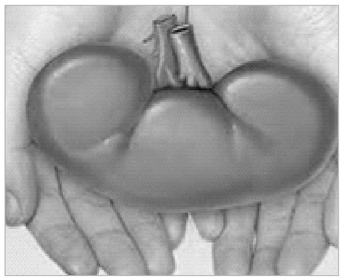
UNIQUE FEATURES

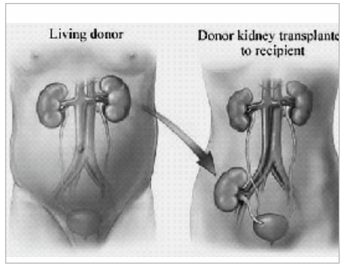
- Time efficiency through bypassing chemical processing and the ability to digitally transfer and enhance images
- Digital flat panel detector (FDP) & imaging software with excellent digital image processing unit offers remote diagnosis solutions
- Greater productivity and more options to enhance images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

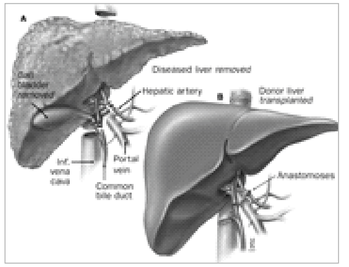
DIAGNOSTIC APPLICATIONS

- To diagnose or treat patients by recording images of the internal structure of the body for assessing
- Presence or absence of disease
- Detection of foreign objects
- Detection of structural damage or anomaly
- Mammography
- Chest radiography
- Angiography
- Digital Subtraction Angiography
- Interstitial lung disease









Kidney transplant owing to

- Diabetes mellitus
- Glomerulonephritis
- High blood pressure
- Polycystic kidney disease
- Severe defects of the urinary tract

Liver transplant owing to

- Chronic hepatitis
- Acute Liver Failure
- Chronic liver failure
- Alcoholism
- Alcoholic liver disease
- Amyloidosis
- Liver cancer

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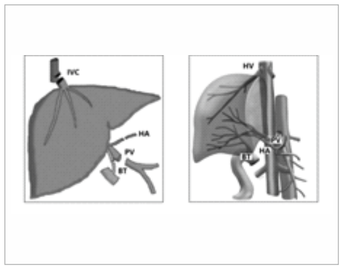
HEART LUNG MACHINE

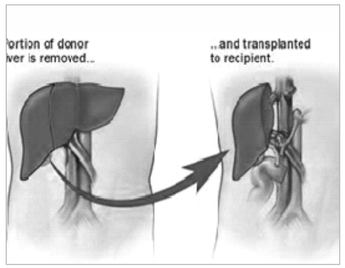
UNIQUE FEATURES

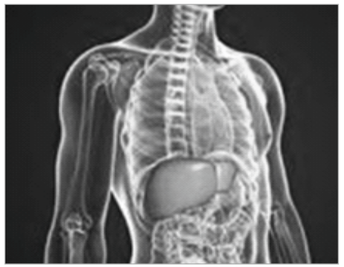
- The advanced design better integrates with the perfusion circuit
- More configuration options
- Greater assortment of procedures including paediatric
- The perfusionist can directly access all control elements of the equipment

DIAGNOSTIC APPLICATIONS

- Transplantation (heart transplantation, lung transplantation, heart–lung transplantation)
- Coronary artery bypass surgery; Cardiac valve repair and/or replacement (aortic valve, mitral valve, tricuspid valve, pulmonic valve)
- Repair of large septal defects (atrial septal defect, ventricular septal defect, atrioventricular septal defect)
- Repair and/or palliation of congenital heart defects (Tetralogy of Fallot, transposition of the great vessels)
- Repair of some large aneurysms (aortic aneurysms, cerebral aneurysms)
- Pulmonary thromboendarterectomy; Pulmonary thrombectomy







Lung Transplant owing to

- Chronic obstructive pulmonary disease (emphysema and chronic bronchitis)
- Idiopathic pulmonary fibrosis
- Cystic fibrosis
- Idiopathic pulmonary arterial hypertension
- Bronchiectasis
- Sarcoidosis

Live donor transplant

- End stage liver disease: cirrhosis
- End stage liver disease hepatocellular carcinoma
- Kidney transplant
- Tissue (bone and amniotic membrane) transplant

Cadaver donor transplant

TREATMENTS AND THERAPIES OFFERED

INTRA-AORTIC BALLOON PUMP (IABP)

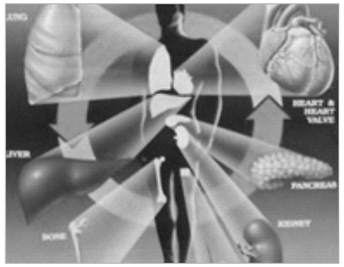
UNIQUE FEATURES

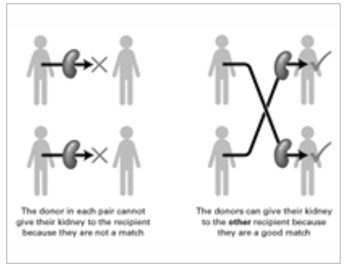
- Faster inflation and deflation speed
- Automatically evaluates and selects the best lead and trigger source and sets optimal timing
- Automatically adjusts to changes in patient conditions without clinician intervention
- Unique Automatic in Vivo Calibration and Fiber-optic Pressure Signal Transmission
- Counter pulsation feature helps interventional cardiologists to enhance hemodynamic support

DIAGNOSTIC APPLICATIONS

- Acute mitral valve regurgitation
- Severe heart failure
- Coronary artery disease
- High blood pressure
- Arrhythmias
- Heart valve disease
- Heart defects present since birth
- Heart muscle diseases
- Damage to the heart muscle from heart attack

- Laparoscopic surgeries
- Live- and Cadaver-donor transplantation - for Liver & Kidney Transplant
- Multi-organ transplants
- Paired Donation
- Paediatric Transplants
- Regenerative Medicine
- Transplant Research





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WARM - ORGAN BLOOD PERFUSION DEVICE

- The world's first commercial, portable, warm blood perfusion system
- Allows a new type of organ transplant, called a living organ transplant
- Designed to maintain organs in a warm, functioning state outside of the body to optimize their health and allow continuous clinical evaluation

KIDNEY TRANSPORTER

- Provides a sealed, sterile environment where a specially formulated physiologic solution is gently pumped through the kidney at cold temperatures to minimize tissue damage while the organ is being preserved outside the body
- The innovative technology has proven to significantly improve 1-year and 3-year graft survival for all types of deceased donor kidneys
- Lightweight and portable allowing an organ to be perfused from time of recovery until transplantation
- Records data on temperature, flow rate, vascular resistance and pressure every 10 seconds, offering clinicians important additional data

RIGHT TO SCIENCE @ TRANSPLANT CARE

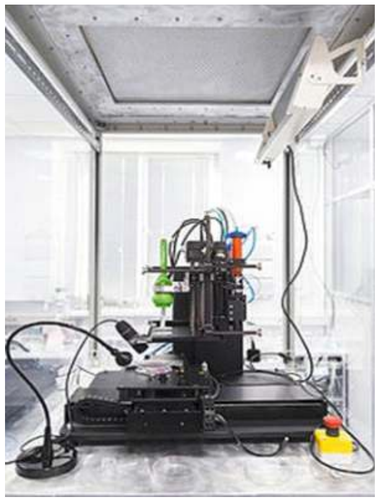
virinchi HOSPITALS Cell Correct

EX-VIVO LUNG PERFUSION

- Ex-vivo lung perfusion (EVLP) is an innovative therapy applied to donor lungs outside of the body before transplantation that improves organ quality and makes lungs that were previously unsuitable safe for transplant
- Intended for flushing and temporary continuous normothermic machine perfusion of isolated lungs, during which time the function of the lungs can be assessed for transplantation

3D PRINTED BIOLOGICAL MATERIALS

- Useful for printing new part for organs or entire organs all together
- Saves hundreds of thousands of people every year waiting for an organ donation to come through



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