EXPERT ADVICE - ETHICAL TREATMENT





NU Hospitals Rajajinagar & Padmanabhanagar,

Bengaluru are accredited with NABH, NABL & NABH

Nursing Excellence Certification





NU Fertility FEQH & ISAR Accredited





NU (South) Padmanabhanagar



NU Shivamogga







Nephro-Uro Fertility Specialists



Economic Times Award Best Urology Hospital in India



NU (West) Rajajinagar



KM NU Ambur

Infrastructure, Manpower, Technology & Other Resources - Guidelines

Dr. Prasanna Venkatesh M.K. Sr. Consultant Paediatric Urologist, Robotic Surgeon & Managing Director



Disclosures - None



Infrastructure



List of Legal requirements

- Registration under Nursing Home Act/ Medical Establishment Act
- Bio-medical Waste Management Licenses
- Authorization of HCO by PCB MOU with Vendor
- NOC from Fire Department
- Building Completion Licenses
- Lift licenses for each lift
- DG Set Approval for Commissioning



List of Legal requirements

- Medical Gases Licenses/ Explosives Act
- Clinical Establishments Act Registration (if applicable)
- MoU / agreement with outsourced human resource agencies as per labor laws
- Electricity rules
- Provident fund/ESI Act
- GST
- PAN
- No objection certificate under Pollution Control Act (Air/Water)

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Wireless operation certificate from Indian P&T



Dialysis Service Complex

2	Dialysis Service Complex
2.1	Dialysis station shall be designed to provide adequate space area and safe treatment as well as to ensure the privacy of patients. The area shall not be less than 6 square meters to accommodate a bed or chair, the dialysis equipment and emergency equipment if needed.
2.2	Separate hemodialysis area shall be designated solely for use of Hepatitis B patients. Current understanding for Indian set-up is that for HCV infected patients also isolation is required.
2.3	Nursing station shall be located in an area that allows adequate surveillance of patients on hemodialysis machines. It shall also be the releasing area for posthemodialysis patients.
2.4	There shall be storage area for sterile instrument/supplies and other materials.
2.5	There shall be work area that contains a work counter, hand washing sink, storage cabinets
2.6	There shall be designated water treatment area and toilet facility for the staff/patients with urinal, water closet, and lavatory.
2.7	There shall be a designated area for CAPD training for patient and her/his family member.



Annexure 1

Minimum space for hemodialysis centre shall be as follows

S.no.	Area	Minimum		
J.110.	Aleu	requirement		
Registratio	Registration Area			
1.	Reception Area			
2.	Waiting Area	30 sq mtrs		
	Public Utilities			
Treatment	Treatment Room			
3.	Bed Space			
4.	Procedure Room			
5.	Staff Changing Room			
6.	Dirty Utility	90 aa m+na		
7.	Clean Utility/Store	80 sq mtrs		
8.	Dialyzer cleaning area			
9.	Toilet			
10.	Store Room			
11.	CAPD training area			
12	Store &Pharmacy	20 sq mtrs		



Annexure 1

Minimum space for hemodialysis centre shall be as follows

Administrative Department				
13.	Accounts Office			
14.	Medical Records 20 sq mtrs			
Water treatment Area				
15	RO Plant	20 sq mtrs		
16	Water Pump			
Generator Area				
17.	Generator	5 sq mtrs		



Support Services

- Registration/Help desk and Billing
- CSSD / Sterilization Area
- Linen management
- Waste Management Services
- Medical Gas / UPS / Power Back Up

- Ambulance services
- Adequate Storage / IT Support
- Fire Safety Devices







View of naturally lit Dialysis Hall





Isolation Dialysis



















Single Use Dialyzer

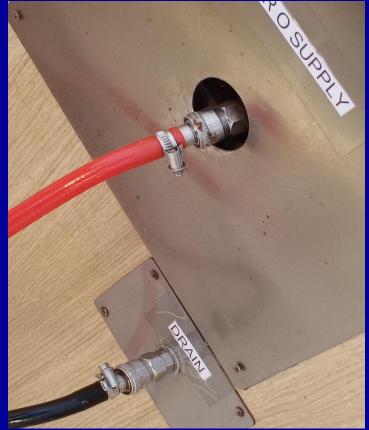




View of PEX Pipe (Cross Linked Polyethylene) with quick release connectors fitted.









About PEX Pipe

- Cross-linked polyethylene (PEX) tubing is a form of polyethylene with cross-links. The piping material has a smooth inner surface and is a non carcinogenic material, fit for use to supply water in area where water quality should be top priority, like ICU, Dialysis etc.
- The product offers several advantages over copper, PVC, and galvanized steel plumbing pipes. PEX is flexible and easier to install than a rigid pipe, and it offers high heat-resistance and long-term durability
- For hemodialysis machines port, 316 stainless steel connectors are used which are crimped on the tube and NOT glued like on PVC, In the derivation points, the pipe's inner wall is almost 10 times less rough than PVC pipes, making it difficult for bacteria to stick to the pipe.
- The PEX loops are assembled with pipes of smaller diameter than those of PVC, which guarantee high speed of water circulation at all points, especially in the loop return and is also has high chemical resistance when compared to PVC.



Close view of QRS Connectors & Outlet Drain









Single Room with attached provision for Dialysis





View of RO Plant







View of Sand, Activated Carbon & Resin filters







View of Micron Filters & Booster Pump





Water Softener Plant









Competition Landscape















KEY FEATURES	RENALYX	FRESENIUS	BAXTER	BBRAUN	NIPRO	NIKKISO
MACHINE TYPE/CONFIG	НД	НД	HD	HD	HD	HD
TELE NEPHROLOGY	BUILT-IN	NA	NA	NA	NA NA	NA
REMOTE MONITORING	BUILT-IN	NA	NA	NA	NA	NA
AVG COST OF CONSUMABLES	LOW	HIGH	HIGH	HIGH	HIGH	HIGH
PRICING	COMPETITIVE	COMPETITIVE	HIGH	HIGH	COMPETITIVE	HIGH
LIFETIME COSTS	COMPETITIVE	HIGH	WEDIUM	HIGH	HIGH	HIGH















RENALYX - RxT17

Renalyx brings you India's first's hemodialysis machine offering smart dialysis with remote monitoring and clinical connectivity.















TREAT-RXT17

- Smartconnected dialysis machine with remote monitoring
- · Tele-Nephrology enabled
- Reduce water usage by 80%
- Bundled with NIS software
- Designed for low resource setting (rural/home)
- Easy to use one touch dialysis operation
- Personalized dialysis profile (patent pending)
- UID enabled patient EMR on cloud
- Customfeatures for specific countries like India,
 Africa, etc.
- Unique ID (Aadhar in India) enabled patient identity
- Renalyx Rxt17 is CE certified and R&D ISO
 13485 certified by TUV



Nephrology Information System & Smart Dialysis Machine



Renalyx - Rx T17 - Technical Sp	ecifications Renallyx
Dimensions	542 X 840 X 1730 mm
Weight	80 Kgs
Power Supply	230 V AC 50Hz adaptable
Electrical Protection Class	Class 1, Type B
Current Consumption	Maximum 7 Amps
Energy Consumption for Rinse, Preparation & Dialysis	2.6 kwh
Energy Consumption for Disinfection	0.9 Kwh
Battery - Sealed and Maintenance free	12V, 7.2 Ah
Blood Flow	60 ml/min to 400 ml/min
Dialysate Flow	300 ml/min, 500 ml/min, 700 ml/min
Trans membrane Pressure	100 mmHg to +500 mmHg
Dialyzer outlet pressure	400 mmHg to + 330 mmHg
Ultrafiltration (UF) Rate	0 – 4,000 mL/ hr
Blood Leak Detector	Optical sensor
Arterial pressure (Postpump)	+ 100 to + 300 mmHg
Venous pressure	+ 50 to + 150 mmHg
Air bubble detector	Detects Air bubble larger than 10 μL
Heparin pump syringe size	10 ml, 20 ml
Connectivity	Wireless, Bluetooth
Tele Nephrology	Remote Monitoring of Dialysis



Manpower Requirements



3	A Qualified Nephrologist, having DM or DNB in nephrology or its equivalent degree shall be the head of the centre. In areas where there is no Qualified Nephrologist, a certified trained dialysis physician (as per local law and regulation) shall be the head of the centre.
3.1	The centre shall have qualified and/or trained medical staff as per the scope of service provided and the medical care shall be provided as per the requirements of professional and regulatory bodies.
3.2	The centre shall have qualified and/or trained nursing staff as per the scope of service provided and the nursing care shall be provided as per the requirements of professional and regulatory bodies.
3.3	The support/paramedical staff shall be qualified and/or trained as per the scope of services provided, and as per the requirement of the respective professional or regulatory bodies.
3.4	For every staff (including contractual staff), there shall be personal record containing the appointment order, documentary evidence of qualification and/or training (and professional registration where applicable).
3.5	Periodic skill enhancement/updation/refresher training shall be provided for all categories of the staff as relevant to their job profile, as prescribed by professional bodies and as per local law/regulations.



Technology



· MASIMO - Patient Safety Net



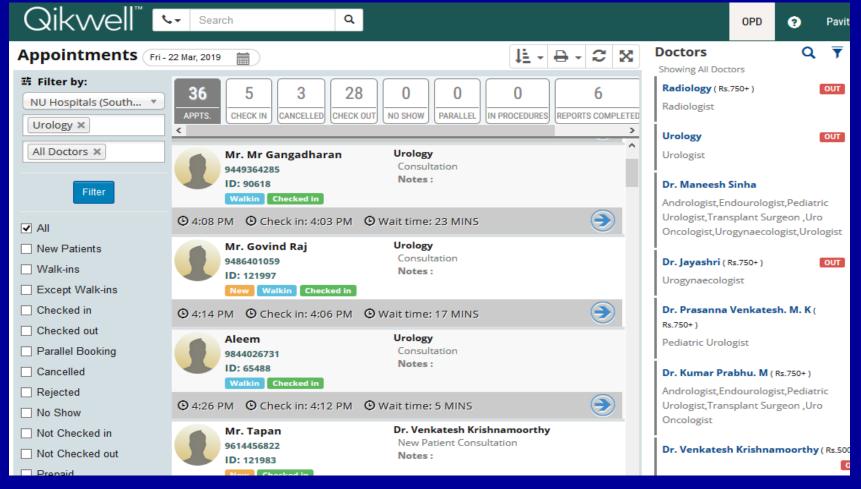






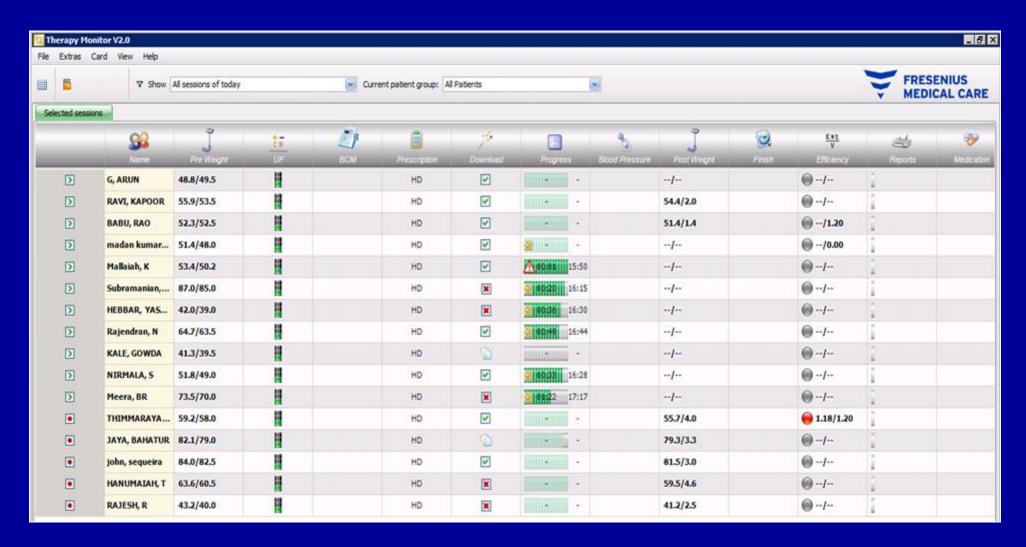


Qikwell - Check in & Out Appointment System





TDMS









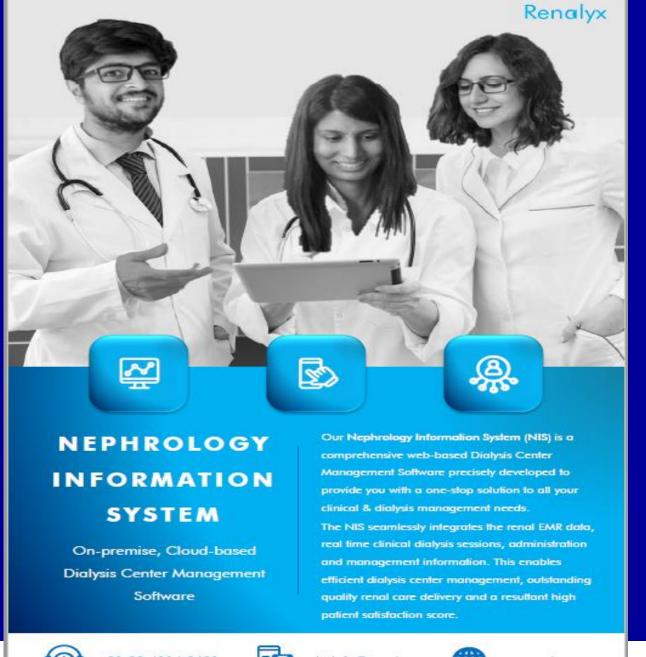


CCTV - Hand Hygiene



























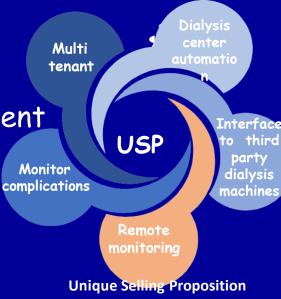




Nephrology Information System (NIS) Nephrology Information System

- Web based workflow automation software
- Tele-Nephrology enabled
- EMR, administration and remote monitoring
- Dashboards admin, technician & nephrologist
- · Billing (Tally) & inventory integrated
- HMS modules integration: billing, inventory, etc.
- Works with 3rd party machines
- Clinical analytics
- ML to achieve personalized and precision treatment
- Easy adaptation to Peritoneal Dialysis (PD)
- Preventive & predictive machine maintenance





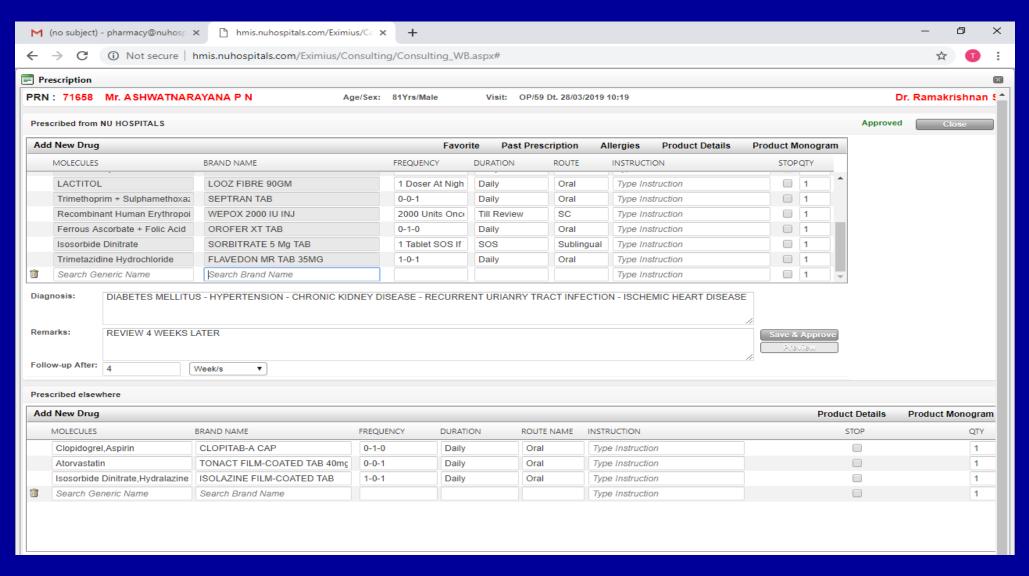


Renalyx Telenephrology Platform

- · RTP is a cloud based comprehensive web management system that automates dialysis workflows, auditing and report generation while monitoring dialysis centre's key performance metrics like Machine utilization, Machine maintenance and Staffing and consumables
- RTP can scale dialysis centers helping administrators to reduce operating costs and seamlessly integrate HIS modules like billing, inventory and e-prescription.
- Remote monitoring with the connected machines.
- Nephrologists can do a tele consultation through this platform.

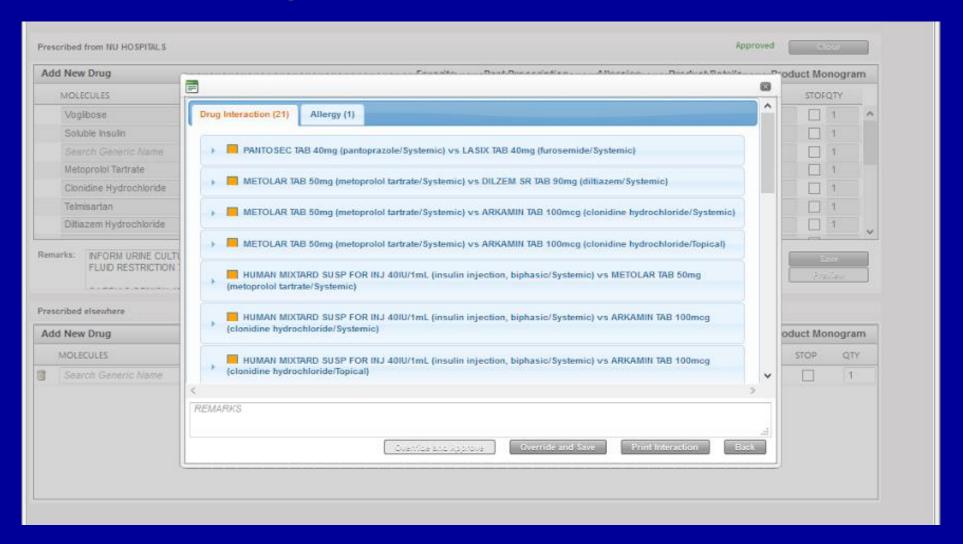


Prescription Entering Module for Doctors



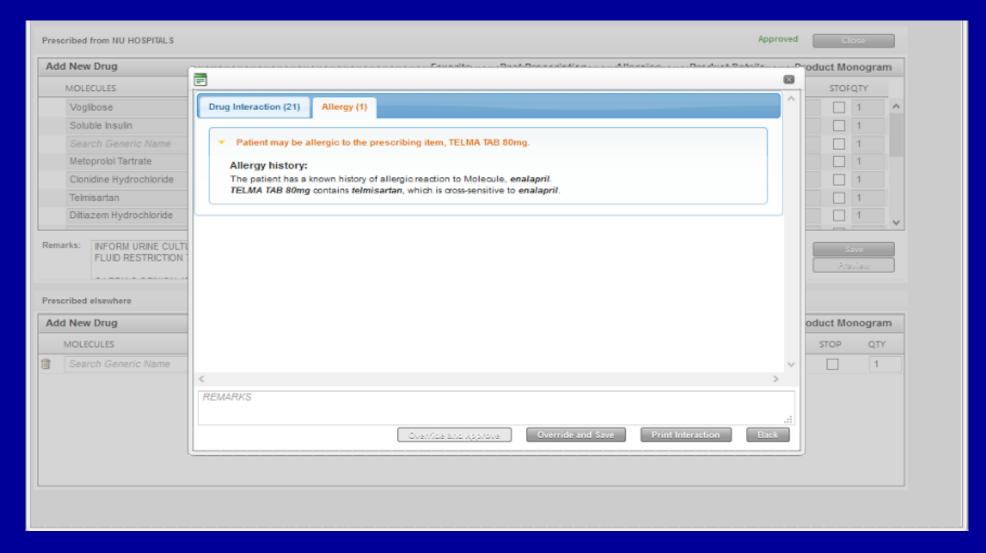


Drug Interaction Module





Known Allergy Module





PHARMACY - PRESCRIPTION MODULE

DOB/Age :	01-JAN-38 / 81 Yrs	Sex:	Male	Date :	28-MAR-2019		
Rx.				F	D	D	
	: d1: i-i>			Frequency 0-1-0	Duration	Route Oral	
CLOPITAB-A CAP(clopidogrel,aspirin) FLAVEDON MR TAB 35MG(Trimetazidine hydrochloride)			1-0-1	Daily Daily	Oral		
FLAVEDON MR TAB 35MG(Trimetazidine hydrochloride) HUMAN MIXTARD 30/70 INJ(Biphasic Isophane Insulin)			0-0-16 units	Daily	SC		
Remark:-30 minutes before food				0-0-16 units	Daily	sc	
	/50 INJ(Biphasic Isophane Insulin)			32 units-0-0	Daily	sc	
Remark:-30 minutes befo		32 units-0-0	Dany	30			
5) ISOLAZINE FILM-COATED TAB(isosorbide dinitrate,hydralazine hydrochloride)				1-0-1	Daily	Oral	
LASIX 40 MG TAB(Frusemide)				1 tablet in morning once in 3 days	Till Review	Oral	
7) LOOZ FIBRE 90GM(LACTITOL)			1 doser at night	Daily	Oral		
8) OROFER XT TAB(Ferrous ascorbate + Folic acid)			0-1-0	Daily	Oral		
9) RANTAC 150 MG TAB(Ranitidine hydrochloride)			1-0-0	Daily	Oral		
10) ROLITEN OD 4 MG CAP(Tolterodine tartrate Extended Release)			0-0-1	Daily	Oral		
11) SEPTRAN TAB(Trimethoprim + Sulphamethoxazole)			0-0-1	Daily	Oral		
12) SHELCAL 500 MG TAB(Calcium carbonate + Vitamin D3)			1-0-0	Daily	Oral		
13) SORBITRATE 5 mg TAB(Isosorbide dinitrate)				1 tablet SOS if there is chest discomfort	sos	sublingual	
14) TONACT FILM-COATE	D TAB 40mg(atorvastatin)			0-0-1	Daily	Oral	
15) WEPOX 2000 IU INJ(Re	ecombinant Human Erythropoietin alpha)			2000 units once in 2 weeks	Till Review	SC	
Morning		Afternoon		Night			
1. FLAVEDON MR TAB 35M		1. CLOPITAB-A CAP - 1			IR TAB 35MG - 1		
	2. HUMAN MIXTARD 50/50 INJ - 32 units 3. ISOLAZINE FILM-COATED TAB - 1				TARD 30/70 INJ - 16 units ILM-COATED TAB - 1		
4. RANTAC 150 MG TAB - 1				4. ROLITEN OD			
5. SHELCAL 500 MG TAB - 1				5. SEPTRAN TAB - 1			
				6. TONACT FILM	M-COATED TAB 40mg - 1		
1. LASIX 40 MG TAB - 1 tablet in morning once in 3 days 2. LOOZ FIBRE 90GM - 1 doser at night							
3. SORBITRATE 5 mg TAB - 1 tablet SOS if there is chest discomfort							
4. WEPOX 2000 IU INJ - 2000 units once in 2 weeks							
4. WEI OX 2000 IC INS - 2000	Diagnosis: DIABETES MELLITUS - HYPERTENSION - CHRONIC KIDNEY DISEASE - RECURRENT URIANRY TRACT INFECTION - ISCHEMIC HEART DISEASE						
Diagnosis:	YPERTENSION - CHRONIC KIDNEY DISEASE	RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			
Diagnosis:	YPERTENSION - CHRONIC KIDNEY DISEASE	RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			
Diagnosis:		RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			
Diagnosis: DIABETES MELLITUS - HY Remarks: REVIEW 4 WEEKS LATER Follow-up after:		RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			
Diagnosis: DIABETES MELLITUS - HY Remarks: REVIEW 4 WEEKS LATER		RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			
Diagnosis: DIABETES MELLITUS - HY Remarks: REVIEW 4 WEEKS LATER Follow-up after:		RECURRENT URIANRY TRACT	INFECTION - ISCHE	MIC HEART DISEASE			

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CMS (Central Monitor System)

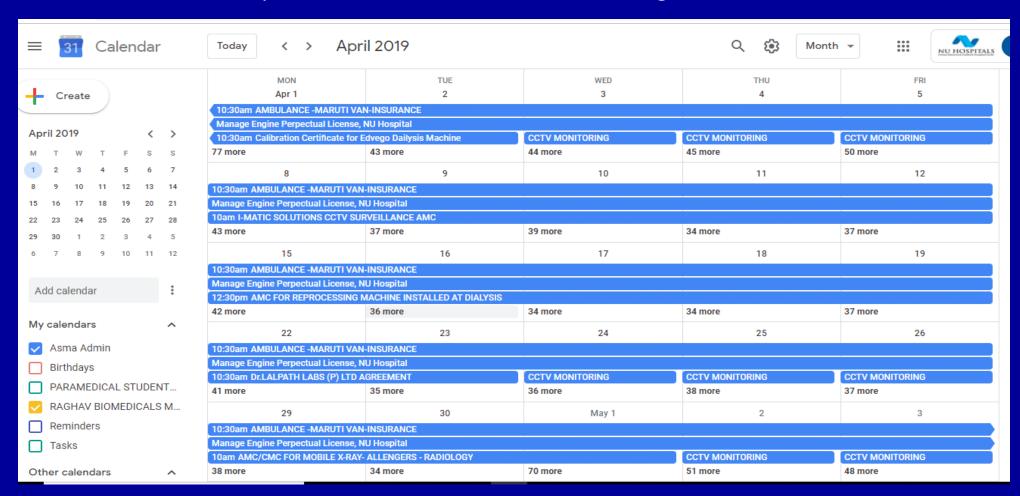
CMS Date: 22 / 03 / 2019 Time: 18:12 Dom Blood Str DIALYSIS PHARMACY 1 PHARMACY 2 L: 2.0 H: 8.0 H: 8.0 L: 2.0 H: 8.0 H: 8.0 L: 2.0 L: 2.0 °C °C °C °C HIGH HIGH HIGH 016.2 003.4 Graph NURSING ST 1 **EMERGENCY** I.C.U. H: 8.0 L: 2.0 H: 8.0 L: 2.0 H: 8.0 L: 2.0 H: 8.0 L: 2.0 °C °C °C °C HIGH 030.1003.8 Graph Graph Graph NURSING ST 2 DF MICRO BLUE MICRO MEDICINE DF CAL BIOCHEM H: 8.0 L: 2.0 H: -15.0 L: -30.0 H: 8.0 L: 2.0 H: -15.0 L: -25.0 °C °C °C °C HIGH Graph Zoom Graph Zoom Graph Zoom Graph Zoom **BIOCHEM MED** REAGENTS HEM DF CAL BIOCHEM BIOCHEM MED H: 8.0 L: 2.0 L: 2.0 H: -20.0 H: 8.0 H: 8.0 L: -25.0 L: 2.0 °C °C °C °C HIGH 006.8 Graph Zoom Zoom Zoom Graph Zoom

NU HOSPITALS



Google Calendar

Programmes and schedules are updated in Google calendar throughout the hospital to function effectively (AMC, PMC, schedule of the meetings etc)





Treat Well-Patients Satisfaction Analysis









Technological Advances in an HD set up

- Single use disposable Dialyzers
- TDMS Therapy Data Management Systems
- · Masimo Patient care systems
- Online applications Control and treatment patterns
- Renalyx TeleNephrology software



26-Feb-22 26-Feb-22

Next Gen Dialysis start-ups Globally







Outset, US based company founded in 2003 has raised a total of \$373.3 million in funding over 4 rounds. Latest fund raise was on Aug 28, 2018 - Machine NOT available in the market





AWAK, a Singapore based company develops wearable dialysis machine has raised a total of \$17.2 million in funding 1 round. Latest fund raise was on Dec 1, 2016 - Machine NOT available in the market







NxStage, US based company founded in 1998 raised \$55 million making home dialysis machine was acquire by Fresenius for \$2 billion on Aug 7, 2017 - First home haemodialysis machine in the market



Gambro, Swedish company founded in 1964 was acquired by Baxter for \$2.9 billion on Sep 9, 2013



CVS Health, an American retail pharmacy and healthcare company with revenue of \$195 billion started clinical trials of Home dialysis machine in July 2019 by getting dialysis machine developed by DEKA an R&D services company - Machine NOT available in the market





Medtronic, Bayer and many more players..... developing dialysis machine -NOT Successful





Thank You

www.nuhospitals.com



Renalyx Hemodialysis Machine

https://youtu.be/odH5Ff6K9Lw

https://youtu.be/odH5Ff6K9Lw

https://www.youtube.com/watch?v=odH5Ff6 K9Lw

