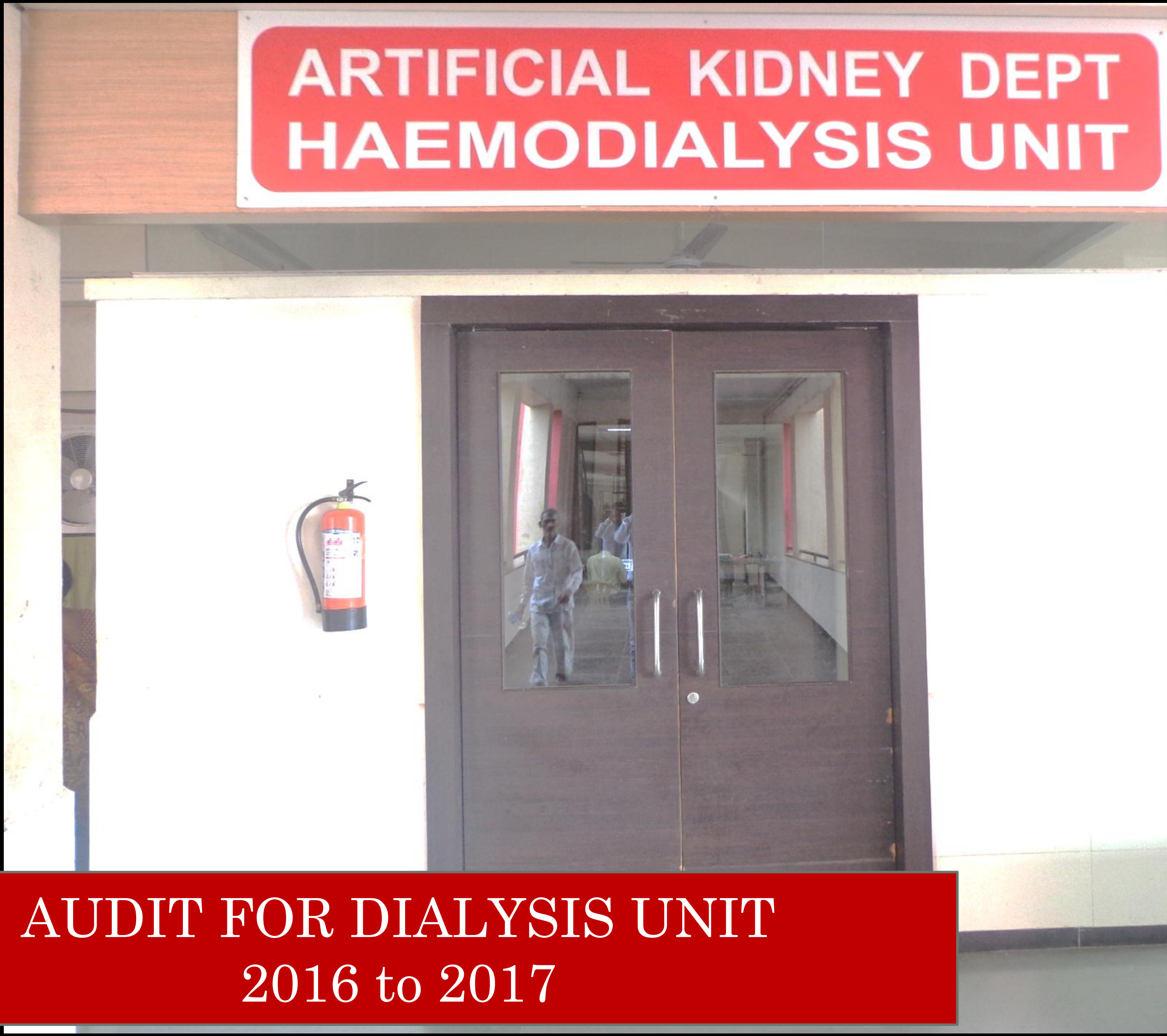
DR. VASANTRAO PAWAR MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTER

DEPT. OF MEDICINE



AUDIT FOR DIALYSIS UNIT
2016 to 2017

BACKGROUND

- Dr. Vasantrao Pawar medical college started its hemodialysis unit in the year April 2008.
- Unit is equipped with 6 hemodialysis machines (including 1 HCV Positive Machine)and 2 reverse osmosis plant(RO systems)
- Unit has provision of Emergency dialysis in ICU with 3 ports for RO connection.
- A new port was added in the ICU for emergency dialysis this year.
- Total number of dialysis done till Feb 2016 is **12390** .

2 Dialog+ Dialysis machines
B/BRAUN
Online clearance monitor

4 FRESENIUS Machines
OCM: Online clearance monitor
4008H/S
4009 HEMODIALYSIS SYSTEM

Reverse osmosis plant
Capacity: 1000 lit
Provides water with 450 lit/hr

NEW Reverse Osmosis Plant
Capacity: 1500 lit
Providing water 1000 lit/hr

BASIN ROOM

BICARB MIXTURE

AAMI maximum allowable levels of contaminants in R.O. water of HD

CONTAMINANT	AAMI max level for in mg/L
Calcium	2
Magnesium	4
Potassium	8
Sodium	70
Antimony	0.006
Arsenic	0.05
Barium	0.1
Beryllium	0.0004
Cadmium	0.001
Chromium	0.014
Lead	0.005
Mercury	0.0002
Selenium	0.09
Silver	0.005
Aluminum	0.01
Chloramine	0.1
Free chloride	0.50
Copper	0.10
Fluoride	0.20
Nitrate	2
Sulfate	100
Thallium	0.02
Zinc	0.10
Bacteria	200 CFU/ ml (50 CFU/ml active level)
endotoxin	2 EU/ ml (1 EU/ ml active level)

STRUCTURAL RESEARCH & PHYSICS DIVISION
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Dindori Road, Nashik – 422004
FAX –(0253) 2530764, e-mail– mtdmeri_nsk@sancharnet.in, PH: (0253) 2530 248

Outward No. SRPD/Water/ 236 Date:

REPORT OF CHEMICAL ANALYSIS OF WATER

1) Name & Address of the party : N. D. M. V. P. Samaj's **Medical College Hospital & Research Centre,** Vasantdada Nagar, Adgaon, Nashik - 3
2) Reference letter no. : Ref. No. : MCHRC / 110 / 2007-08 dated 19/4/08
3) Source of sample : Water from Dialysis unit.
4) Date of collection
5) Date of Receipt
6) Laboratory sample no. : P-5

Sr. No	TEST	Permissible units as per IS 10500: Permissible units	Permissible units as per IS 10500: Excessive Limits in absence of alternate source	Results
(A)	CHEMICAL CHARACTERISTICS (Values in mg/1itre except pH)			
1.	Total Hardness as $CaCO_3$	200	600	**20.0**
2.	Calcium as Ca	75	200	**1.6**
3.	Magnesium as Mg	30	150	**3.84**
4.	Total Dissolved Solids	500	1500	**1.0**

REMARKS: - 1) Sample was provided by concern party & tested by this division.
2) Sample is found **fit** for Drinking purposes with respect to above results.

(C. L. Narkhede)
Scientific Research Officer
Structural Research & Physics Dn.

- Unit has 1 full time technician 1 trainee technician, 2 Sisters and 1 ward boy .
- Dialysis unit dedicates one machine for HCV positive patients ‘exclusively’.
- Unit has separate instrument storing and washing area for seropositive and negative patients.
- Well equipped emergency trolley with adequate drugs and instruments.

INVESTIGATION PROFILE

- **ON ADMISSION :**
  - Chest X-ray PA VIEW
  - ECG
  - USG abdomen and pelvis
  - 2D ECHO
  - RenalDoppler
  - Ophthalmology Opinion
  - Others

MONTHLY INVESTIGATIONS

- HB %
- BUL
- Serum Creatinine
- BSL
- Serum Calcium
- Serum Phosphorous
- Serum Uric Acid

EVERY 3 MONTHLY INVESTIGATIONS

- Serum Iron
- Serum Ferritin
- Serum Retic count
- TIBC
- Transferrin saturation
- Vitamin B12

- Folic Acid
- HBsAG
- HIV
- HCV viral load
- PTH
- SGOT/SGPT

OUR OBJECTIVES

1) Assess the work environment in the Dialysis Unit,from the perspective of residents, staff, physicians and administration.

2) Seek input on ways to improve the unit's work environment.

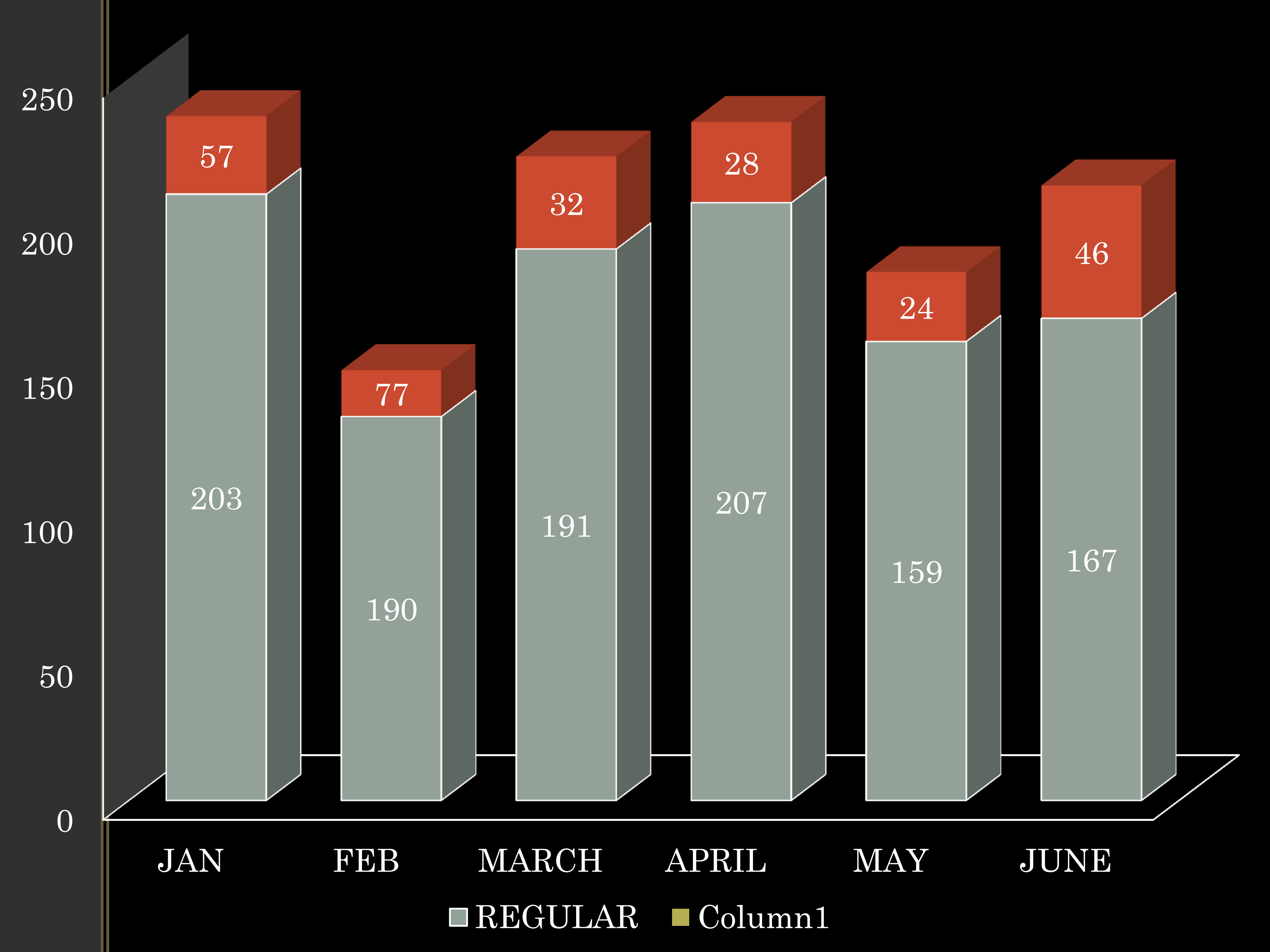
3) Make recommendations that will enable us to develop and implement solutions.

4) Recommend actions that senior management can take to support this renewal process in the Dialysis Unit.

DEMOGRAPHIC PROFILE OF CKD PATIENTS

- Unit at present is registered with 25 patients of Chronic kidney disease doing dialysis on OPD basis.
- Daily 2-3 IPD patients are dialysed.
- 14 Patients succumbed in the last year.

- During the year FEB 2016 to FEB 2017 total no of dialysis done are 2278
- Out of them 311 dialysis were done in patients with acute kidney injury.
- The unit has conducted plasmapheresis of 11 patients. 8 of them were diagnosed with GBS , 1 with Myesthenia Gravis and 2 ObGy patients with HELLP Syndrome .
- All of them had excellent prognosis post plasmapheresis.
- Showing month wise distribution of dialysis done .


250
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150
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57
77
32
28
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46
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190
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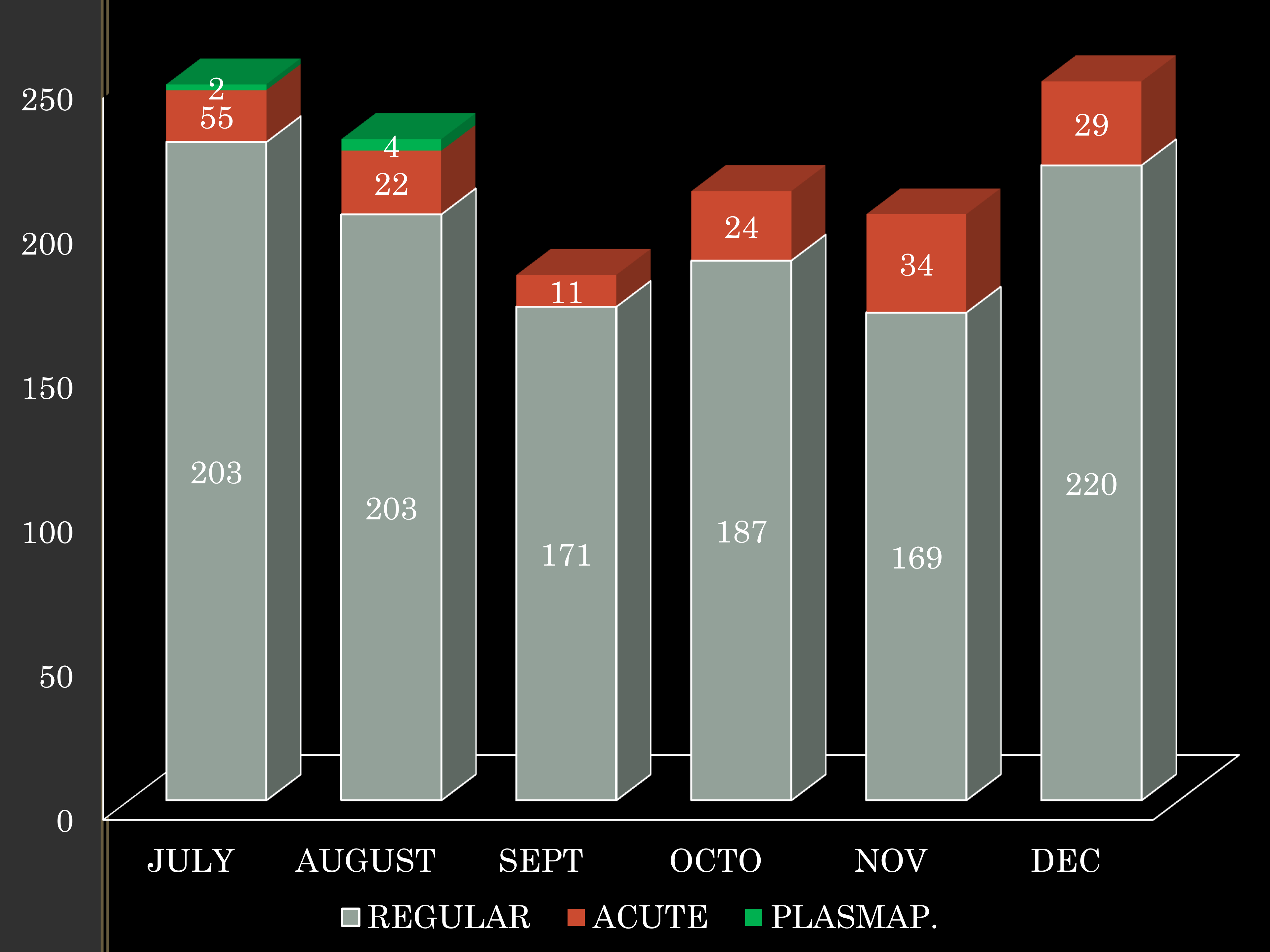
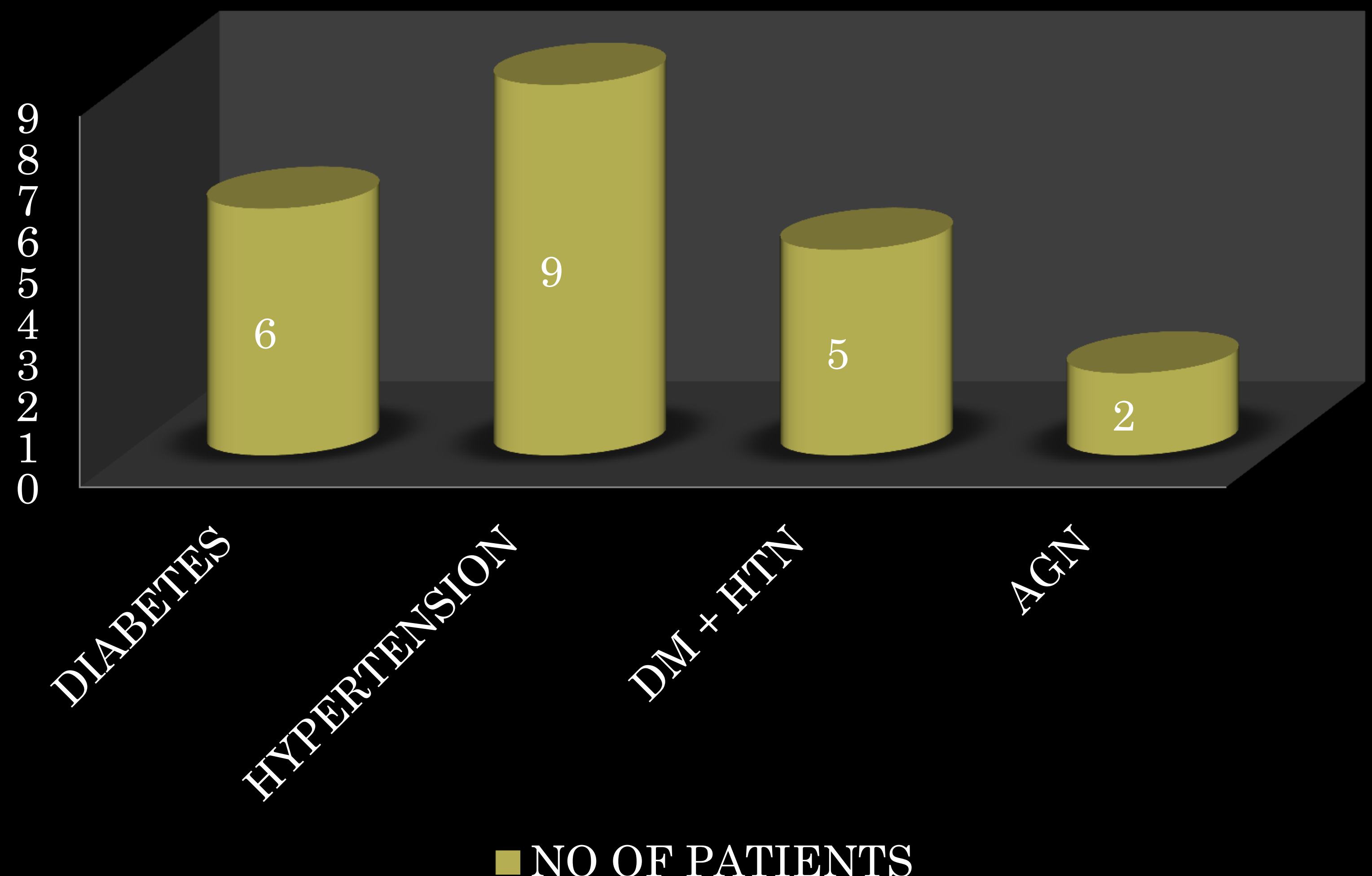
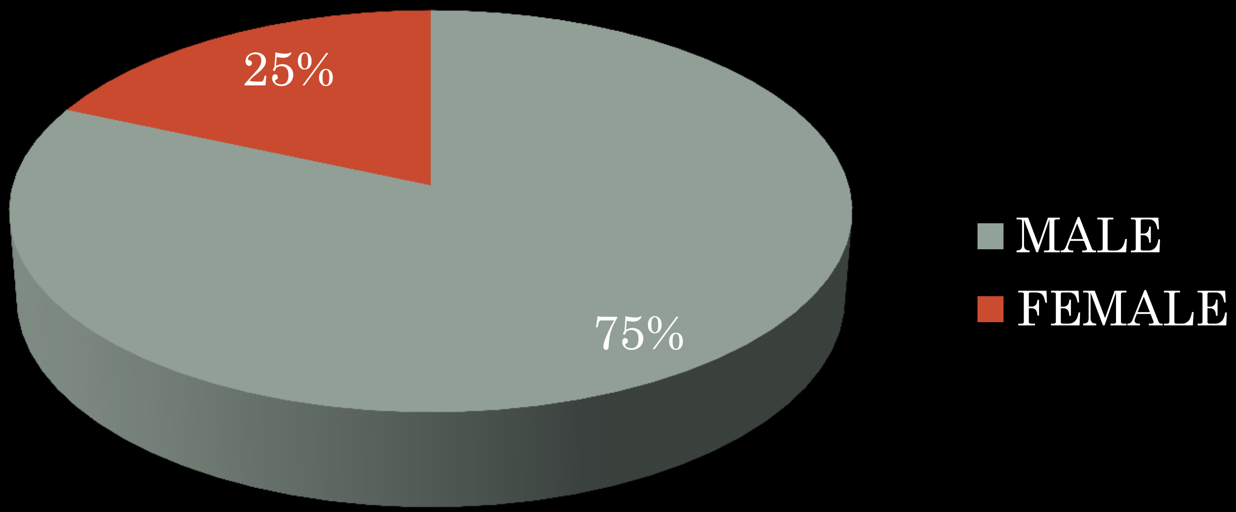
207
159
167
JAN
FEB
MARCH
APRIL
MAY
JUNE
REGULAR
Column1


250
200
150
100
50
0
2
55
203
4
22
203
11
171
24
187
34
169
29
220
JULY
AUGUST
SEPT
OCTO
NOV
DEC
REGULAR
ACUTE
PLASMAP.

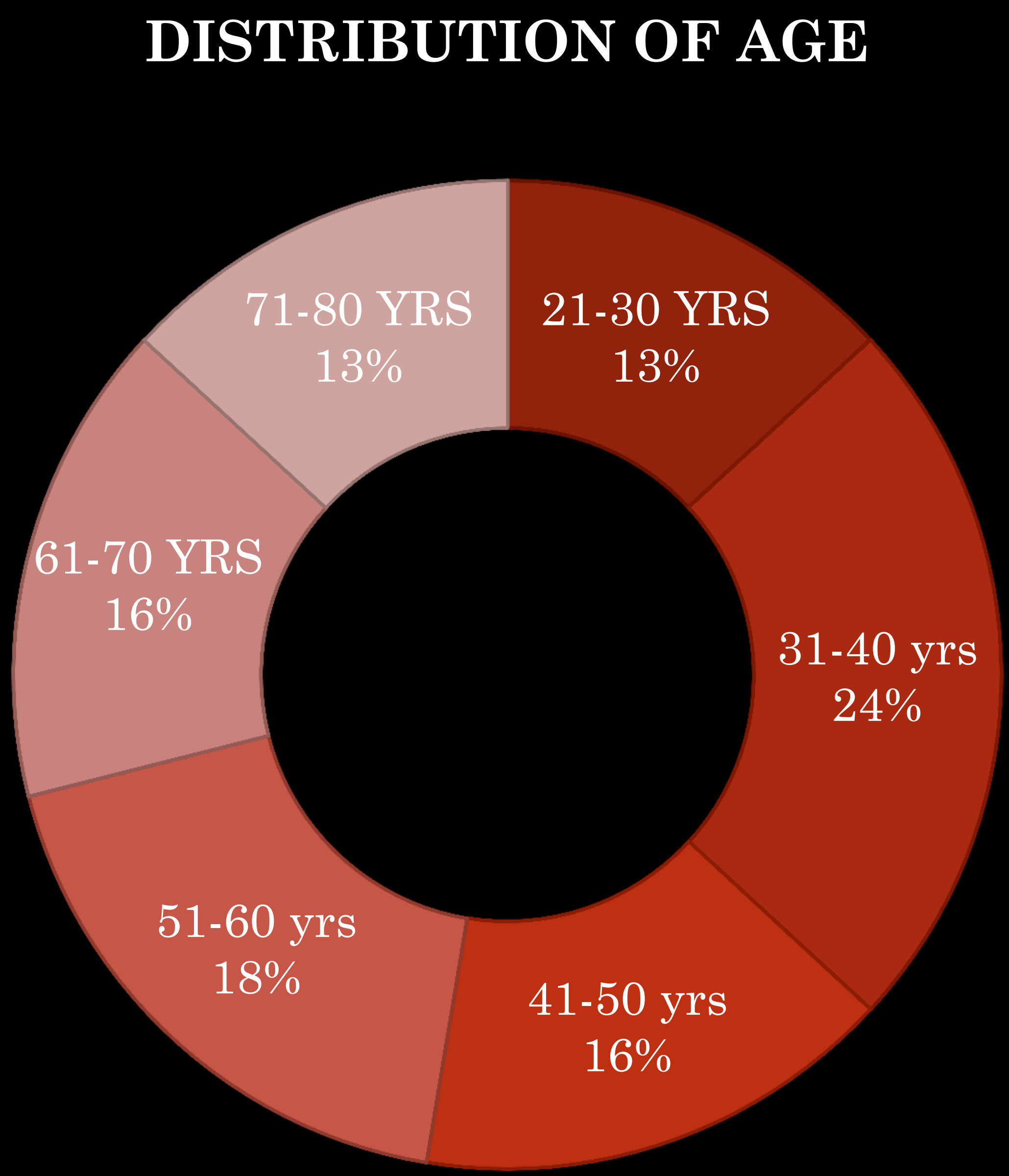
Etiology of ckd



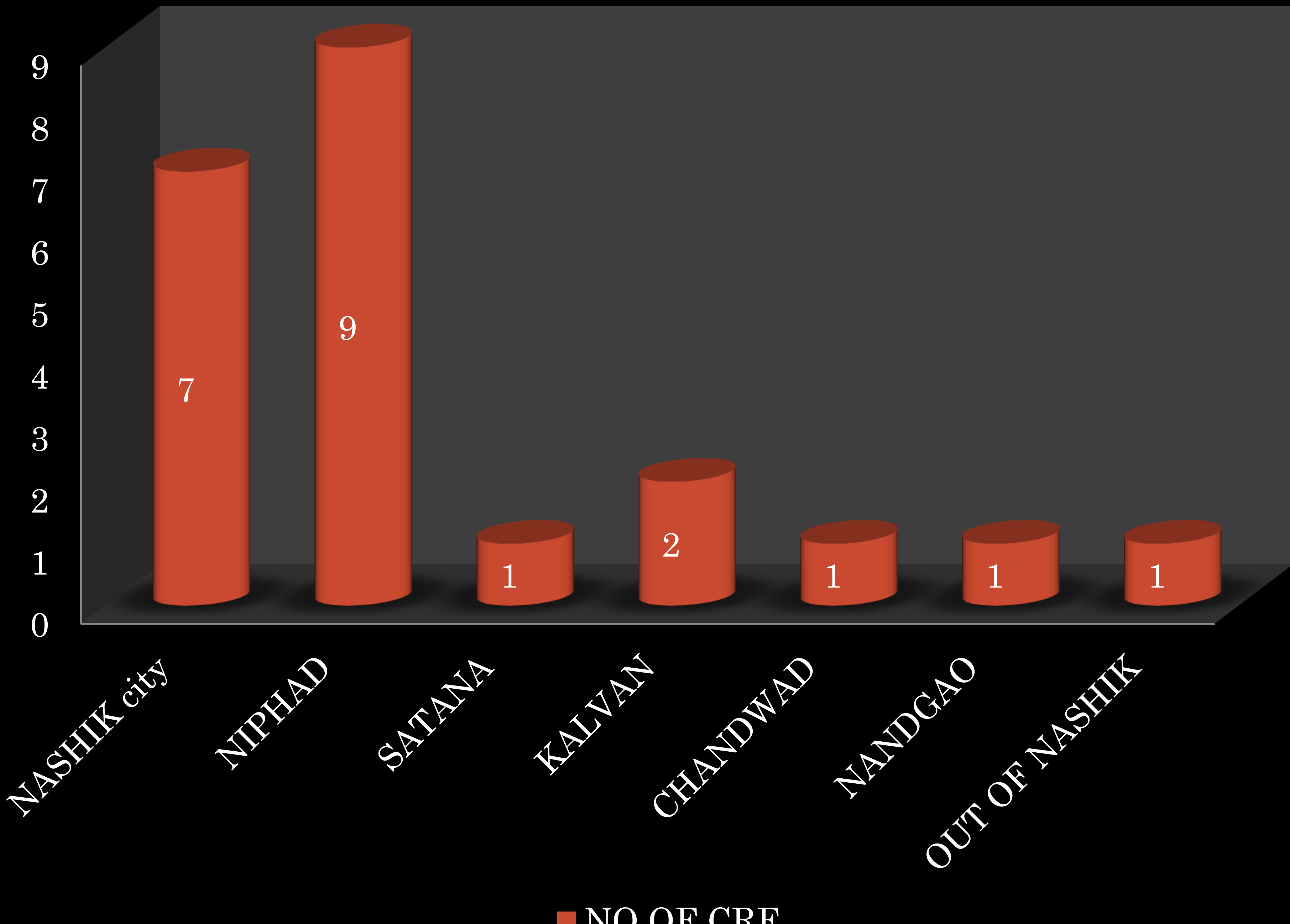
DEMOGRAPHIC PROFILE OF CKD PATINTS



AGE WISE DISTRIBUTION



Geographical distribution



ADEQUACY OF DIALYSIS

- To monitor the adequacy of dialysis with frequency and duration of dialysis most common indicator we use is

  blood urea & serum creatinine level.

Due consideration is also given to symptoms of patients (e.g. breathlessness, drowsiness) and intra dialysis weight gain.

In our setup we measure adequacy of dialysis by formula:

Kt/V

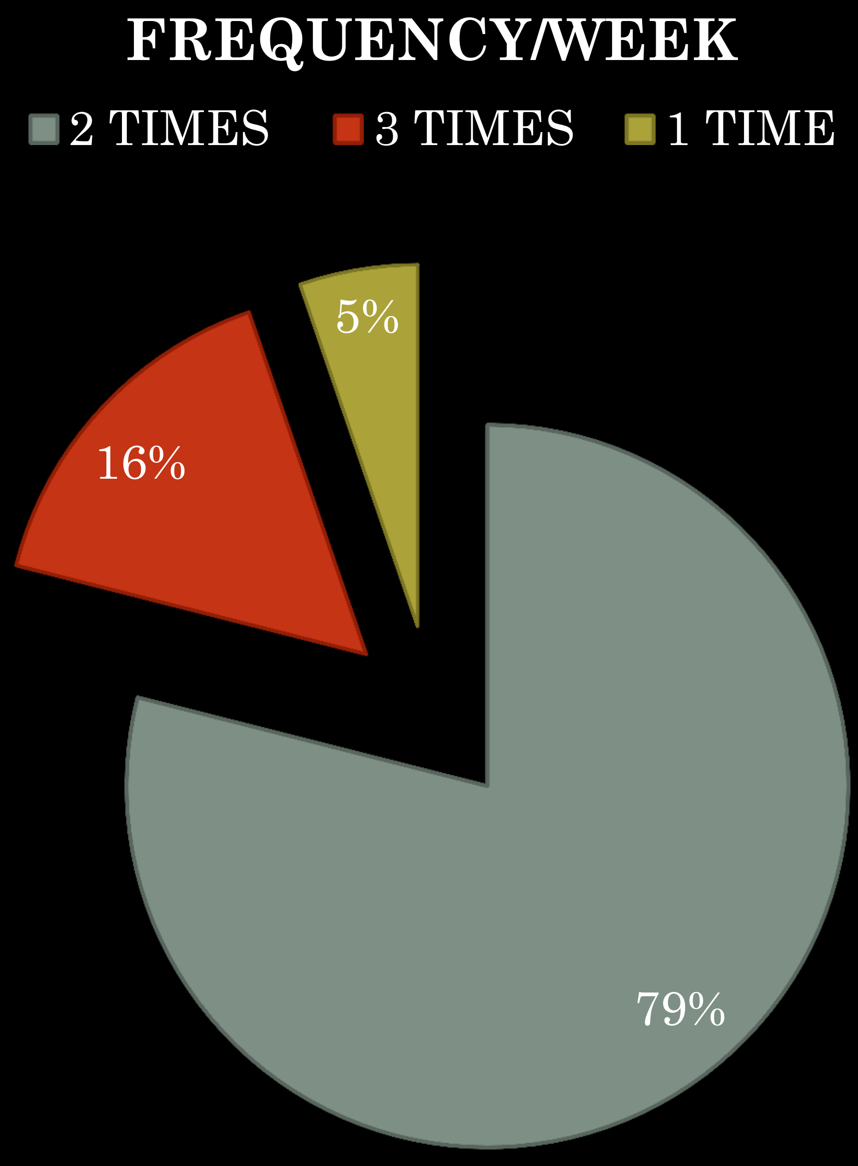
where **k: constant**

t:effective duration of dialysis

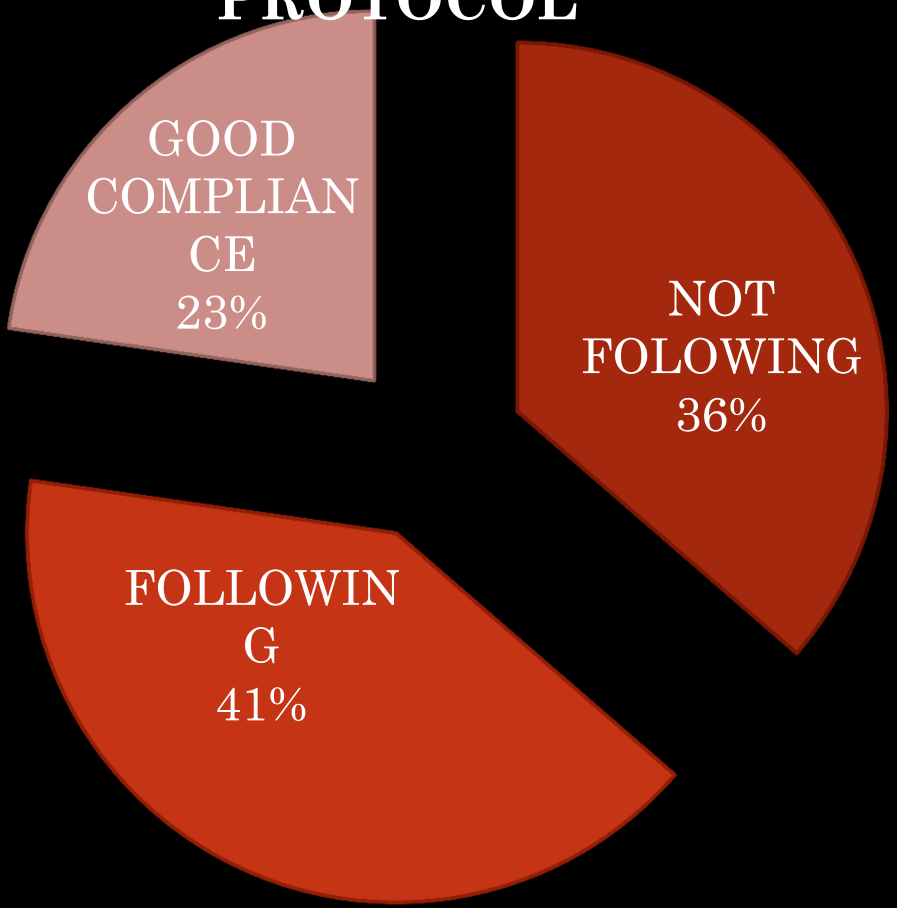
v: volume of distribution of urea

acceptable range > 0.8

FREQUENCY OF HD



DISTRIBUTION OF PATIENTS FOLLOWING INVESTIGATION PROTOCOL



ANEMIA

- Considering the obvious prevalence of anemia in CKD patients we are following anemia protocol by clinical examination and biochemical tests like -Hemoglobin, sr.ferritine, TIBC, Transf. saturation.

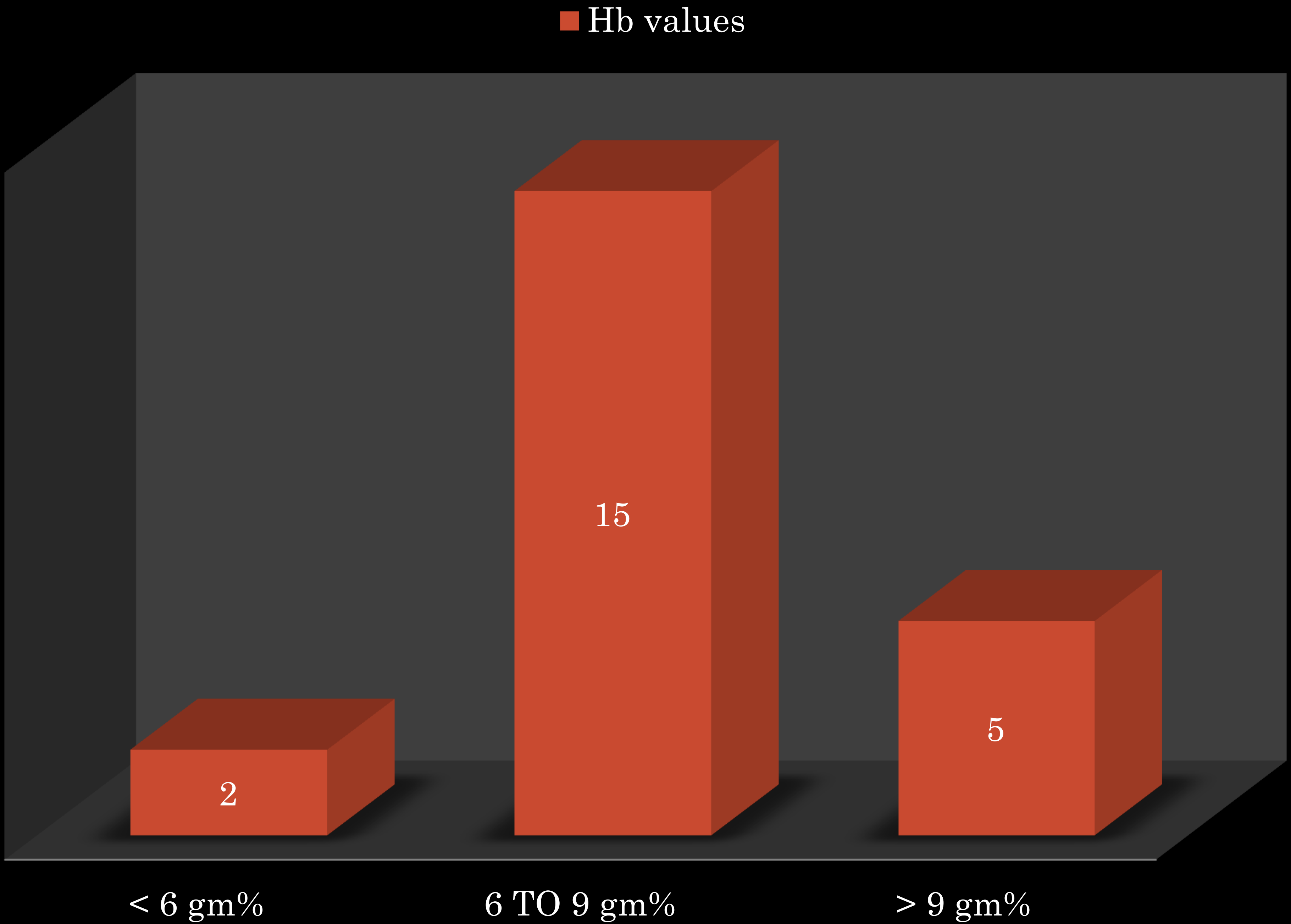
- Treatment is advised as per the situation in the form of ..

    oral/IV iron supplementation.

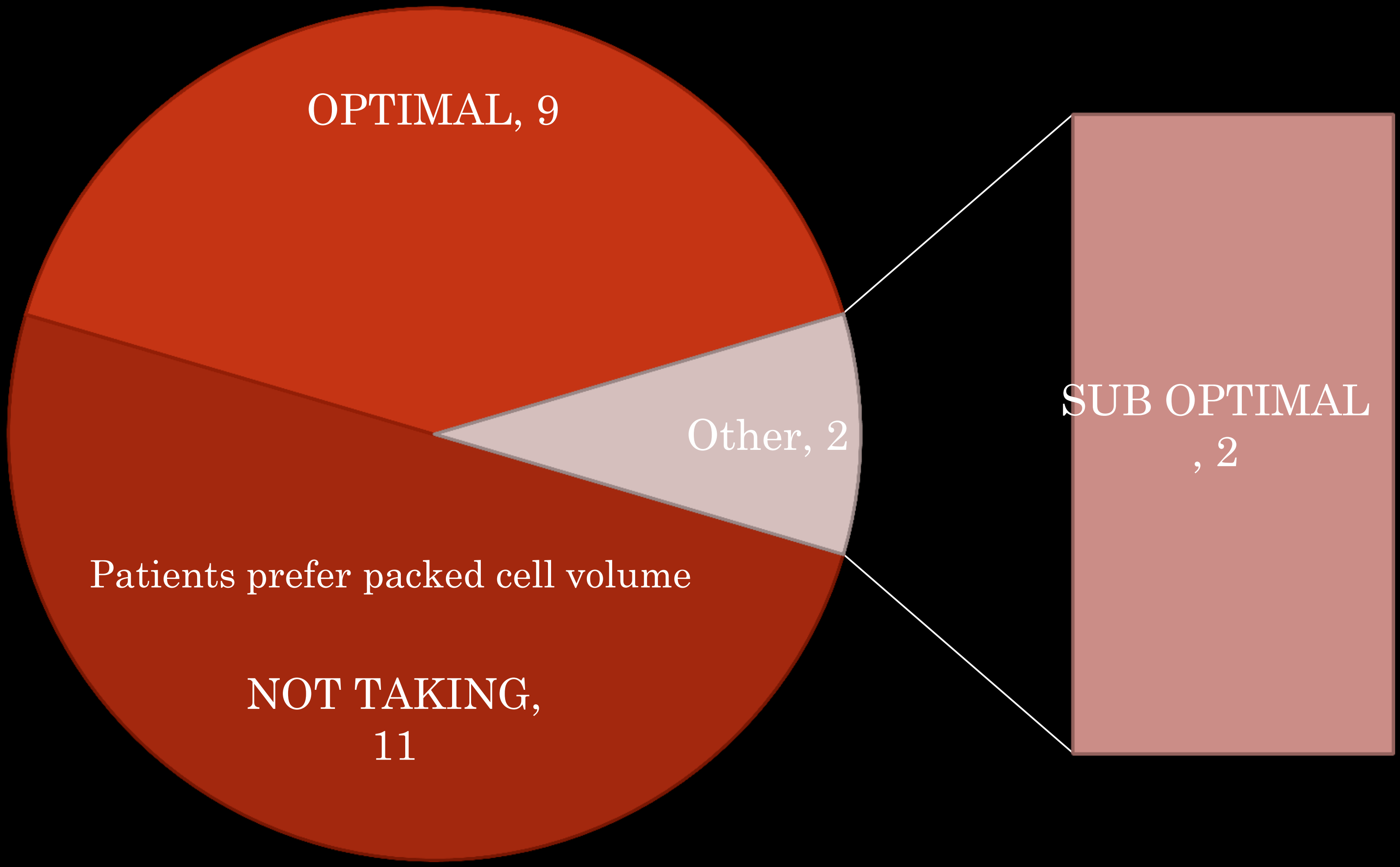
    recombinant Erythropoietin (EPO)

    PCV/ Whole blood

Range of Hb values of CKD patients



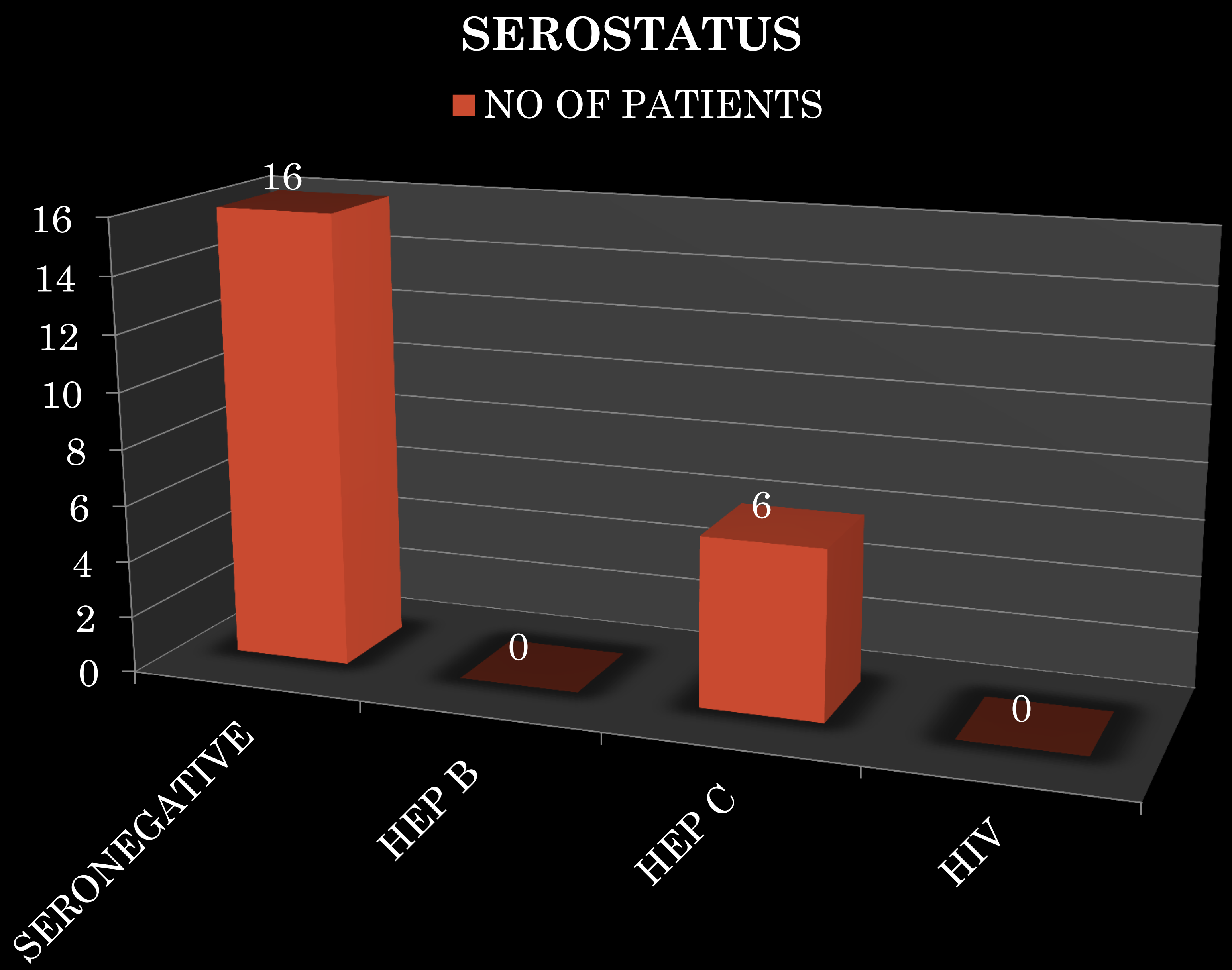
PATIENT RECEIVING EPO



VACCINATION

- Considering the increasing number of patients who are developing Hepatitis B during there period of dialysis, we are implementing strict immunization schedule for Hep B.

- Almost 100% of the patients have either taken full course or taking booster doses regularly.


SEROSTATUS
NO OF PATIENTS
16
14
12
10
8
6
4
2
0
16
0
6
0
SERONEGATIVE
HEP B
HEP C
HIV

MONITORING OF CKD PATIENTS

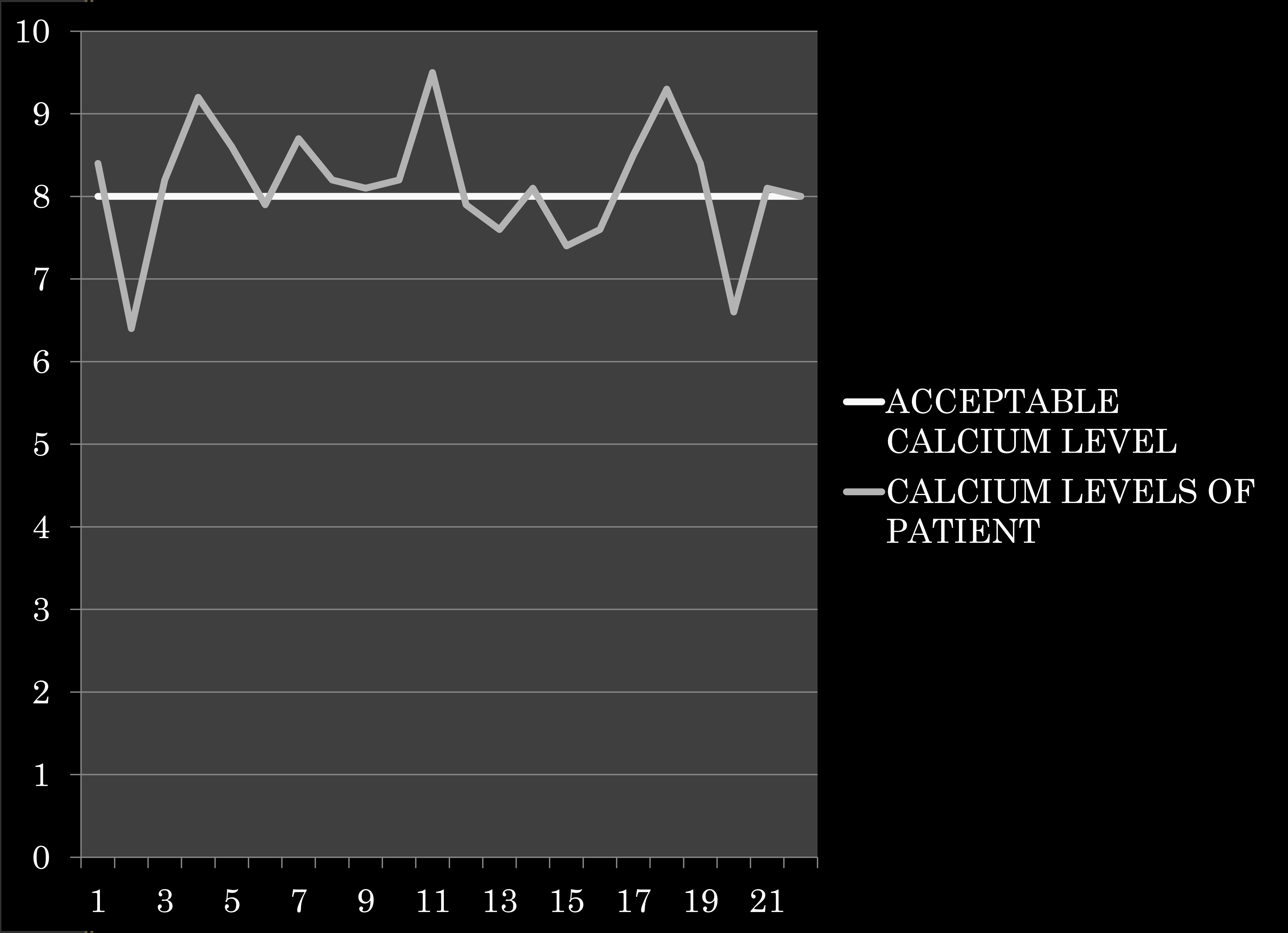
- We monitor patient’s serum parameters
- Most common parameters we look in patients are

  sr. calcium.

  sr. phosphorous.

  sr. uric acid

SHOWING DISTRIBUTION OF PATIENTS WITH THERE RESPECTIVE PARAMETERS…..



10
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17
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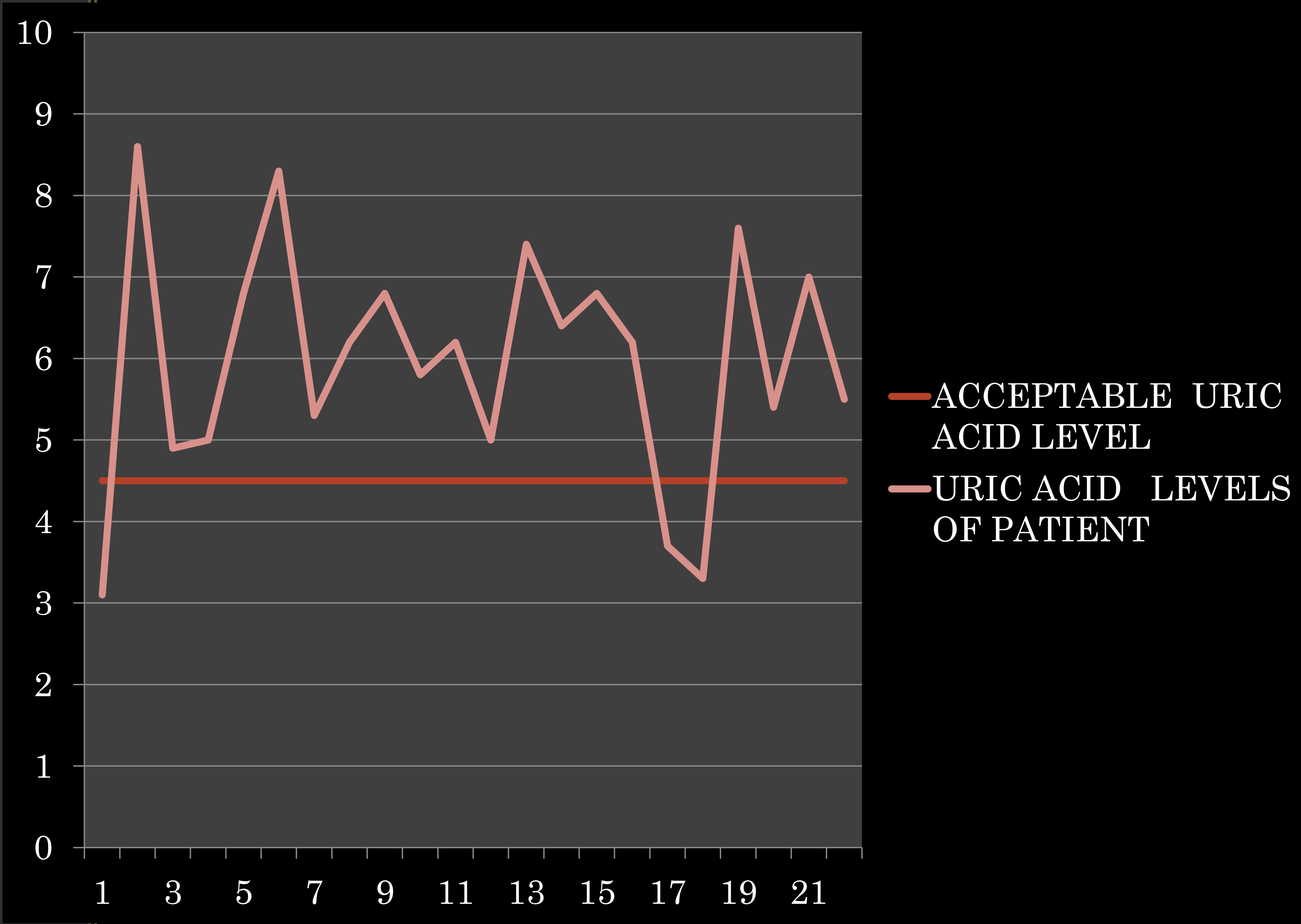
21
ACCEPTABLE CALCIUM LEVEL
CALCIUM LEVELS OF PATIENT



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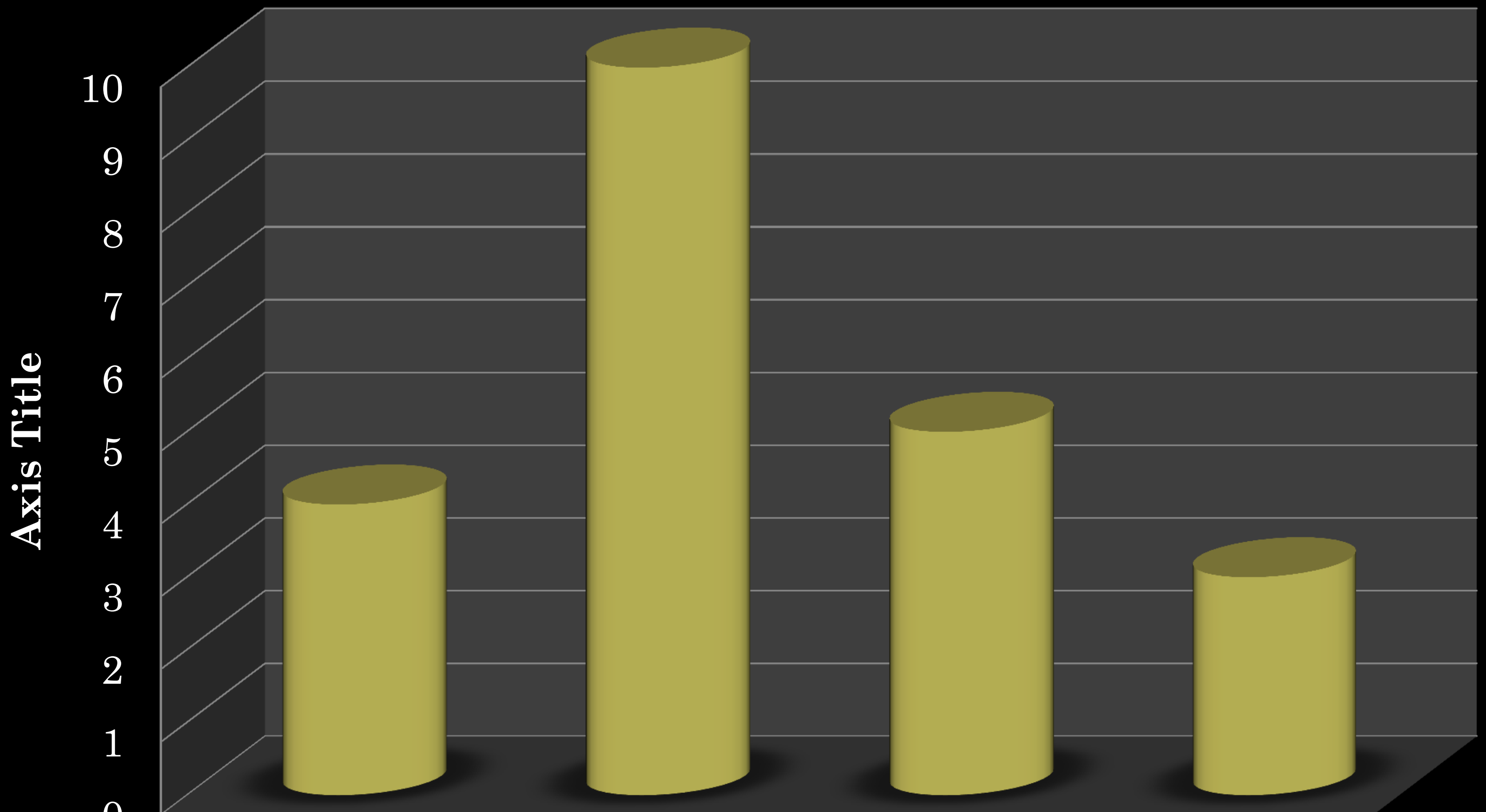
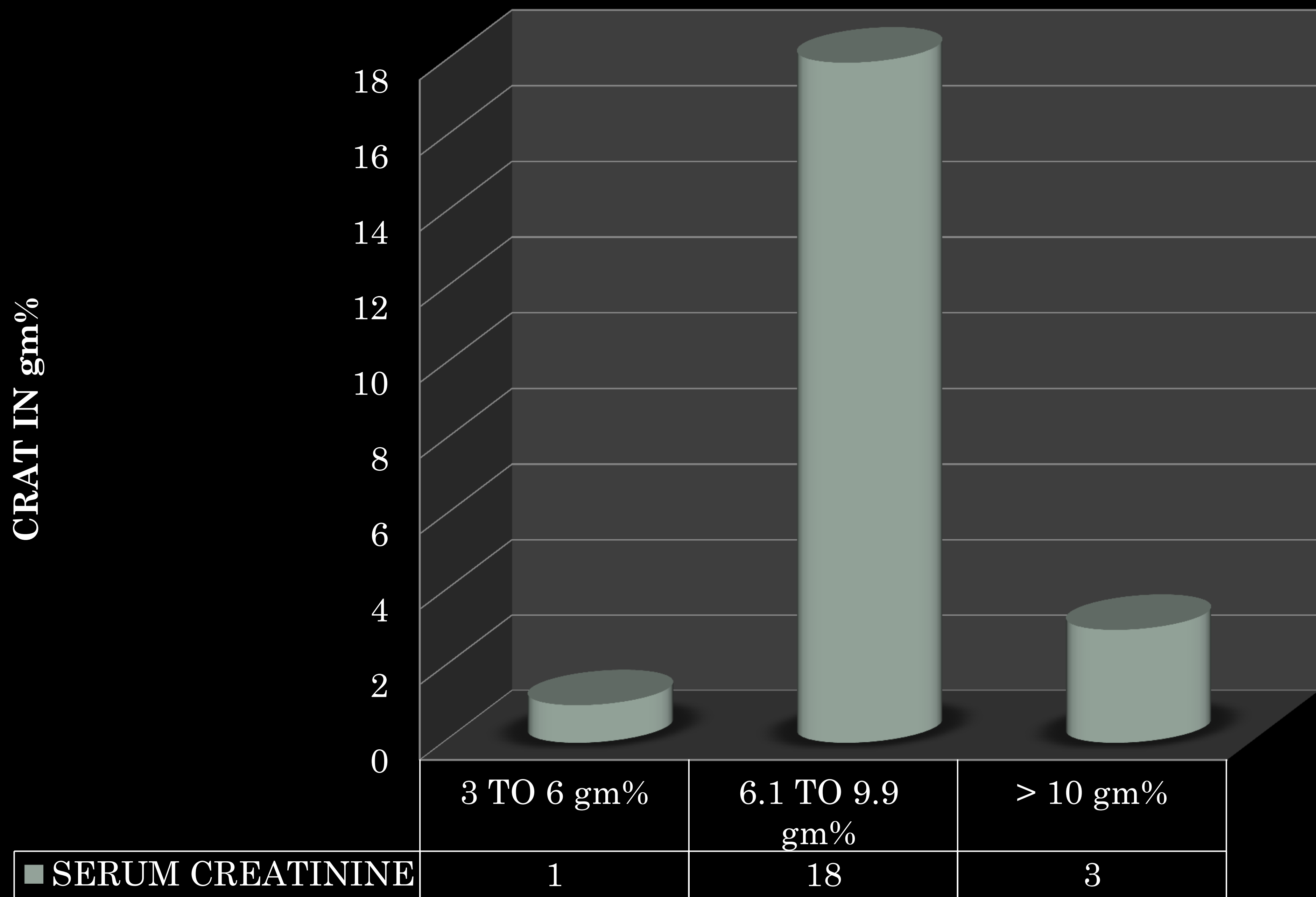
19
21
ACCEPTABLE URIC ACID LEVEL
URIC ACID LEVELS OF PATIENT

Blood urea level



	50 TO 100	101 TO 150	151 TO 200	201 and more
BUL	4	10	5	3

SERUM CREATININE

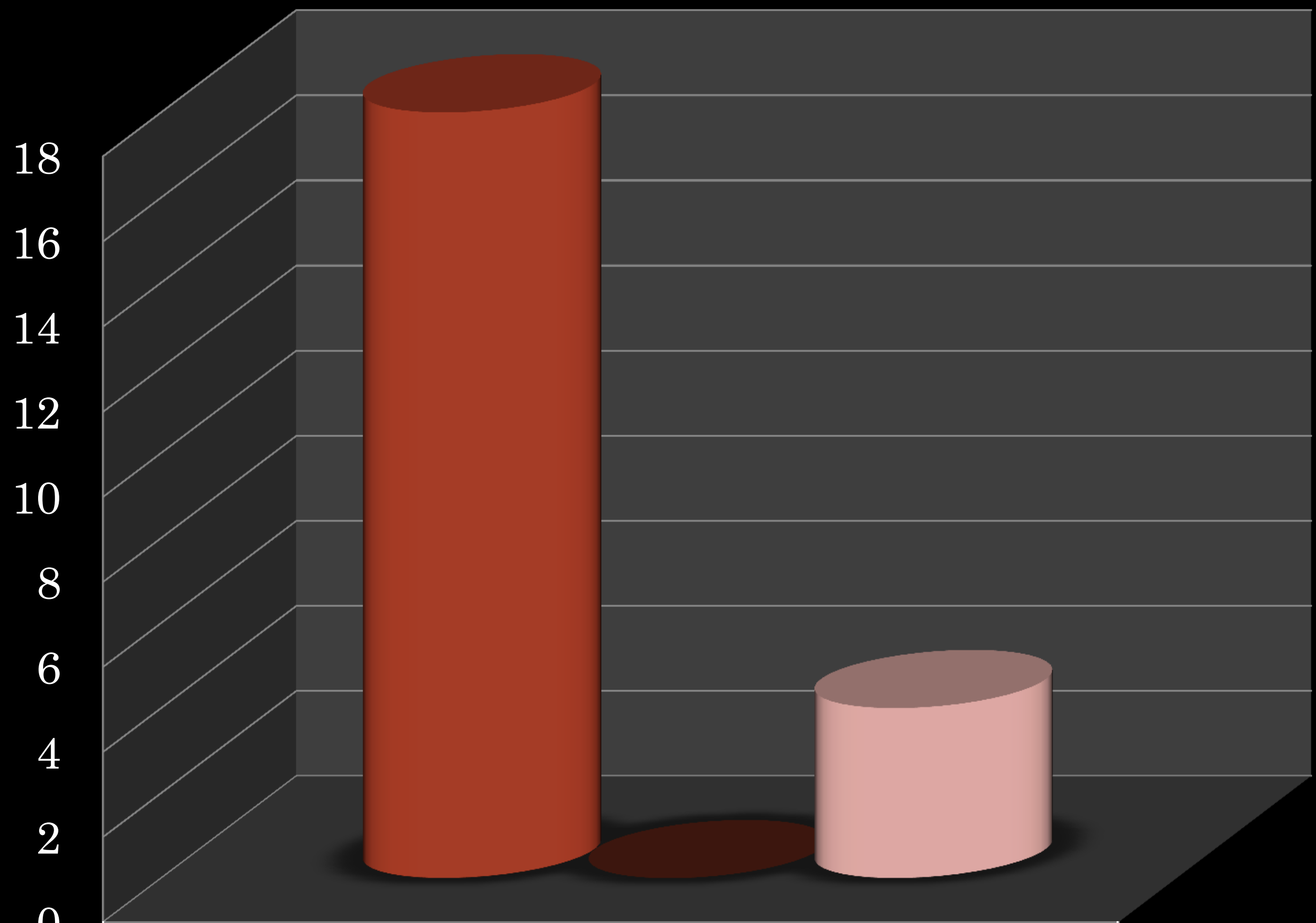


SEROCONVERSION…

- Before the beginning of the year we had 2 patients registered Hep C positive.

- During this year we had detected 4 patients registered with us found to be infected with Hepatitis C…

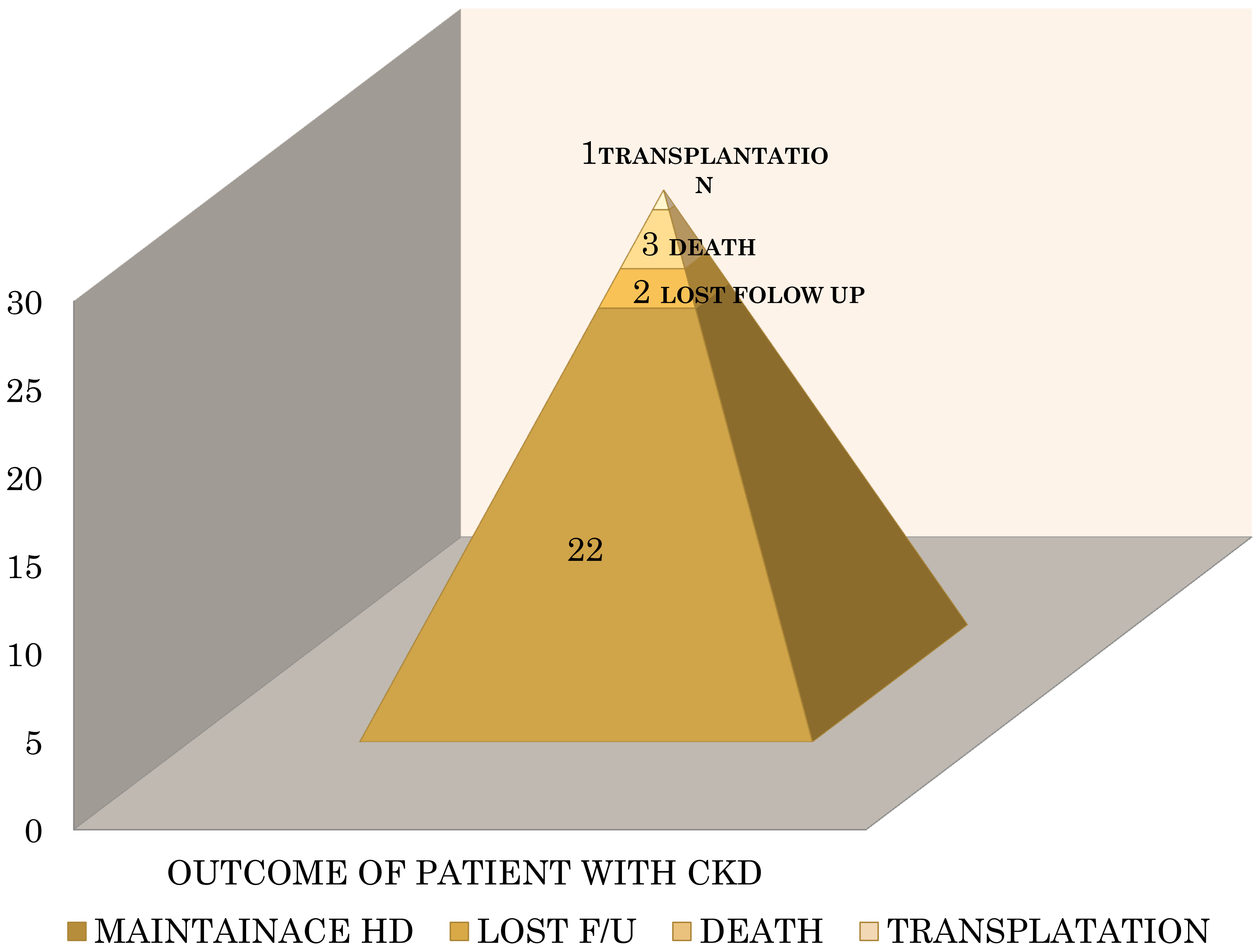
VASCULAR ACCESS



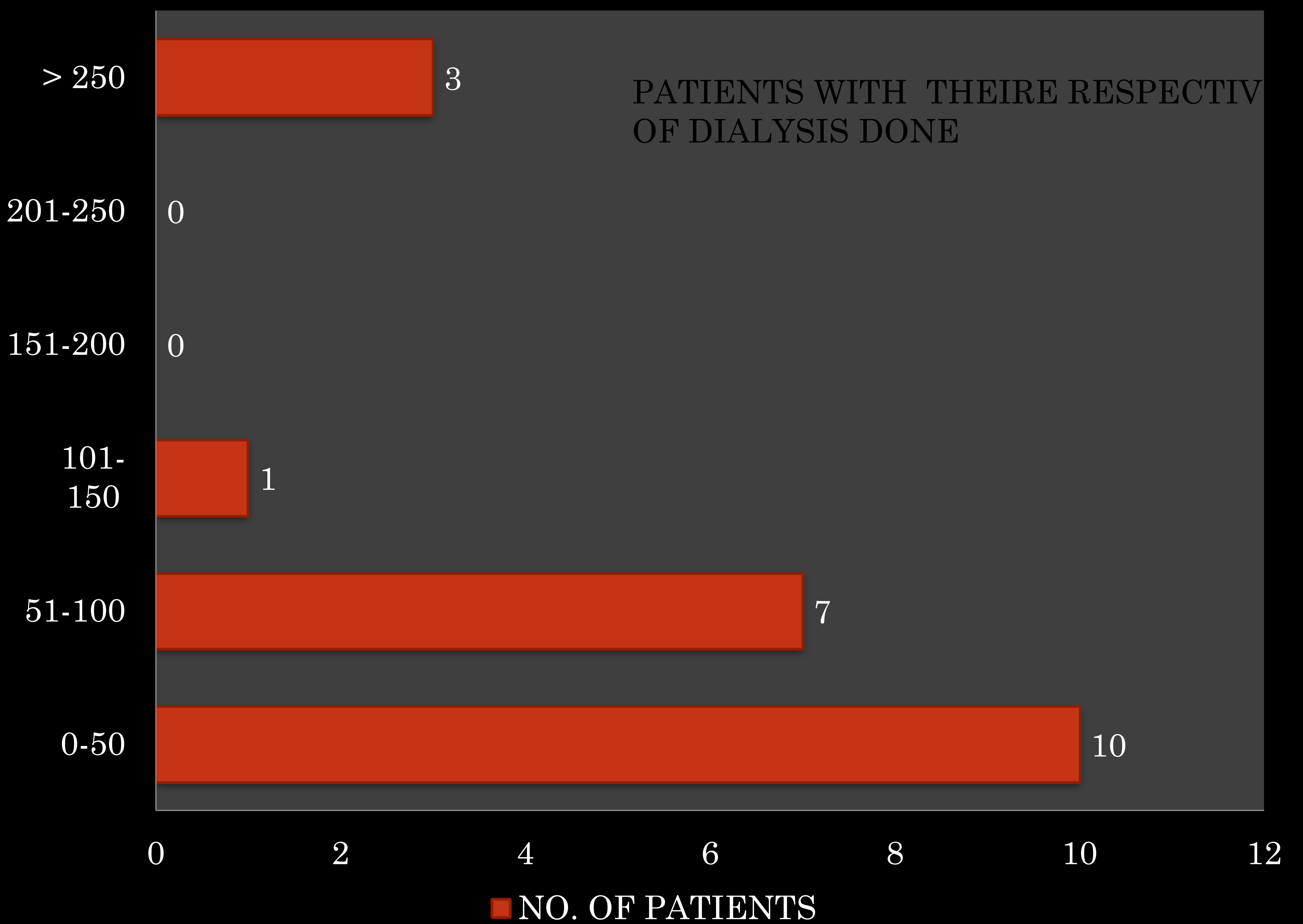
	A-V FISTULA
A-V FISTULA	18
CATHETER	0
FAILED FISTULAS	4

Timely referral to vascular-surgeon

- Early diagnosis of patient with CKD or Identifying patients who will need long term hemodialysis and their timely referral for creating A-V fistula.
- This will prevent the complication related to catheter in situ.
- **16 out of 22** patients had to face the problem due to non availability of dates of vascular-surgeon .



1TRANSPLANTATIO N
3 DEATH
2 LOST FOLOW UP
22
30
25
20
15
10
5
0
OUTCOME OF PATIENT WITH CKD
MAINTAINACE HD
LOST F/U
DEATH
TRANSPLATATION


PATIENTS WITH THEIRE RESPECTIV
OF DIALYSIS DONE
> 250
201-250
151-200
101-
150
51-100
0-50
3
0
0
1
7
10
0
2
4
6
8
10
12
NO. OF PATIENTS

COMPLICATION DURING HEMODIALYSIS

- Most common complication encountered during hemodialysis of most patients been..

Hypotension: underestimation of dry weight. avoid anti-hyprtensives 4 hours before HD. head low position with ionotropic support. Decreasing dialysate temperature.

Muscle cramp: use of dialysate with low Na concn.

high UF

during Hypotension.

Rx: bolous NS, Hypertonic saline,50% Dxtrose n water.

Quinin sulphate vit E and carnitine

DIALYSIS DISEQUILIBRIUM SYNDRON

nausea/vomiting
headache
backache

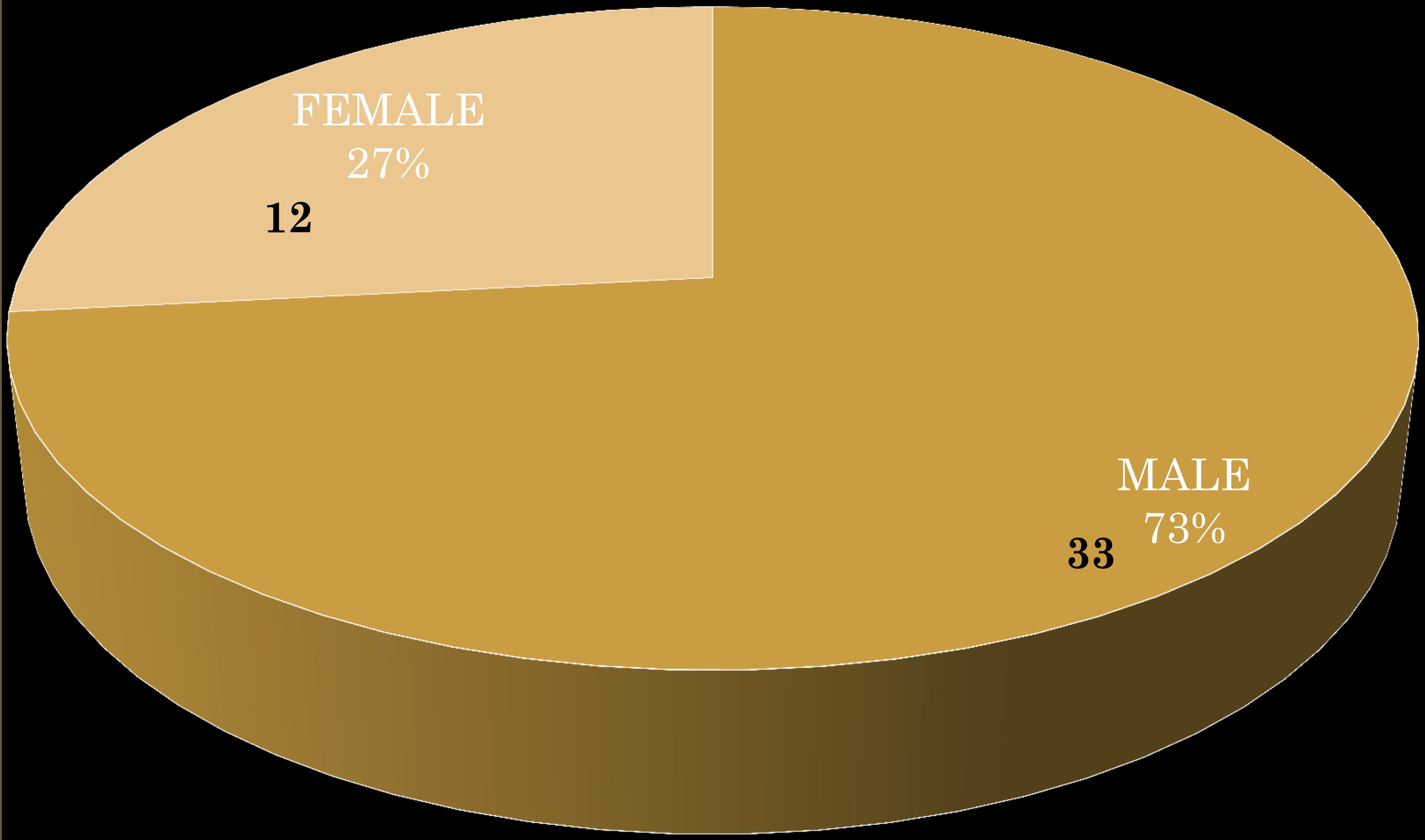
Reducing rate of blood flow
Decresing solute clearance rate by reversing the countercurrent mechar

ACUTE KIDNEY INJURY

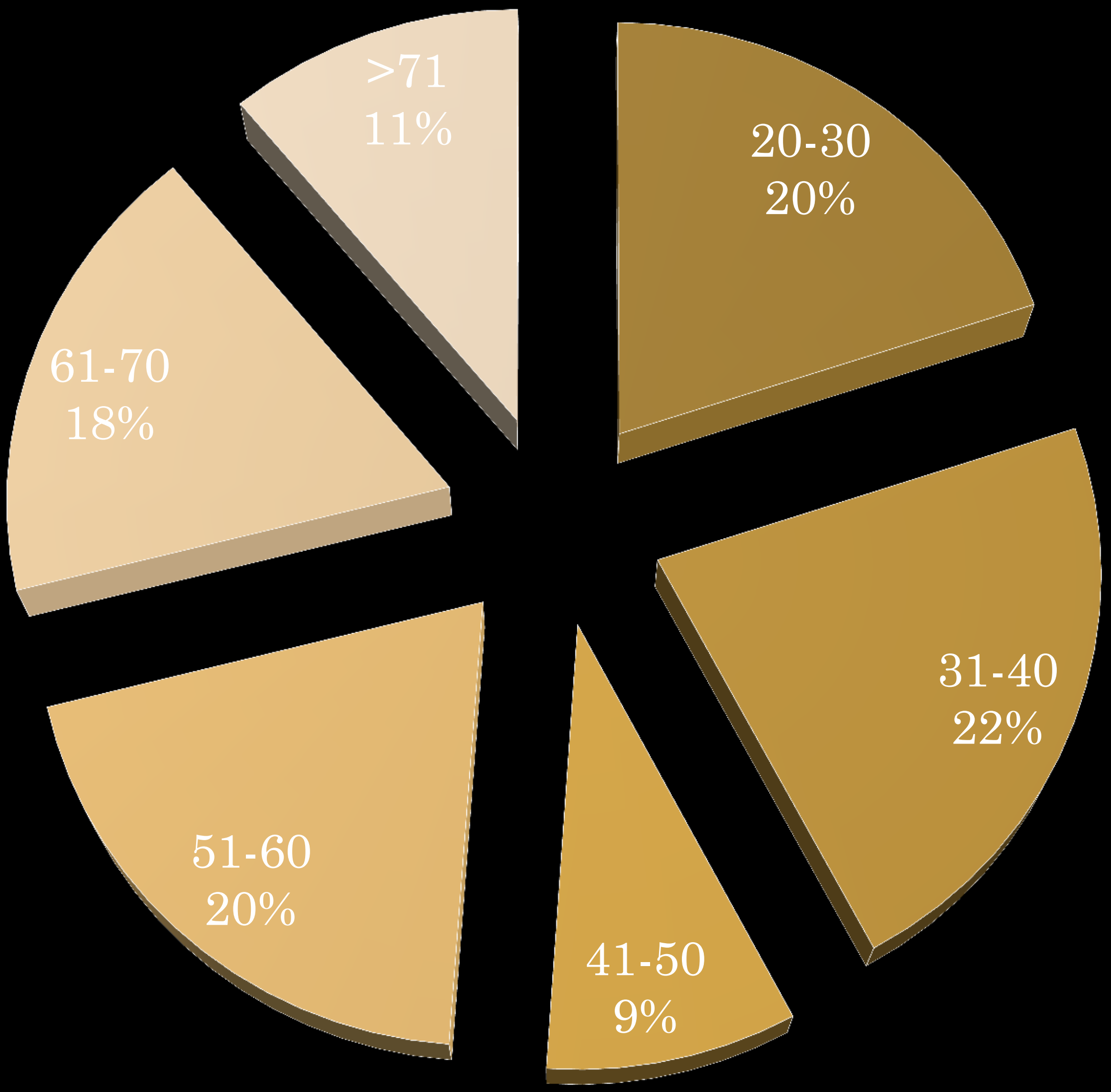
- During period of FEB2015 to FEB 2016 we had 45 patients who presented as acute kidney injury.

Details are given in the piecharts below:

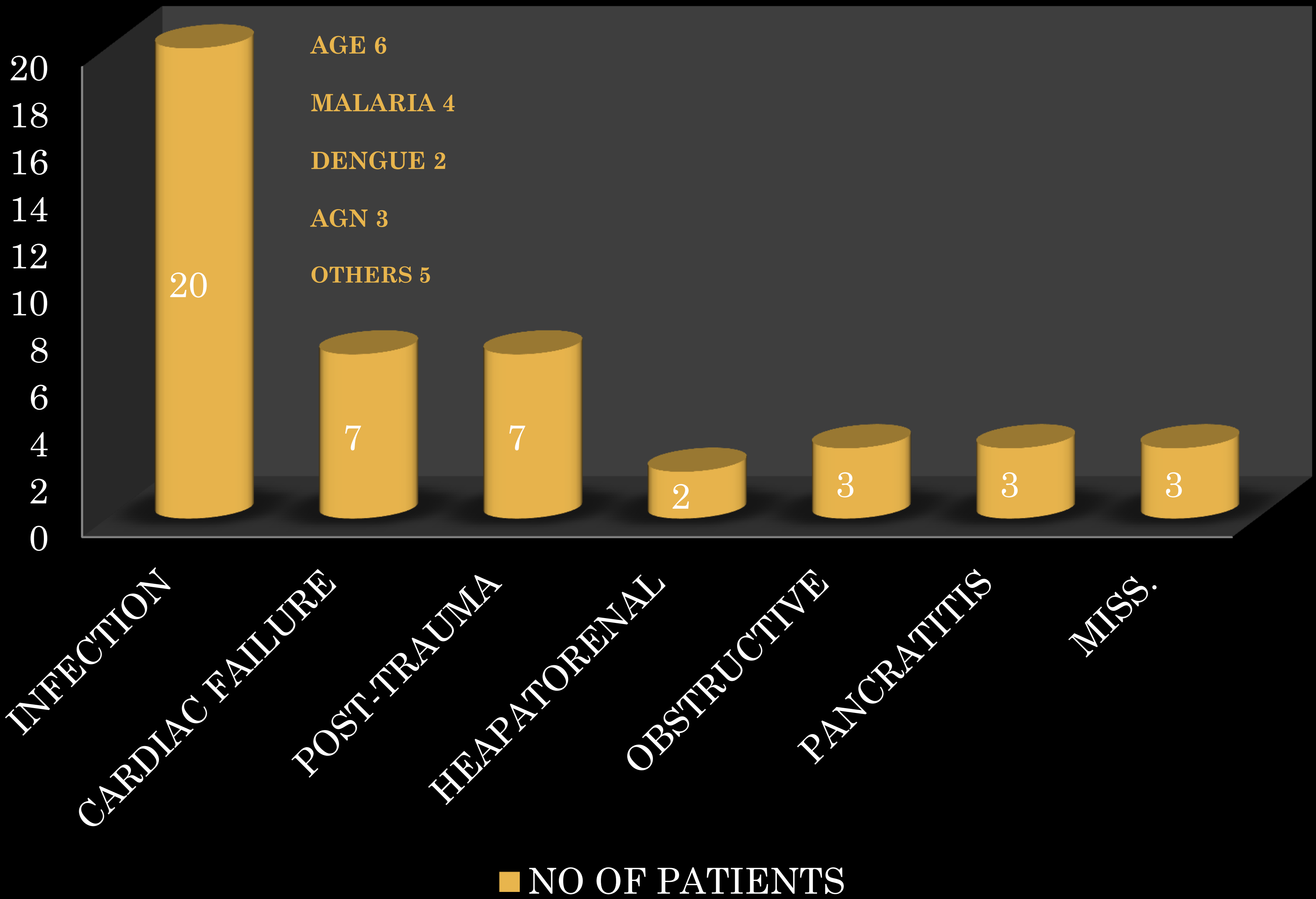
AGE DISTRIBUTION OF PATIENTS WITH AKI



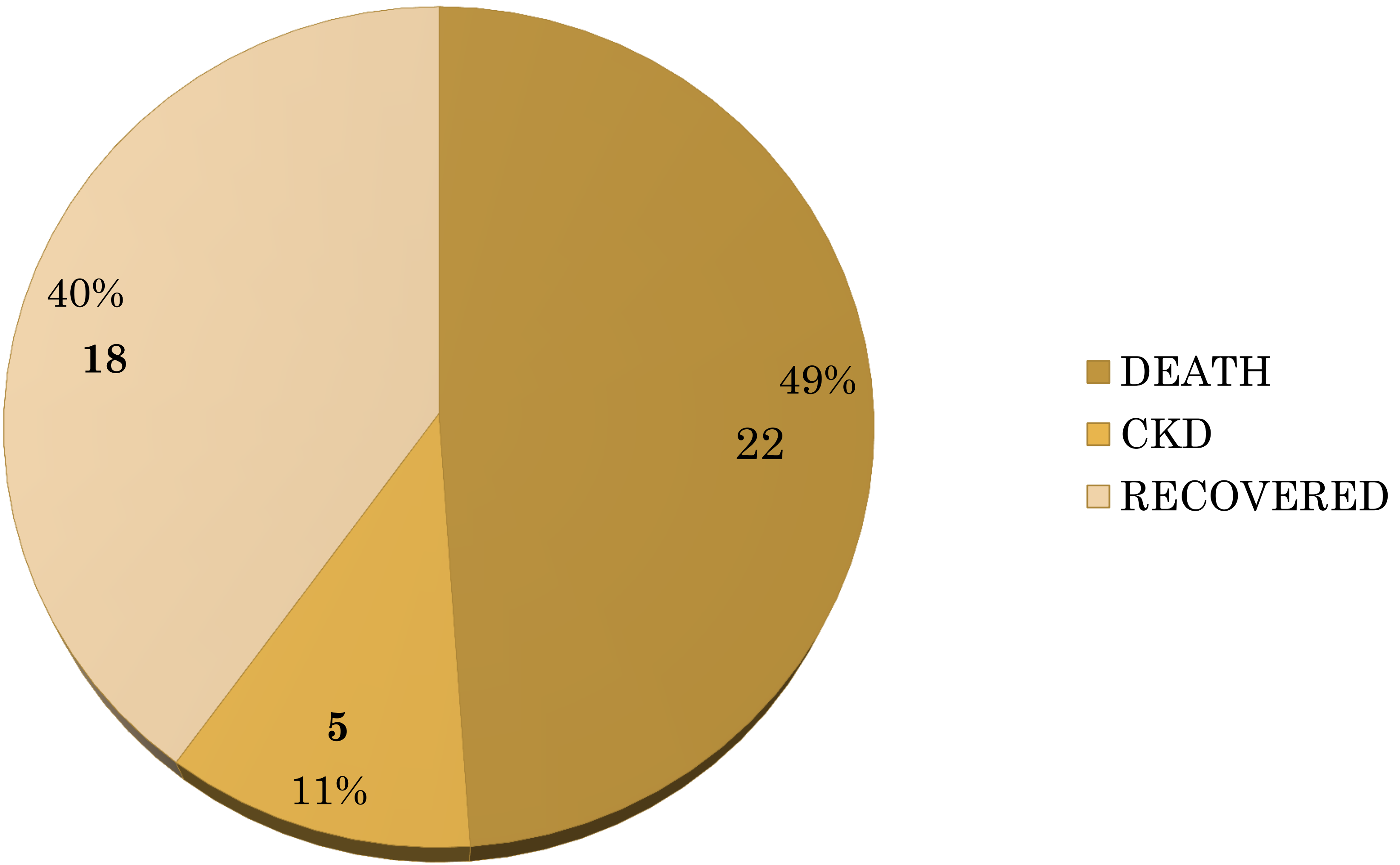
AGE WISE DISTRIBUTION OF PATIENTS WITH AKI



Etiology of AKI



OUTCOME OF PATIENTS WITH AKI FOLLOWING TREATMENT



PLASMAPHERESIS

During plasmapheresis, blood is initially taken out of the body through catheter.

Plasma of patient is replaced with fresh plasma from donor.

During this procedure antibody's which are culprit in certain autoimmune diseases are exchanged with normal antibodies. Which help to decrease the severity of symptoms.

Indication of plasmapheresis:

GBS
Myasthenia gravis
Graves disease
Multiple sclerosis
TTP
Wegener's granulomatosis.
FSGS

- IN our unit until now only indication for
- which plasmapheresis done is GBS

- We have treated 11 patients of GBS out of which
- 9 patients recovered completely
- without any morbid condition.

- Showing ***EXCELLENT*** results……..!

- **RECOMMENDATIONS**

These recommendations are suggested by taking into consideration feedbacks from Hon. HOD dept. of nephrology, HOD dept. of medicine, teaching staff, residents and technicians….

ADEQUATE STAFF

- Considering the ONLY technician available at present scenario due consideration should be given regarding increasing number of technician.

- Preferably technicians should have proper qualification and enough experience so that management of patient should not be compromised.

A-V FISTULA:

- Timely referral to vasculosurgeon is deferred due to non availability of dates and appointments.

- There are increasing incidence of sepsis related due to dialysis catheter insitu.

- Because of this delay there is increasing no. of patients whom we lost follow up…

EQUIPMENTS

- **Increasing no of machines..**

Number of machines should be increased considering increasing number of patients on routine as well as acute kidney injury

Which will provide adequate support for management of patient in ICU.

Considering increasing no. of Hep B and HIV patients

There should be provision Of isolated & exclusive machines To prevent cross contamination by any means..

Why ____ is not done in this patie

Patient is not willing

Patient is not affording

Subsidization of investigation cost to regular dialysis patients

Subsidization of cost for drugs like ERYTHROPOTINE, anti-Hypertensives,

Availability of drugs **(e.g. sevelamer**) in our medical store & cost at cheaper rates.

Subsidization for dialysis instruments.

These measures will help patient to be compliant to follow ideal protocol…

Posting of residents..

- Posting of residents by rotation in dialysis unit.
- There is increase In compliance of patients from the day we started our rotation in unit.
- Residents should concentrate more on patients ongoing treatment and counseling should be done regarding..

  treatment modification.

  importance of routine investigation

  sos referral to transplantation.

Residents should concentrate on nephrology unit as a whole and not just HD unit with daily rounds of inpatients.
problems should be discussed with seniors and HOD.

One person for doing clerical job:
maintaining records, duty muster,
indenting daily needs of unit.
E-RECORD: of machines as well as patients

Full time nursing staff:
- Nursing care of patients
- to keep check of patients medication.
- to keep maintainance of dialysis machines and instruments.
- to keep vigilance on aseptic precaution.
- to follow universal safety standards.
- disposal of biomedical waste.

Patients education programs:

Timely educational programs for increasing awareness regardin
disease.

With involvement of charts, pictures and Audio-visual aid.

Involvement of social workers and PRO:

Monthly referral of patient to dietician.

Approach To be ideal……….


Thank you for
your patience