

Editorial

It gives me great pleasure to present to you this maiden issue of "Kidney Health" the newsletter of our newly launched "Mumbai Kidney Foundation". In keeping with the ethos of our foundation, this issue and our subsequent issues will be pertaining to kidney in health and disease. As our foundation was launched on the occasion of the 1st world kidney day with its central theme of 'Prevention of kidney disease', the theme of our inaugural newsletter remains the same. We have some stalwarts from the nephrology community contributing to this issue.

The newsletter will help us to introduce our foundation to you, including its aims and objectives; its vision; and various projects which will be launched, to share the burden of the Chronic Kidney Disease patients. A close, one-on-one contact with this unfortunate group of individuals over the last 15-20 years helped us realise the magnitude of the problem which these patients face, not only in combating their disease, but also in their day to day lives. Every patient fights this problem in his own unique manner. Thus we see a panorama of human reactions ranging from anguish; despair; hope; grit and determination; the will to come out on the top despite all odds; and ultimately just to grin and bear it all. It is this group of people who have been our inspiration in setting up this foundation so as to help ease their burden.

We unfortunately live in a country where the government provides absolutely no form of social security. But we as Indians have been taught about social responsibilities right from our childhood days. Thus we do have a host of NGOs working in the medical, educational or social sector. But the problems which need to be tackled are of immense proportions, hence any help put forward by the various NGOs seems to be just a mere drop in the ocean. Hence there definitely is a need for as many people as possible to come forward to try and do their bit for the society.

Here, I would like to quote Kahlil Gibran who said about giving:

"It is well to give when asked, but it is better to give unasked, through understanding;

And to the open-handed the search for one who shall receive is joy greater than giving.

And is there aught you should withhold?

All you have shall some day be given;

Therefore give now, that the season of giving may be yours and not your inheritors."

Dr. Molina Khanna

Editor

President's Message

Organ transplants offer patients a new chance of living healthy, productive, and normal lives and return them to their families, friends and communities. You have the power to change someone's world by being a donor. It's about living.... It's about life.

As we are already aware, a vast majority of kidney patients do not get a chance to live a disease-free life but have to be satisfied with life-long supportive treatment in the form of dialysis in one form or the other. This is due to the poor acceptance of the concept of ORGAN TRANSPLANTATION among the masses.

As on today < 5 % renal failure patients in India undergo renal transplant surgery. In a city like Mumbai, for example, only about 20 cadaver transplants were done in the entire last year. This can only be blamed on poor patient awareness about organ donation.

According to the "Human Organs Transplantation Act" (HOTA) of 1994, cadaver organ donation is legalized. A cadaver donor is one who has undergone brain death during unfortunate events such as accidents but has the other organs functioning adequately. Under this act multiple organs can be harvested from such a donor and include the kidneys, liver, pancreas, lungs etc. However, only about 20 renal and hardly any liver transplants were carried out last year, leave alone pancreas and lungs. This is a very sad state because in a city with such a massive population strength and high literacy, 20 transplants annually is a pity. The stress should now be laid on educating the masses about the importance of organ donation. And the best medium to do the same is through all of us and moreover, the general practitioners who are the first level of patient interaction.

As the president of The Mumbai Kidney Foundation, I pledge to venture ahead in spreading awareness about the need and importance of organ donation and also invite you to lend a helping hand in trying to make better the life of a needy patient..... because together we can make a difference.

Whatever you give away today, or think or say or do...

will multiply about tenfold and return to you....

Let that thought and this one direct us through each day,

The only things we ever keep are the things we give away.....

ORGAN DONATION...the seeds for a better life..

- Dr. Anil Suchak

From the Chairman's desk

India cannot afford the treatment of End Stage Kidney Failure. Yet, Chronic Kidney Disease (CKD) ranks 3rd amongst the life threatening diseases, following cancer and cardiac ailments. Every 10th Indian you meet on the road has CKD. By 2020 almost 50 – 100 million Indians would be struggling to cope with the problems of CKD. Thus truly, CKD is taking the shape of a global pandemic and yet it remains a highly under-recognized health problem in India.

What happens to these patients?????...Approx. 100,000 to 200,000 new patients develop kidney failure each year. **90% of these do not see a nephrologist.** Of the 10 to 20,000 new patients who initiate treatment, only 20% undergo kidney transplant. 60% drop out of the dialysis program in 3 months due to poverty. Barely 10 - 20% continue dialysis therapy in some form and these young people are between 30 – 40 yrs of age, thereby being the bread winners of the family. Only 4 - 5 % spend money from the pooled family sources and the rest depend on charities, loans, sale of property or jewellery. **Truly this country cannot afford treatment of End Stage Kidney Failure**

Thus, there is an urgent need for reaching out to people and increase awareness of early detection and prevention of kidney disease. Where to begin?...Obviously at the level of the primary physician, who in India still commands a great deal of faith and respect in the eyes of the patient and his family; who sees the patient very early when he is first diagnosed to have diabetes, hypertension, stone disease, UTI and all other illnesses which are forerunners to his developing Chronic Kidney Disease at a later stage. The primary physician is aware of his childhood history of nephritis and also of the family history of kidney disease. He can warn the radiologist against using radio-contrast dyes during X-Rays and also orthopaedicians to avoid using painkillers for his patient of early kidney disease. It is the primary physician who will pick up these high-risk patient groups and subject them to routine health check-ups. It is he who will order **microalbuminuria** testing in every diabetic or hypertensive. It is he who has to start **ACE-inhibitors**, explain to the patient the need for a revised **target BP of 120/80mmHg** and check his creatinine clearance at an early stage of CKD. So the primary physician plays a stellar role in early detection and spreading awareness of CKD

As the chairman of the Mumbai Kidney Foundation, I pledge to do my best in arranging such kidney disease detection camps for benefit of the patients and the community, to hold CMEs for primary physicians and regular updates on brochures pertaining to CKD.

This issue of **Kidney Health** is one such small step by our foundation to educate the medical fraternity. We would greatly appreciate feedback and newer ideas from you, so that together we could tackle the menace of CKD, the new global pandemic of lifestyle diseases.

Dr. Umesh B. Khanna
Chairman, Mumbai Kidney Foundation

Message from the Pioneer and our Guru

It is over 4 decades since facilities for dialysis and treatment of kidney diseases has been made available for citizens of Mumbai. The very first unit was started in the city by the efforts of Mumbai Mahanagar Palika at the K.E.M. hospital in 1963. Since then, much progress has been made in this august city, which now offers treatment for kidney patients at several of its medical centers both in the public and private sector. It is estimated that about 1800 patients of chronic end stage renal failure, need treatment in greater Mumbai. Though there are 106 dialysis centers to this date in the city, not more that 22.5% of needy patients get dialysis. Management of such patients is very costly and is beyond the reach of the common man, unless the treatment is heavily subsidized for him/her.

It is important for me to bring to the notice of all, certain highlights.

- There has been a definite rise in kidney disorders over the last decade or so.
- About 200,000 persons in India suffer from end stage kidney failure every year. Over 35 million people in India are expected to develop kidney failure in the next 20 years.
- Kidney diseases rank third among the life threatening diseases after cancer and cardiac ailments. Most of them are the outcome of the "Life Style" diseases in the community like High Blood Pressure and Diabetes Mellitus. W.H.O. has projected a pandemic of the latter all over the world, and in India, in particular.
- 150 per million individuals from the general population succumb as a consequence of chronic kidney Disease.
- 100,000 kidney transplants are needed in India per year.
- 1500 kidney transplants are required in Maharashtra
- Only 22.5% patients requiring dialysis receive treatment and that too most of them in preparation of kidney transplant.
- Only 2.5 % patients of end stage kidney failure receive kidney transplant mainly for socio-economic reasons.

I am hence very happy that "Mumbai Kidney Foundation"(MKF) was inaugurated on "World Kidney Day" on the 9th of March 2006. This day was launched to highlight the urgent global need for early detection and prevention of chronic kidney diseases. One of the important missions of MKF is to institute measures to detect chronic kidney disease early, as being asymptomatic, it remains hidden for a very long time. It would largely help in preventing its further progression to end stage kidney disease and kidney failure, if one has to obviate the enormous cost involved in the management of such patients. Kidney diseases affect people of all ages from birth, through infancy, to childhood; young females and males; middle aged subjects with high B.P. and diabetes mellitus and senior citizens too. It has been noticed that in the adult population between ages of 30-50 years residing in Mumbai every 5th person has High Blood pressure and every 7th person has diabetes mellitus. It would hence be important to prevent involvement of kidneys in these two afflictions early, by appropriate measures taken to diagnose them in time and treat them early and adequately so that they do not get the chance to progress further. The task of managing chronic kidney disease is enormous. There are about a dozen NGOs in the city who are doing voluntary and selfless work to help in all kinds of problems of kidney patients. For a population of the city, which is over 12 million and yet growing at a rapid pace, many more voluntary organizations need to come together in different geographic locations in the city, to enable to cater to the enormous problems posed by Chronic Kidney Disease.

Entering of the "Mumbai Kidney Foundation" in this arena is welcome and their stated missions are laudable. I am very hopeful that with co-operation and co-ordination between various groups working for a common cause we could look forward to alleviate the sufferings of Chronic Kidney Disease patients in the city and bring a satisfying smile on their faces.

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Former Prof. & Head of Nephrology KEM Hospital, Mumbai.

The Relevance of World Kidney Day in India

The 9th of March is being observed as World Kidney Day by the various Kidney Health Organizations of the World. I hesitate to call it a 'celebration'- and yet we have reason to celebrate our conquest over communicable diseases like plague, small pox, pneumonia because of which people are living much longer than before. This victory has created new frontiers to be conquered in Medicine and these are the non-communicable and degenerative diseases like diabetes, hypertension, cardiovascular and cerebrovascular atherosclerosis, cancer, and chronic kidney disease. This is particularly true of the western and developed world. We in India still have a large share of infectious diseases claiming lives. Malaria, TB, malnutrition, dengue, hepatitis, HIV, leptospirosis, and natural disasters continue to decimate our country. Our government health programs continue to be overwhelmed and completely preoccupied by these problems. But the individual citizen, the medical fraternity, the social organizations and the NGOs, and the insurance and TPAs can ill afford to ignore the menace that is Chronic Kidney Disease or CKD as it is known today. "Why?" you may ask – quite justifiably. It is to answer this question that World Kidney Day is being observed.

Ignorance about kidney disease is abysmal! And it is universal. It would be expected and understandable amongst the uneducated "lay" public. It is forgivable amongst the educated but indulgent "lay" public obsessed with cholesterol and heart disease. But what is shocking and unforgivable is the ignorance of the medical fraternity. In the 1960's when I was a medical student, renal failure was a terminal illness, which was like a cancer where nothing could be done. Hardly anything was taught about it and very little learnt, because of the futility and helplessness of the condition. That era of futility and helplessness is over, and so this ignorance is unacceptable. As a first step towards alleviating ignorance, the NKF of USA revised the name of this problem from Chronic Renal Failure (CRF) to Chronic Kidney Disease (CKD) replacing the complicated and ill understood word "Renal" by the simple well understood word "Kidney". The sense of despondency and helplessness conveyed by the word "Failure" was replaced by the simple word "Disease".

We the nephrologists of Mumbai, styling ourselves as the "Mumbai Nephrology Group" and the NKF of India have made it our aim to educate and create awareness in the medical fraternity and the lay public about the following aspects of kidney disease.

1. That the population of patients suffering from CKD is increasing and almost 10% of the adult population is estimated to be already suffering from CKD.
2. That a large number of CKD patients escape detection because the currently available tests particularly Blood Urea and Serum Creatinine are insensitive and misleadingly negative when the disease is in the early stages.
3. In an attempt to overcome this deficiency in our diagnostic armamentarium, the disease is now classified into 5 stages. We have formulae like the Cockcroft and Gault formula which use the patient's age, sex, and race variable and derive the estimated kidney efficiency from the serum creatinine value (eGFR). These formulae help to recognize early kidney dysfunction i.e., Stage 1 and Stage 2 of CKD.
4. There are various medical interventions that are advised for each stage of CKD, and it is our aim to delay, postpone and even attempt to reverse the transition from Stage 1 to Stage 5.
5. That Stage 5 is the last and the most life threatening stage of this disease also known as ESRD wherein life is not possible without an extraordinary support system like either dialysis or kidney transplant. At this stage of disease the Indian patient becomes a burden on himself and/or his family who pay the cost of care (usually Rs. 20-30000/- per month) for the rest of his life. Insurance coverage is hardly ever

available for this disease and only the Central Government and the Railways along with a few philanthropic private employers like the Tatas, the Birlas, and the Ambanis pick up the tab for this care. For most others, this disease spells either physical doom or financial disaster and not more than 5% of the one lakh new Indian cases per year actually get dialysis or kidney transplant. The other 95% suffer and perish. Surprisingly, even in the USA where the government gives free dialysis and kidney transplant to its citizens, 25% of the ESRD patients die without dialysis and kidney transplantation.

6. Primary public health preventive measures must therefore be aimed at preventing the disease from developing in the "population at risk" (lets call them Stage '0' for convenience) i.e., diabetics, hypertensives, those with kidney stones and infections, "high risk" pregnancies, those who have had acute renal failure, senior citizens, those habitually using nephrotoxic drugs like pain killers, arthritis medicines, ayurvedic bhasmas, higher antibiotics, and X-ray contrast dyes, those drinking hard water, those with chronically infected sore throats and scabies, and those with family history of kidney disease. Public Awareness Programs must be aimed at identifying Stage '0' patients and instituting proper intervention.

7. There is a need for early detection of CKD in Stages 1 and 2, the stages at which reversibility and control are most feasible by

- Community detection projects like "SEEK" (Screening Early detection and Evaluation of Kidney disease)
- The International Society of Nephrology (ISN) has globally adopted the method of Dr. M.K.Mani Apollo Hospital, Chennai wherein a team of health care workers "adopt" a village with an approximate population of 10,000 for chronic kidney care.
- Encouragement of school health survey, pre-employment, and pre-military checkup, and periodic health checkups with stratification into stages from Stage 0 to Stage 5 of kidney patients.

REFERRAL TO THE NEPHROLOGISTS in the early stages of CKD is of paramount importance. These measures require awareness of kidney disease amongst doctors which must primarily be imparted in the medical curriculum of all type of medical training i.e., Allopathic, Ayurvedic, Unani, and integrated, both to doctors and paramedics. This should further be reinforced by periodical CMEs organized by the nephrology community.

What we are doing today is only a drop in the ocean of effort that we require to achieve these goals; but it is a beginning. And "well begun" is "half done"! We cannot however achieve this alone. We wish to spread this message of relevance not only to other medical organizations, NGOs, the public health authorities, the medical practitioners, health providers, and insurance companies but also to the individual Indian that chronic kidney disease is preventable and a lot can be done for those with mild CKD to prevent and delay ESRD. Mahatma Gandhi said "I cried for I had no shoes until I saw the man with no feet". The man with ESRD, like the man with no feet must not frustrate, but motivate those with early CKD to act in their own interest and not cry helplessly. "Two men looked out of the same window, one saw the mud below and the other saw the sky above", let us not give up hope – there is lots to do and to achieve. World Kidney Day is a celebration of our newly acquired knowledge and skills, which will help conquer CKD, a new frontier in preventive medicine.

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Chronic Kidney Disease: Definition, Classification, Diagnosis

Introduction

The term "Chronic Renal Failure" has been replaced by "Chronic Kidney Disease", the term (kidney) being more understandable to many a patient. Additionally, the term 'failure' which conjured up a despondent picture, has been replaced. We all are aware that chronic kidney disease slowly advances and patients may present at various stages and not necessarily when dialysis is inevitable. The new terminology and staging would bring uniformity in use across the globe and communication would be more meaningful and better understood.

Definition

Chronic Kidney Disease is defined by the following:

Structural or functional abnormalities of the kidneys for ≥ 3 months as manifested by either kidney damage with or without decreased GFR as defined by

- Pathologic abnormalities
 - Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging test
- $GFR < 60 \text{ ml/min/1.73m}^2$, with or without kidney damage

As mentioned before, chronic kidney disease has been classified into stages. This makes good sense as the prevalence, number and severity of abnormalities correspond to the level of GFR. Therapies could be tailored to the need of the patient.

Stages of Chronic Kidney Disease

Stage	Description	GFR ml/min/1.73m ²
1	Kidney damage with normal or \uparrow GFR	> 90
2	Mild \downarrow GFR	60-90
3	Moderate \downarrow GFR	30-59
4	Severe \downarrow GFR	15-29
5	Kidney failure	<15 or dialysis

Chronic Kidney Failure could present either for the first time late in the course of the disease (Stage 5) or could have a slow meandering course characterized by episodes of remissions and relapses (glomerular disease, symptomatic stone disease, etc) or may be consequent to a reported kidney ailment in the past (acute kidney failure). Differentiating between acute and chronic kidney failure is essential, for the plans of action differ.

Differentiating between Acute and Chronic Kidney Failure

Chronicity of kidney disease is characterized by prior sustained elevation of BUN and creatinine for more than 3 months, small kidneys, renal bone disease and renal biopsy evidence of chronicity. Less reliable evidence include: lowered hemoglobin, BUN:Creatinine ratio of $\geq 10:1$, stability of azotemia, low calcium and elevated phosphorous.

Etiologies of Chronic Kidney Disease

India is gradually establishing itself as the diabetes capital of the world, if it has not already done so. It is therefore anticipated that, in the years to come, the number of chronic kidney disease patients requiring renal replacement therapy will far outstrip the facilities available for the same or for that matter even the economic resources. This makes prevention the need of the hour.

Diabetes and hypertension related kidney disease constitute the predominant causes for chronic kidney disease and have displaced glomerular diseases. Another emerging group with chronic kidney disease are the patients with chronic tubulointerstitial disorders. This group has its share of identifiable etiologic agents which include the "painkiller meds" that find indiscriminate use and an equally important group of "herbal" agents that are widely prescribed and used. Many of the kidney disorders could be prevented and timely steps taken could limit the consequences related to disease process. Progress of the disease also, can be gauged by following the patient and classifying the patient according to the stage of his disease. The patient too could be aware of his/her progress with the estimated GFR (using mathematical formulae based on serum creatinine levels).

Classification of CKD and action plan

CKD Stage	Description	GFR ml/min/1.73m ²	Action
At increased risk	Risk Factors for CKD are present but without markers of kidney damage	≥ 90	Periodically test for CKD; treat modifiable risk factors for CKD
1	Kidney damage with normal or increased GFR	≥ 90	Diagnose and treat type of kidney disease; treat co-morbid conditions; slow progression of CKD; treat modifiable cardiovascular disease risk factors; periodically re-stage
2	Kidney damage with mild reduction of GFR	60-89	Adjust drug dosages for level of GFR
3	Moderate reduction of GFR	30-59	Evaluate for and treat complications of CKD; avoid nephrotoxic drugs
4	Severe reduction of GFR	15-29	Prepare for kidney replacement therapy
5	Kidney failure	<15	Start kidney replacement

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Socioeconomic Impact of CKD

Introduction:

Chronic kidney disease (CKD) is a global health problem because of increasing incidence and prevalence, poor outcome, and high costs. Moreover, it is associated with poor quality of life and increased risk of death. The most common causes of CKD are diabetes and high blood pressure (hypertension). It is because of increasing incidence of these conditions that there has been an increase in number of cases of CKD.

In USA about 10% of the population is affected by CKD and the numbers continue to increase. There is no registry in India but if one were to translate the same statistics to our country, it would mean that 100 million people in India are affected by CKD. Patients in early stages of CKD if aggressively managed can be prevented from progressing to end stage kidney disease (ESKD). But beyond a certain stage CKD invariably progresses to ESKD. Once ESKD develops, treatment options are limited and include life-long dialysis or kidney transplantation. Both treatment options are prohibitively expensive. Availability of these options is also limited. Thus, only a small percentage of patients are fortunate to get treatment.

Cost involved in dialysis treatment:

1. Hemodialysis: The cost of hemodialysis treatment should be considered in 2 parts – direct cost and indirect cost.

The direct cost (table 1) includes:

- a) cost of hemodialysis procedure (about Rs. 12,000 per month),
- b) cost of medicines (about Rs. 10,000 per month) and
- c) cost of traveling to the dialysis unit 3 times a week (about Rs. 3000 per month).

The indirect cost includes:

- a) loss of income due to decreased working hours and in many cases decreased working capacity,
- b) decreased working hours of the accompanying person and
- c) increased hospitalization for various complications that a dialysis patient is prone to.

2. Peritoneal dialysis: The direct cost involved is similar to that of hemodialysis. For continuous ambulatory peritoneal dialysis (CAPD) the expense is about Rs. 25,000 per month. If automated peritoneal dialysis is used where dialysis is performed with the help of a machine which costs about Rs.4 lacs, the expense increases to about Rs. 40,000 per month. The indirect cost is also similar to that of hemodialysis.

For both forms of dialysis treatment, compromising the treatment to reduce the direct cost leads to an increase in indirect cost. For example, an attempt to reduce the frequency of hemodialysis to twice a week and in case of peritoneal dialysis an attempt to reduce the number of exchanges to 3 per day, increases the risk of cardiovascular disease(heart disease and stroke).

Cost involved in kidney transplant:

This involves cost of evaluating the recipient and the potential donor to assess their suitability for transplantation, cost of transplant procedure and cost of post transplant care (table 2).

a) Cost to determine suitability of patient and donor: To be able to perform kidney transplant, the patient should be thoroughly evaluated to assess his/her suitability for transplant. This will vary from patient to patient. If the patient is suitable, the next step is to identify a suitable donor. The potential donor has to be subjected to a battery of tests. The combined cost of evaluating the patient and his donor will be

approximately Rs. 50,000. In some cases this may be higher. For example an elderly diabetic may need cardiac evaluation which will include coronary angiography. As regards the donor, it may happen that after a detailed evaluation the donor may not prove to be suitable and another donor may have to be evaluated.

b) Cost of transplant operation (including stay in the hospital, operation of the patient and donor, medicines and various testing): This will approximate Rs. 250,000 for an uneventful course. If a complication develops, which happens in about 10% of the cases, the cost goes up depending on the nature of the complication.

c) Cost of care after transplant operation: After transplant, a periodic check up is required and medicines are required to prevent rejection of the new kidney. In the early period after transplant, the check up required is more frequent and the dose of medicines is high. Thus the cost will be high. This is on an average Rs. 15,000 per month for the first year. Then the cost progressively comes down. By 3 years the cost comes down to Rs. 5,000 per month and by 5 years it comes down to Rs. 3,000 per month. When there is a full match between the recipient and the donor the cost comes down substantially.

Availability of ESKD treatment in India:

While dialysis and transplant has contributed significantly to improving outcome of patients with ESKD, these options are available to only a small percentage of patients. This is because the cost of dialysis and transplant (as discussed above) is beyond the reach of most of the patients. Even if cost is not a factor, availability of dialysis and transplant which requires elaborate facilities is limited. These facilities are available only in urban areas. There are approximately 400 dialysis units in the country. A majority of them are in private sector. The Government sector cannot afford to provide maintenance hemodialysis. A maximum of 2% of patients can be subjected to maintenance hemodialysis. Only about 3000 to 4000 Patients (1% of those developing ESKD each year) are fortunate to go for kidney transplant.

Table 1. Direct cost of currently recommended hemodialysis treatment

HD - 3 times/week	Rs. 12,000
EPO (100u/kg/week)	Rs. 06,000
Other medicines (DM, BP, vit D, PO4 binders)	Rs. 04,000
Travel	<u>Rs. 03,000</u>
Total	Rs. 25,000

Table 2. Cost involved in kidney transplant

An initial expense for evaluation of recipient and donor	Rs.50,000
Transplant operation	Rs.250,000
Post transplant care	Rs.15,000/month for 1 st year
	Rs.10,000/month for 2 nd year
	Rs.5,000/month for 3 rd year
	Rs.3,000/month from 5 th year

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Early detection and prevention of chronic kidney disease (CKD)

Definition:

Chronic kidney disease (CKD) as defined by the National Kidney foundation – kidney disease outcomes and quality initiative (NKF – K/DOQI) workgroup and accepted internationally is as follows:

“The presence of markers of kidney damage for ≥ 3 months as defined by structural or functional abnormalities of kidney with or without decreased Glomerular filtration rate (GFR) manifest by either pathological abnormalities or other markers of kidney damage including abnormalities of composition of blood or urine and/or abnormalities in imaging tests.

or

The presence of GFR < 60 ml/min/1.73 m² for ≥ 3 months with or without other signs of kidney damage as described above”

Based on the above definition and staging of chronic kidney disease by NKF. K/DOQI, (Table I) in representative samples of USA population, it has been found that about 1 person in 10 in the general population has some form of kidney disease which when extrapolated to India would suggest that at least 100 million people in INDIA if not more, have some form CKD (Table I). Globally more than 500 million individuals have some degree of chronic kidney disease.

The common causes of CKD in India are Diabetic nephropathy, hypertension, chronic glomerulonephritis and chronic interstitial diseases.

Early detection is possible by doing simple laboratory tests in the high-risk individuals like urinalysis, spot urine protein / albumin to creatinine ratio and serum creatinine and estimated GFR using MDRD or Cockcroft & Gault formula. (Table 2)

The consequences of undetected CKD is progressive loss of kidney function leading to kidney failure and need for dialysis & transplantation which are expensive treatment modalities. The other important consequence is premature death due to cardiovascular events. The mortality of a patient on dialysis is more than 100 times than in the general population. A 25 year old person in general population on dialysis has similar mortality as in an eighty year old person. What has been very striking is that even in early stages of CKD like GFR < 70 ml/min vs > 90 ml/ml/min the relative risk of death is 1.68. This is at a stage when serum creatinine level may not be higher than in the normal range. Mortality rates even among the subjects with urinary protein levels more than 300 mg/dl vs < 30 mg/dl are six times higher.

These revealing data during the last five years have highlighted that even small increases in serum creatinine levels suggesting minimal deterioration of kidney function either in form of proteinuria or deterioration of GFR have a huge impact on cardiovascular mortality. Kidney function has been emphasized by these data, as the most important factor determining cardiovascular events. Thus there is a need for early detection and possible prevention.

The costs of end stage kidney disease are escalating worldwide. More than 1.5 million people are currently alive through either hemo or peritoneal dialysis or transplantation. Over the next decade the cost is predicted to exceed more than one trillion dollars. The economic burden could strain healthcare budgets worldwide, more so in the developing countries. For lower income countries it is impossible to meet such costs. With epidemics of diabetes and hypertension worldwide, the greatest growth and impact of these is likely to be in the developing world, thus greater need for early detection and prevention in these countries including India.

Strategies for early detection and prevention

Screen subjects at high risk for chronic kidney disease. These are

- i) Patients with diabetes mellitus and hypertension
- ii) Patients with history of kidney disease
- iii) Obese individuals or those who smoke.
- iv) Individuals above 50 years of age
- v) Individuals with family h/o diabetes, hypertension and kidney disease

What should you do in these high risk subjects ?

Spot urine albumin protein to creatinine ratio – which will pick up individuals with microalbuminuria (30 – 300 mg /gm of creatinine); overt albuminuria (> 300 mgms /gm creatinine); serum creatinine and estimate GFR, and if need be imaging tests.

Those with microalbuminuria or overt albuminuria and early CKD especially with diabetes & hypertension should be given ACE inhibitor's or ARB's and monitored regularly for target blood pressure levels of less than 130/80 mmHg, glycosylated hemoglobin (HbA1c) of < 7 %. The dose of ARB's or ACEI's should be targeted to decrease or normalization of proteinuria / or microalbuminuria and target blood pressure levels. These strategies have reduced the burden of disease from CVD, diabetes, hypertension & CKD at a relatively less cost.

Thus it is possible to detect & diagnose early CKD with easy to do tests in the clinic and institute cost effective preventive therapies so that need for more expensive therapeutic modalities for kidney failure is lessened.

Table 1

Stages of Chronic Kidney Disease

Stage	Description	GFR	Estimated burden in India
1.	Kidney damage with normal or ↑ GFR	> 90	28 million (2.8 %)
2.	Kidney damage with mild ↓ GFR	60 – 89	28 million (2.8 %)
3.	Moderate ↓ GFR	30 - 59	37 million (3.7 %)
4.	Severe ↓ GFR	15 – 29	1.3 million (0.13 %)
5.	Kidney Failure	< 15 (or dialysis)	2 million (0.2 %)

Table – 2

GFR Estimation from s.creatinine

(i) Cockcroft & Gault formula

CCr in Men	$\frac{(140 - \text{age}) \times \text{wt}}{72 \times \text{P. creat.}}$
CCr in Women	0.85 x value from above
(Age	In years
Wt	Kgs
P.Creat.	Mg/dl)

(ii) Abbreviated MDRD study equation

$$\text{Estimated GFR (mL/min/1.73m}^2\text{)} = 186 \times (\text{Scr})^{-1.54} \times (\text{Age})^{-0.203} \times (0.742 \text{ if female}) \times (1.1210 \text{ if African - American})$$

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Role of Family Physician in Prevention and Management of CKD

Chronic Kidney Disease (CKD) is a global pandemic but a highly under-recognized health problem in India. Diabetes and Hypertension are common causes of CKD in the world and are important lifestyle diseases whose prevalence is increasing day by day. If properly targeted, these diseases could be controlled to slow down the growth of CKD in the population.

Diabetes affects 3-5 % of the Indian population (approx. 30 million people). Furthermore, WHO estimates that by 2025 the prevalence in India will increase to 57.2 million, almost 3 fold higher than that of the US. Diabetics are 17 times more likely to develop CKD. Thus, from diabetes alone 10-20 million individuals in India will develop CKD. The prevalence of hypertension could be anywhere between 15-30% derived from various studies. If 10% of hypertensives develop CKD, then the total figure of CKD patients from diabetes and hypertension alone is staggering.

If we extrapolate the figures from the US population data that 5-10 % of the general population have CKD then, translated to an Indian population of approx. 1 billion people, 100 million could be suffering from CKD – a mind boggling figure catapulting CKD to the position of a compelling health problem requiring concerted efforts not only of the nephrology community but also of primary care physicians, governmental agencies, NGOs and common people.

As the first and prime level of associating with the patient, general practitioners play a very important role in helping in the prevention of kidney disease. Your contribution in this respect would be:

- (A) To recognize the pandemic of CKD and to know that upto 10% of the Indian population could be suffering from CKD.
- (B) To know about the new Terminology and classification of CKD as explained in other articles in this issue.
- (C) To be aware that Sr. Creatinine rises only after 50% of kidney is damaged and that Sr. Creatinine is an insensitive and inaccurate marker of renal function and laboratories should report eGFR or estimated GFR.
- (D) To identify population at risk and do screening tests for the community and the individual.
- (E) At risk population comprises of patients suffering from
 1. Diabetes
 2. Hypertension
 3. Kidney stones
 4. High risk Pregnancies
 5. Past history of acute renal failure
 6. Old age
 7. Those habitually on Pain-killers such as patients suffering from back-ache, arthritis, migraine etc.
 8. Patients on Ayurvedic drugs
 9. Those drinking hard water
 10. Those with chronically infected scabies and sore-throats
 11. Those with family history of kidney diseases

For the "At Risk Population": Role of G.P.

- I. Educate the patient of the risk for developing CKD
- II. Reinforce the need for Periodic Health Check-ups
- III. Refer at risk patients to NGOs like Mumbai Kidney Foundation(MKF), National Kidney Foundation(NKF) and similar organizations who regularly conduct Kidney disease detection camps

What tests are needed?

- ˘ Urine routine analysis - To pick up Macroalbuminuria
- ˘ Spot Urine albumin/Creatinine ratio (to pick up Microalbuminuria)
- ˘ Sr. Creatinine or better still calculated creatinine clearance or estimated GFR (eGFR)
- ˘ If microalbuminuria or macroalbuminuria is detected, then institute treatment as per the stage of CKD

At risk population & stage I and II

ABC of prevention strategy in Diabetes & Hypertension

- A. HbA1C - keep < 7.0
- B. Blood Pressure < 130/80 mmHg & if possible <125/75 mmHg
- C. Cholesterol – LDL < 100 mg/dl

A for HbA1C

- ˘ Measures the average blood sugar over 3 months
- ˘ Keep FBS between 80 – 100 and PLBS < 140mg

How to achieve-

- ˘ Dietary modification
- ˘ Regular OHA / Insulin
- ˘ Exercise
- ˘ SMBG (Self Monitoring Blood Glucose)
- ˘ Regular follow up

B for Blood pressure

Target BP must be < 130/80 and if associated risk factors are present, it should be < 125/75

How to achieve-

- ˘ Salt restriction
- ˘ Regular Exercise
- ˘ Timely initiated treatment
- ˘ Regular monitoring [SMBP]
- ˘ Use of ACEIs or ARBs

C for cholesterol – LDL Cholesterol<100

- ˘ Yearly checking
- ˘ Dietary advice
- ˘ Exercise
- ˘ Statins & if required fibrates

Drugs of choice for prevention of progression of renal disease are ACE inhibitors & / or Angiotensin receptor blockers

ESTABLISHED CKD STAGE III ONWARDS

Treat your patient in consultation with a Nephrologist.

- 1) Approach to a case of elevated serum creatinine:
Any patient with a serum creatinine > 1.5 in males and > 1.3 in females should be put on red alert.
 - a) Cross check with a different lab.
 - b) Rule out causes of false positivity e.g.: Drugs, dehydration, gastrointestinal bleed etc.
 - c) Calculate serum creatinine clearance by Cockcroft and Gault formula (eGFR)
- Once the creatinine is confirmed to be elevated, proceed to the next step.

2) Differentiate ARF from CRF

Definitive Criteria for CRF

- Abnormal Urinalysis & creatinine value for > 3 months
- Small kidneys on USG
- Evidence of Renal Osteodystrophy
- Biopsy evidence of CRF

Relative points to differentiate ARF from CRF (points in favor of CRF)

- a) Anaemia
- b) Decrease in Calcium & Increase in Phosphorus
- c) Urea/Creatinine ratio >10:1
- d) Patients very comfortable with the degree of azotemia
- e) Other end organ damage. e.g.: fundus, ECG etc.

3) Search for Correctable factor

- a) Dehydration: Look for evidence of postural hypotension
- b) Obstruction: Check USG for Hydronephrosis
- c) ACE Inhibitors & Diuretics in combination or Diuretics alone in a situation of volume depletion can worsen the azotemia & hence attain euvoemia
- d) Patient may be on NSAIDs – omit NSAIDs, Cox-2 inhibitors etc.
- e) Severe hypertension or hypotension can worsen azotemia. Hence try to attain normal BP.
- f) Hunt for UTI, fever or sepsis & try to correct it with non-nephrotoxic drugs.

4) Treat the underlying disease

- a) Remove obstruction e.g. stones, prostate, etc.
- b) Control BP & Diabetes
- c) Steroids or Immunosuppressants for Glomerulonephritis
- d) Angioplasty for Renovascular disease

5) Retard progression of Kidney disease

- a) Specific renoprotective therapy with ACE inhibitors eg. Enalapril, Lisinopril, ramipril etc. or Angiotensin receptor blockage eg. Losartan, Valdesartan, Telmisartan, etc.
- b) Dietary Protein restriction to <0.8 gm/day
- c) Lipid lowering agents – statins or fibrates
- d) Strict control of Diabetes & Hypertension
- e) Avoid smoking
- f) Treat obesity

Treatment of Complications of CRF

• **Anaemia Correction-**

- a) Injection Erythropoietin available as 2000, 3000, 4000, 5000 & 10,000 units given as subcutaneous injection thrice a week [approximately 100 units / kg]
- b) I.V. Iron: Iron sucrose available as I.V. infusion to be given as slow I.V. bolus; found to be extremely safe with no anaphylactic reaction; given once a week if serum ferritin or transferrin saturation is low.
- c) Inj.B12 and Folic acid: As per the cause of anaemia

• **Altered Calcium Phosphorous product-**

If phosphorous is high & calcium is low— use phosphate binders such as

- Calcium carbonate [Shelcal etc]
- Calcium acetate [Lowphos or Hypophos]

If phosphorous & calcium both are high, use phosphate binders such as Sevelamar [Renagel, Phoseal, Acutrol etc.] 400mg to 800mg three times a day along with meals so as to remove phosphorous obtained from diet.

• **Correction of Volume overload-**

- Salt restriction [< 2 gm/day]
- Fluid restriction to [< 750 ml/day]
- Diuretics except Potassium sparing diuretics such as Spironolactone, Amiloride etc.

• **Electrolytes Imbalance:-**

Most dangerous is HYPERKALEMIA

- Avoid Fruits/ Juices/ Coconut water
- Use Potassium binding resins such as K-bind or P-bind
- Use Diuretics such as Frusemide or Torsemide
- Check for drugs which increase potassium such as: - spironolactone, ACE inhibitors & ARBs, β blockers, NSAIDs, etc.

Role of G.P. in stage V CKD

- Explain the treatment options in a case of CKD stage V to the patient & prepare him & his family Physically, Mentally & Financially.
- The various treatment options are –
 - I. Conservative treatment till the patient reaches the stage of dialysis
 - II. Continuous ambulatory peritoneal dialysis or CAPD
 - III. Hemodialysis
 - IV. Kidney transplantation

• **VACCINATION-**

- (1) Hepatitis B vaccine for all CKD patients, usually double dose is given i.e. 2ml [1ml on each deltoid] at 0, 1, 2 & 6 months
- (2) Influenza & Pneumococcal vaccines for all elderly patients as they are prone to Respiratory Infections.

CONSTRUCTION OF A.V.FISTULA

Once the serum creatinine reaches 5-6 mg%, an AV fistula must be constructed by a small surgery generally done on the forearm under local anaesthesia. It is a day care surgery requiring surgical skills but does not carry much risk & the patient should be encouraged to do it in advance so as to prevent the need for emergency jugular catheterization for initiation of dialysis.

The AV fistula generally takes 4 weeks to mature & hence has to be done in advance. It is generally a **life long, life line** for patients.

For the G.P:- BP should not be measured in the hand with the fistula, nor give injections or collect blood from it. However the patient can use the hand for all normal activity.

HEMO-DIALYSIS :- is generally done 2-3 times per week, each session lasting for 4-5 hours. This timetable should be rigidly followed by the patient. 2 long fistula needles are inserted into the large veins (of the fore-arm or the arm) which develop 1-2 months after the construction of AV fistula. These needles are connected via blood tubings to an artificial dialyser mounted on a machine which monitors safe dialysis.

CAPD:- In this procedure, a thin silastic catheter is inserted under L.A. into the peritoneal cavity. The patient uses it to empty 2 liters of fluid from a special CAPD bag mounted on I.V. stand into the cavity. In 10 minutes the fluid enters in & the bag is disconnected. The patient is then free to do his work & after 4-6 hours, empties the peritoneal cavity, only to put in a new bagful of fluid.

The CAPD patient does 3-4 such exchanges in a day, 365 days a year & can be fully ambulatory anywhere in the world.

KIDNEY TRANSPLANT

This is the best form of Renal Replacement Therapy & should be advocated unless contraindicated. The present law permits only live - related kidney transplant & cadaveric kidney transplant.

For using organs from a cadaveric donor, one has to declare a patient brain dead after a series of tests which are meticulously laid down by the law. This brain death is certified by a Neurologist/Neurosurgeon & an intensivist unconnected with the transplant team. One cadaver donor can source organs for the following transplants.

- ˘ 2 kidney transplants
- ˘ 1 Liver transplant
- ˘ Cardiac transplant
- ˘ Pancreas transplant
- ˘ Lung transplant

Thus as a G.P. one must encourage cadaveric transplantation & people should be encouraged to pledge their organs for donation after death.

Mumbai Kidney Foundation has a donor card which your patient can fill up & keep with him / her permanently.

Dr. Umesh B. Khanna

Consultant Nephrologist,
Nanavati and Asian Heart Hospital;
Chairman, Mumbai Kidney Foundation.

DRUGS AND KIDNEY

Though they constitute less than 1% of the total body mass, the kidneys receive approximately 20% of the total cardiac output out of which 90% is distributed to the renal cortex. Hence the renal tubules and interstitium are maximally exposed and vulnerable to toxin and drug-induced injury. Early and prompt recognition of drug induced renal injury is crucial since it can be easily curtailed and even reversed by stopping the intake of the offending drug.

The list of drugs with adverse effects on the kidney is exhaustive. However we would restrict only to a few, but very harmful ones. Drug induced renal injury can be broadly classified into two categories:

- 1) Glomerular disease
- 2) Tubulo-interstitial disease

DRUG-INDUCED GLOMERULOPATHIES	DRUGS AND INTERSTITIAL NEPHRITIS
MINIMAL CHANGE DISEASE NSAIDs, Rifampin, Ampicillin, Interferon α	ANTIBIOTICS β lactams, Sulphas, Quinolones, Vancomycin, Erythromycin, Rifampicin, Ethambutol, Acyclovir
MEMBRANOUS NEPHROPATHY Penicillamine, Gold, Captopril, Mercury, Chlormethiazole	NSAIDs & COX-2 INHIBITORS
FOCAL SEGMENTAL GLOMERULOSCLEROSIS Heroin	DIURETICS Thiazides, Frusemide, Triamterene
PROLIFERATIVE GN WITH VASCULITIS Allopurinol, Penicillin, Sulfonamides, Thiazides, i.v. Amphetamines	ANTI-CONVULSANTS Phenytoin, Carbamazepine, Valproate
PAUCI-IMMUNE NECROTIZING GLOMERULONEPHRITIS Ciprofloxacin, Hydrallazine	MISCELLANEOUS Captopril, H2 Receptor blockers, Omeprazole, Allopurinol, Indinavir

NSAIDs & KIDNEY

Pain killers have been the major cause of acute and chronic renal injury since time immemorial. When used over long periods (even short term use may cause ARF) they cause irreversible renal damage, which can progress to CRF. The dreaded offenders are propionic acid derivatives like ibuprofen, naproxen, etc.

In NSAID induced renal injury, nephrotic syndrome and ARF frequently coexist due to a combination of acute interstitial nephritis and a glomerular lesion similar to minimal change disease. Membranous nephropathy may occur as an idiosyncratic reaction.

NSAID induced tubulointerstitial nephritis is common in elderly people, perhaps because of the higher incidence of arthritic disorders and the subsequent abuse of pain-killers. Acute allergic interstitial nephritis should not be confused with the acute vasomotor renal insufficiency, which can occur in patients with preexisting underperfusion of the kidney.

The luckier aspect of NSAID induced injury is that stopping the drug usually results in complete reversal of renal dysfunction, at least in early stages.

Often simple clinical disease scenarios are drastically affected by the use of NSAIDs. For example a very common presentation is that of a controlled stable hypertensive going to a dentist, is advised 5 days of NSAIDs, following which he develops sudden worsening of hypertension (due to sodium retention). This

patient may also suddenly present with flash pulmonary edema (due to fluid retention) or (less commonly) with sudden, severe hyperkalemia which may even lead to sudden cardiac death.

THE EFFECT OF ANTIBIOTICS

Cases of antibiotic induced renal injury are usually observed in the hospital setting during treatment of serious infections. The onset is within several days to weeks of initiation of antibiotic therapy. It manifests as rash, eosinophilia and eosinophiluria, as well as sterile pyuria, hematuria, and modest proteinuria (usually <1 g/day). Unlike in NSAID-induced allergic interstitial nephritis, nephrotic range proteinuria is very rare. If a renal biopsy is performed, eosinophils can be seen as a component of the interstitial nephritis. Occasionally, ill-defined granulomas are seen.

Amongst antibiotics, **RIFAMPIN** is unique in that the interstitial nephritis generally occurs when the antibiotic is reintroduced after an interval. Furthermore, the interstitial nephritis associated with it does not manifest with eosinophilia. In some cases, rifampin-associated interstitial nephritis has been reported to show casts containing immunoglobulin light chains in tubular lumens without any evidence of myeloma in the patient. Flu like symptoms, flank pain, hypertension, and oliguric acute renal failure are common. In some patients, circulating anti-rifampin antibodies and IgG deposits along the tubular basement membranes have been reported.

CONTRAST INDUCED NEPHROPATHY

Another important cause of ARF is acute allergic response to i.v. contrasts used in various radio-diagnostic procedures. They cause intra-renal vasoconstriction resulting in acute ischemic pre-renal ARF. This effect is dose related & is characterized by acute onset within 24–48 hrs, peak in 3–5 days and resolution by a week. It is common in CKD patients, diabetics, CCF patients, hypovoleemics, patients with Multiple myeloma, etc.

The solution is reduction in the use of non ionic dyes. Gadolinium or CO₂ contrasts are much safer. The use of saline infusion / Soda bicarbonate is beneficial. N-Acetylcysteine has been shown to play a protective role, but effects are poorly documented.

ACE INHIBITORS & ANGIOTENSIN RECEPTOR BLOCKERS

After the exhaustive list of drugs causing adverse effects on the kidneys, it would only be fair enough to mention about the family of drugs having beneficial effects. ACE inhibitors and Angiotensin receptor blockers play this role.

ACE inhibitors slow the progression of CKD, reduce proteinuria and stabilize & improve kidney function besides exerting beneficial effects on the heart, which indirectly contribute, by improving the blood supply and thus the afferent arteriolar blood pressure. The only contraindication to their use is the presence of bilateral renal artery stenosis.

ARBs reduce proteinuria, the time required for doubling of creatinine and also the time to dialysis.

The prophylactic use of ACE inhibitors in Type-II Diabetes Mellitus preserved kidney function for over 6 years in normotensives without microalbuminuria

- Levi et al : Annals of Internal Medicine 1998

Dual blockade may offer additional renal and CVS protection in Type – I Diabetes with Diabetic Nephropathy

- Parving H.H. JASN 2003

Thus combined use of ACEIs + ARBs is the key to controlling the progression of renal disease.

To conclude the article we would like to share a list of nephrotoxic drugs to be avoided and corresponding safe drugs to be used in existing kidney disease patients and also as a preventive measure because your prescription can make a difference.....

CATEGORY	DRUGS TO BE AVOIDED IN RENAL FAILURE	DRUGS SAFE IN RENAL FAILURE
PAIN KILLERS	NSAIDs- Brufen, Indomethacin, Piroxicam, Diclofenac, Nimesulide Ointments- Volini gel, Pirox gel, Dicloran gel, Nise gel COX2 inhibitors- Celecoxib, Rofecoxib, , Valdecoxib, Aceclofenac Aspirin (unless used in heart or brain disease), Analgin, Novalgin, Baralgin	Paracetamol 650mg (Crocin, Lanol ER) Morphine, Tramadol, Fortwin, Proxymol / Spasmoproxyvon, Ultracet
ANTIBIOTICS	Aminoglycosides- Gentamycin, Amikacin, Netilmicin, Streptomycin Cephalosporins - Cephaloridine, Cefazoline Tobramycin, Septran, Sulfas, Tetracyclines except Doxycycline	Penicillins- Penicillin-G, Ampicillin, Amoxicillin Cephalosporins- Cephalexin, Cephadroxil, Cefotaxime, Cefipime, Ceftazidime, Cefuroxime Quinolones- Ciprofloxacin, Norfloxacin, Levofloxacin Erythromycin, Doxycycline
DIURETICS	Acetazolamide (Diamox), Spironolactone	Furosemide, Torsemide (Dytor), Thiazides
ANTIDIABETICS	Metformin, Pioglitazone	All other classes of drugs are safe
OTHERS	Proctoclysis enema, Eno salt	Simple enema, Neotomic enema, Glycerine syringe enema

Dr. Prashant P. Agarkar, Dr. Umesh B. Khanna

Dietary Management in Chronic Kidney Disease

"Whosoever was the father of disease, an ill-diet is its mother"

The major objective of dietary treatment is:-

- ˘ To prevent protein catabolism and minimise toxicity due to uremia
- ˘ To avoid dehydration or over hydration
- ˘ To correct acidosis
- ˘ To correct electrolyte depletion and avoid excesses
- ˘ To maintain optimal nutritional status
- ˘ To avoid complications such as hypertension, bone pain and central nervous system abnormalities
- ˘ To retard progression of renal failure

Dietary therapy for Chronic Kidney Disease (CKD) involves variable nutrient adjustments primarily in protein, sodium, potassium, phosphate and water, according to individual needs.

Protein:

Protein intake should be sufficient to prevent tissue protein catabolism. At the same time it should not be too much in excess so as to lead to uremia. Protein provided should be of high biological value.

Protein rich foods that could be incorporated in the diet are-

- ˘ Pulses
- ˘ Soyabean
- ˘ Milk and milk products
- ˘ Chicken
- ˘ Fish
- ˘ Eggs or egg whites

Some of the protein rich foods may also contain a lot of phosphorus, which needs to be controlled. Hence, with the advice of the dietician the right amount of each protein source can be planned for good health and strength.

Sodium:

- ˘ Depending on the degree of sodium restriction, all food should be prepared & served without addition of salt, baking soda, baking powder or MSG (mono sodium glutamate or ajinomoto). Reduce the amount of salt in all recipes. Gradually cut back on the use of saltshaker.
- ˘ Carefully read labels of all prepared foods. Look not only for salt but also for bicarbonates of soda (baking soda), baking powder, MSG (ajinomoto), sodium compounds such as sodium benzoate, sodium citrate etc.
- ˘ Avoid medicines, laxatives & salt substitutes (eg: LoNa, rock salt) unless prescribed by the doctor.

Foods to avoid

- ˘ Commercial foods made up of milk, condensed milk, ice-cream, milk shakes.
- ˘ Natural sodium content of animal foods is high & hence meat, fish, chicken, eggs, milk, cheese & paneer should be used in restricted amounts. Organ meats (kidney, liver, brain) also contain more sodium than muscle meat & hence they are best avoided. Shell-fish (crab, lobster, oyster & shrimp) are also high in sodium. Salt water fish contains no more sodium than fresh water fish.
- ˘ Avoid use of canned fruits, dry fruits like raisins & canned vegetables. Spinach, carrots, Beetroot, & white Turnip contain good amount of sodium.
- ˘ Commercially baked products like bread, bread rolls, croissants, brioche, biscuits, cakes, pizzas, pastries etc. should be avoided.
- ˘ Unsalted butter or white butter prepared at home should be used instead of regular market butter.
- ˘ Soft drinks & prepared beverage mixes including fruit flavored powders.
- ˘ Eating snack foods outside like bhel, pani-puri, samosa, ragda-pattice, dahi-wadas, chana- bhatura, burgers, popcorn, wafers, papad, medu-wada etc.
- ˘ Seasoning to avoid includes all types of sauces, pickles.

Foods low in sodium

Cereals, fruits, most vegetables, sugar, oil, cream, unsalted butter & margarine.

Tips:

Try using fresh or dried herbs and spices instead of salt to enhance the flavor of food. Also using souring agents like lime, kokum, tamarind, vinegar etc. helps impart flavor to food low in salt.

Potassium:

All natural foods (except pure fats and sugars) contain potassium. Careful measurement of all potassium rich foods is important in controlling the level of potassium in blood.

High potassium foods that need to be avoided are-

- ˘ All fruits are rich sources of potassium, however, apple, papaya, guava, pear, pineapple and orange have comparatively less potassium and could be advised.
- ˘ Pure fruit juices (fresh/canned), lime juice cordial.
- ˘ Coconut, coconut water, groundnuts
- ˘ Raw vegetables and soups
- ˘ Dals and legumes
- ˘ Cocoa and all cocoa products
- ˘ Aerated drinks (soft drinks)
- ˘ Dry fruits
- ˘ Malted drinks like bournvita, horlicks, beer, drinking chocolate etc.
- ˘ Salt substitutes (eg. LoNa)

To lower potassium content of food:

- ˘ Peel, cut and soak vegetables in water for sometime. Rinse them and boil them in large volume of water. In this way the potassium is leached into the water. This water should be discarded and vegetables cooked as required.
- ˘ Do not use a pressure cooker or microwave for cooking vegetables and fruits.

Phosphate:

Phosphorus is a mineral found in all foods. Large amounts of phosphorus are found in,

- ˘ Dairy products such as milk, cheese, yoghurt etc.
- ˘ Shellfish, seafood, meat, poultry, eggs
- ˘ Nuts & oilseeds
- ˘ Dried beans and peas such as kidney beans, split beans and lentils
- ˘ Beverages such as cocoa, beer and dark cola drinks

To keep blood phosphorus at safe levels, phosphorus rich foods should be limited and phosphate binders should be used with meals.

Water:

- ˘ Avoid salty foods, as these increase thirst
- ˘ If the mouth gets dry , chewing gum or sucking on some hard candies can be tried
- ˘ Small cups should be used for drinking.
- ˘ If possible medications should be taken with meals to avoid taking extra water after meals
- ˘ Drinking in small sips helps drinking less water

Energy giving foods:

When protein, sodium and potassium are restricted , there are some foods that can be eaten which provide sufficient energy despite being low in sodium and potassium.

These include-

- ˘ Sugar
- ˘ Honey
- ˘ Arrowroot
- ˘ Sago (sabudana)
- ˘ Sweets made from cereals like rice, suji, savia, sago etc.
- ˘ Unsalted butter
- ˘ Vegetable oil & ghee
- ˘ Milk based sweets like ice-cream (all flavors except chocolate or cocoa and ones with dry fruits or fruit pieces), pudding, halwa etc.
- ˘ Rice products (poha, kurmura, sevia)
- ˘ Corn

Priya Mendon
Dietician

Mumbai Kidney Foundation

Mumbai Kidney Foundation (MKF) is a project of *Jivan Jyot Charitable Trust* endeavoring to brighten the lives of chronic kidney disease patients.

It is a small effort launched on the auspicious occasion of the first World Kidney Day (9th March 2006) for education, prevention, treatment of kidney disease and rehabilitation of kidney patients.

About MKF's mission:

1) For the common man

MKF mainly aims at creating awareness of kidney diseases by,

- a) Conducting health check up camps
- b) Distribution of educational material
- c) Conducting lectures and discussions for patients
- d) Identifying high risk individuals such as hypertensives, diabetics, relatives of patients suffering from chronic kidney diseases and counseling them about regular kidney check ups.
- e) Educating general practitioners regarding early detection and treatment of CKD patients through regular updates and CMEs.

2) For the Chronic Kidney Disease (CKD) patients

- a) Creating a support group of CKD patients by regular meetings, get-togethers and functions helping them to meet similar patients and discuss common problems.
- b) Providing subsidy by way of a drug bank.
- c) Providing subsidy in investigations and consultations with Nephrologists and other allied branches.
- d) Providing services of medical counselor, psychologist and dietician; spiritual discussions; yoga and meditation at our centers.

3) For End-Stage renal disease patients (ESRD)

- a) Providing subsidized dialysis.
- b) Discount on medicines and injection erythropoietin.
- c) Organising blood donation camps.
- d) Providing food grains and educational help to patient's children.
- e) Promotion of cadaveric transplant.

4) For transplant patients

- a) Providing transplant packages at reasonable rates.
- b) Providing subsidized transplant medicines.
- c) Felicitating kidney donors and forming a transplant club by the transplant patients and of the transplant patients.

5) Rehabilitation of ESRD patients- both dialysis and transplantation

This area at present is neglected and needs special attention to improve the quality of life of ESRD patients giving them dignity and much needed finance to fund their own treatment.

- 1) Providing them ,
 - Aarey milk vending booths
 - Tea-Coffee vending machines
 - Telephone booths
 - Xerox, fax centers
- 2) The trust will start small enterprises like cyber cafes, communication centers, computer classes, coaching classes, women's small scale enterprises, etc. and utilize their skills to provide them with jobs.
- 3) Providing help for kidney patients and their dependents in some form of vocational training

6) Lobbying with the government

Along with like minded foundations such as National Kidney Foundation, Narmada Kidney Foundation and other NGOs to actively make representations to government regarding important CKD related health issues.

- a) Offering handicap status to dialysis patients, helping them with travel, jobs and subsidies.
- b) Procuring subsidy and excise duty cuts in dialysis equipments, CAPD (chronic ambulatory peritoneal dialysis) material and drugs.
- c) Promoting a rational transplant programme.

(7) Setting up a dialysis unit for HIV positive patients

This will be a boon to CKD patients requiring hemodialysis and who are also HIV positive as no dialysis centres offer dialysis to such patients.

(8) Setting up a Mobile dialysis unit

The details about this project are elsewhere in this issue.

How Can You Help?

- 1) Become a MKF member and promote the cause of kidney patients, spread awareness of disease and also avail of subsidies in different aspects of CKD management for your friends and well wishers.
- 2) Select any area and voluntarily help the organization by becoming a Well wisher.
- 3) Contribute financially and gain the blessings of the hapless CRF patients.
- 4) Adopt a kidney patient by joining the various schemes for dialysis and transplant patients.

Contributions to the trust are exempt 50% under section 80-G and 100% under section 35A-C of the IT Act.

Cheques should be drawn on ***Jivan Jyot Charitable Trust A/C Mumbai Kidney Foundation.***

More details about our foundation are available at our website

www.mumbaikidneyfoundation.org

For any queries, you can also contact the ***office of Mumbai Kidney Foundation*** at

Lancelot Kidney and GI Center

111 C, Lancelot, Opp. Shastri Nagar, S.V. Road,

Borivali (W), Mumbai 400 092

Tel. No. : 28016266 / 28626854 / 28012783

Mumbai Kidney Foundation Activities – A Report

Report on health camps

The Mumbai Kidney Foundation, after its launch on 9th March 2006, conducted several kidney disease detection and prevention camps at various hospitals scattered between Borivali and Goregaon. At these camps, blood and urine tests for kidney disease detection, blood pressure and random blood sugar tests were conducted absolutely free of cost. Focus was laid more on subtle signs of renal disease like borderline elevated serum creatinine, minimal level proteinuria and presence of trivial amounts of sugars in urine. The camps were followed up with interactive health education workshops conducted for the lay public which were very well appreciated.

The following are the statistics obtained:

On the 12th of March at Suchak Hospital, out of 198 people screened, 23 individuals were seen to have elevated creatinine levels and 29 others had some other urinary abnormality. 5 individuals were diagnosed as frank chronic renal failure cases.

On the 18th March a similar camp held at Kandivli Hitvardhak Mandal hospital showed that out of 355 people screened, 5 had elevated Creatinine, 75 had urinary sugar leakage and 51 others showed presence of proteins in urine.

On the 19th March a similar camp was held at Borivali Lancelot Medical Centre where 200 odd patients were screened out of which 16 were found to have proteinuria, 10 others showed presence of sugars in urine and 5 had elevated creatinine levels.

The final camp was held on the 26th of March at BK Kidney & GI Centre, Goregaon. It picked up 8 cases of proteinuria, 10 people with elevated Creatinine and 17 others whose urine showed presence of pus cells.

The success of all such camps depends solely on the awareness in the general population about the relatively silent and slowly invasive nature of kidney diseases. This may start with anything trivial, right from burning urination to just a vague aversion for food and can rapidly progress in a very short while to renal failure and even death if left unattended. So it's time to wake up, open your eyes, decide and take the necessary steps to avoid falling into the clutches of CKD as it is rightly said, PREVENTION IS BETTER THAN CURE.

Report on distribution of school essentials

On 4th June 2006, MKF carried out mass distribution of school essentials for the children of dialysis patients and also to their service providers- dialysis technicians, nurses and ancillary staff. The package included school bags, tiffin box, school stationery and rain-gear for children from Kg to Std.10.

The programme kicked off with tea and biscuits being served to the patients at 10.00 am at the Hitvardhak Mandal Hall, Kandivli. The guests of honor at the occasion were Rotarian Anil Agarwal and President of Hitvardhak Mandal Shri Bhagwati Bhai Shroff. The programme was a huge success with over a hundred and fifty patients availing the benefits.

Forthcoming Projects Of MKF

Inspired by the success of its two camps, Mumbai Kidney Foundation has planned to provide a variety of ITI certified vocational training in association with Rotary group. This would include carpentry, electrician, fitter, plumber and computer courses for the relatives of dialysis patients.

MKF has also planned its forthcoming projects which include rehabilitation of kidney patients; commissioning of the Mobile Dialysis Unit which will be functioning soon; blood donation camps to benefit the CKD patients who require frequent blood transfusions; free drug distribution camp once in three months; and establishing a dialysis centre for HIV positive patients;

Our survey of HIV +ve Chronic Renal Failure [CRF] patients requiring hemodialysis facilities suggests that "A Dialysis Center exclusively for HIV +ve kidney failure patients" is the need of the hour. There are no maintenance dialysis facilities available for such patients who are left with very few options. We propose to very soon start a Dialysis Center which will be run by other HIV +ve patients who will be trained by us as Renal Technicians but will be supervised by Senior Technicians who will manage the Unit for the Foundation. In this way we will provide succor not only to HIV +ve CRF patients but also a form of rehabilitation to other HIV +ve people.

MKF will be active in its endeavor to find ways and means to see improvements in the lives of kidney patients and their families.

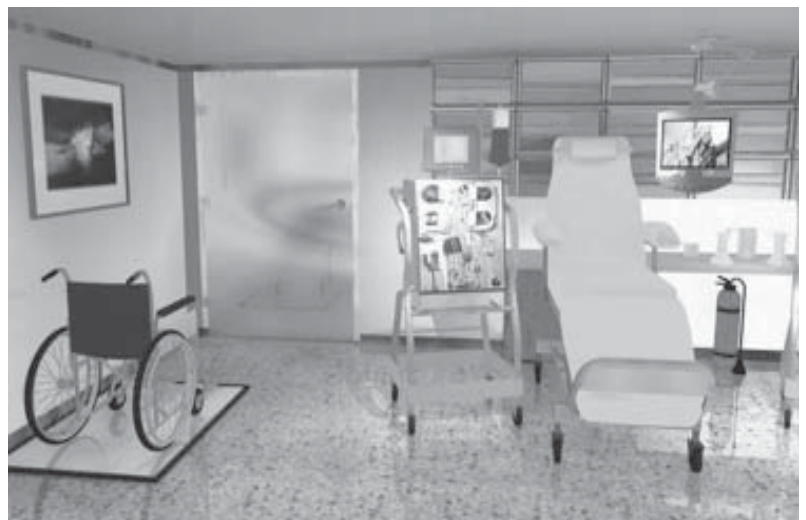
Mobile Dialysis Unit

Dialysis on wheels is a mobile vehicle that has all the necessary paraphernalia required for hemodialysis. The concept of mobile dialysis ambulance is very popular in developed countries like UK, USA, Australia and New Zealand wherein the serious immobile patients and patients living in distant or far-off localities are given dialysis in the ambulance itself. The core concept of mobile dialysis is mobilizing a dialysis unit and bringing the treatment to patients in the geographic area of need instead of patient traveling long distances to a fixed location for dialysis treatment. There is no mobile dialysis unit in existence at this time in Mumbai though it has more than 100 dialysis centers all over the city. This kind of service is available in India only in Bangalore but it still has its own limitations that of providing dialysis to patients living on the ground floor only. MKF has conducted its own survey in order to determine dialysis needs and options in Mumbai as well as design requirements that would make a mobile project viable. The beneficiaries of this service will be:



1. Patients who are stable and wish to have hemodialysis at a place of their choice
2. Patients in acute emergencies incapable of mobilization to hospital / dialysis centre
3. Those who are immobile and have difficulty in commuting to the hospital / clinics – paraplegics, hemiplegics, geriatric patients, etc.
4. Peripheral nursing homes where dialysis facilities are not available / adequate
5. Paediatric patients in which case getting the patient to the dialysis centre is itself a challenge for the parents.
6. Dialysis in rural areas / remote places

The Mobile Dialysis Ambulance will provide a complete dialysis set up for patients within the ambulance along with cardiac care facilities and will be manned by a qualified doctor and renal technician. The trailer, a self-sustainable dialysis unit will comprise of a treatment area, nurses' station, water treatment room and washing. Service connections for electricity, water and sewer are included as well. The patient will be provided dialysis inside an air-conditioned custom made van with state-of-art machine on a state of art dialysis chair at very reasonable rates. This service is proposed to be available to patients from September 2006 onwards.



Fauzia Ghani
Chief Co-ordinator, MKF

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