

TROPICAL JOURNAL OF NEPHROLOGY

The Official Journal of the Nigerian Association of Nephrology

AIMS and SCOPE

The aims and scope include the following:

1. *To provide a medium of exchange of ideas and knowledge of nephrology in the tropics through publication of research works, clinical experiences and relevant articles.*
2. *To promote nephrology education, clinical practice and research through publication of original research works, innovative clinical experience and authoritative review articles on topical issues.*
3. *To provide an avenue for global dissemination of consensus positions on issues of concern in tropical nephrology through publication of proceedings of consensus meetings, dedicated conferences and commissioned reviews.*
4. *To serve as a scientific link between the Nigerian Association of Nephrology and other such International Organizations all over the world.*

Publication Details

The Tropical Journal of Nephrology is owned by the Nigerian Association of Nephrology and published by Samdavies Publishers, His Grace Villa, Plot 4, Adenekan-Oyejide Street, Olorunto Layout, Kuelu, Oloode, New Ife Road, Ibadan, P. O. Box 27411, Agodi, Ibadan, Nigeria. *Tel:* 234 8023451177, 07034885019, 08054569871, 08084878480.
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Subscription request should be sent to the Managing Editor. Subscription prices (2 issues) for individuals in Africa is N3, 000.00 and \$50 for outside Africa. Institutional rate is N4, 500.00 for African countries and \$60 for countries outside Africa.

Articles for submission should be forwarded to the The Editor-in- Chief through: The Managing Editor, Dr. J.O. Awobusuyi, Department of Medicine, Lagos State University College of Medicine, Ikeja, Lagos, Nigeria. E-mail: tropicaljournal_2005@yahoo.com. Website: www.tjn-ng.com.

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Editorial

Pockets of data: Bits and pieces of the jigsaw puzzle.

The process of establishing epidemiological information in any subspecialty could be likened to adding pieces to a jigsaw puzzle. Some pieces may appear to be more important than others because they have the best colours, or the best shape. But, are they really more important than any other? The answer is probably no, because the jigsaw is incomplete without every piece put in place. Thus, every piece of data no matter how small is important in the construction of the global picture.

Hepatitis C virus (HCV) remains common in patients undergoing regular dialysis and is an important cause of liver disease in this population both during dialysis and after renal transplantation (RT). Anti-HCV screening of blood products has almost eliminated posttransfusion HCV infection but acquisition of HCV continues to occur in dialysis patients because of nosocomial spread. Hepatitis C virus (HCV) remains common in patients undergoing regular dialysis and is an important cause of liver disease in this population both during dialysis and after renal transplantation (RT). Anti-HCV screening of blood products has almost eliminated posttransfusion HCV infection but acquisition of HCV continues to occur in dialysis patients because of nosocomial spread.

In this edition, pieces of epidemiological data on important topics in nephrology by our colleagues in various parts of the country are put together. Hepatitis C virus infection is an important cause of liver disease in the dialysis population. Even though anti-HCV screening of blood and blood products has almost eliminated post transfusion HCV infection, acquisition of HCV still poses a health challenge in the dialysis population because of nosocomial spread. Umatte *et. al.* investigated the prevalence of Hepatitis C Virus infection among haemodialysis patients in North-Eastern Nigeria.

Bello and his colleagues evaluated epidemiological data on the prevalence of hypertension and associated cardiovascular risk factors in patients attending a family practice clinic in Ile-Ife, South-west Nigeria, they determined the prevalence of hypertension amongst a family practice population and ascertained the anthropometric and clinical correlates of hypertension in the studied population.

Encouraging resident doctors to develop abstracts presented during conferences into manuscripts was a major point stressed during our last conference. Okwuonu's abstract won an award during the conference and it is indeed the pleasure of the journal to publish his findings. Okwuonu (now a practicing nephrologist) and his colleagues looked at Resident Doctors' Knowledge and Practice of Chronic Kidney Disease: Diagnosis and Referral Pattern. Their findings may have direct implication on the training of resident doctors, as the authors observed significant deficiencies in knowledge of chronic kidney disease management (especially in residents that are not in the internal medicine program).

Utev presents an interesting review on preventive maintenance of dialysis equipment. This article is definitely a must-read for all stakeholders involved with renal replacement therapy. Utev identified the lack of maintenance culture (which has bedeviled most of our dialysis units) as a leading cause for frequent brake down of dialysis machines and water treatment equipment and proffers good reasons for performing annual preventive maintenance of our dialysis machines to ensure optimal performance of the machines through out the year.

Lastly, a case report by Adekanbi *et. al* documented a case of Congenital Mesoblastic Nephroma. A rare clinical occurrence in our environment. High index of suspicion is required in the diagnosis and a constant reminder through case reports/series such as this is essential. Just like the small pieces in the jigsaw puzzle, the articles presented seem like unrelated pieces, but in reality, every piece of information presented by the authors, provide relevant insights into the practice of nephrology in our environment.

Contributions to the Journal by members and interested authors/groups are surely important to the development of nephrology practice in Nigeria. So, are you willing to contribute relevant pieces to the jigsaw? Will you be that all-important missing piece? Your research contribution to nephrology is important, send in your manuscript to the TJN. The Journal is willing to promote your contribution(s).

Dr JO Awobusuyi,

Associate Prof. of Medicine,

Editor

Prevalence of Hepatitis C Virus Infection Among Haemodialysis Patients in North-Eastern Nigeria

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ABSTRACT

Background: There is paucity of information on the prevalence of HCV infection among patients with chronic kidney disease in Nigeria in general and North East Nigeria in particular, it is therefore necessary that the extent of the problem be ascertained in our centre.

Materials and Method: We studied 100 patients with stage 5 chronic kidney disease requiring haemodialysis and attending the nephrology clinic or admitted into the medical wards of the University of Maiduguri Teaching Hospital. Patient's demographic data including age and sex, were recorded. Anti HCV testing was made by the 2nd generation ELISA.

Result: Out of the 100 patients, 68 were males and 32 were females. Their ages ranged between 15 and 74 years with a mean (\pm SD) of 39.9 ± 13.58 years. The mean (\pm SD) age of the male patients was 41.71 ± 13.27 years and that of female patients was 36.06 ± 13.64 years. Fifteen (15%) patients and eight (4%) of the controls were positive for HCV antibody, (p value = 0.001). We did not find age or sex predilection of HCV infection.

Conclusions: Hepatitis C virus infection is highly prevalent in haemodialysis patients with chronic kidney disease.

INTRODUCTION

Hepatitis C virus (HCV), a member of the family *Flaviviridae*, is an RNA virus which was first identified in 1989 and recognized as the primary cause of non-A/non-B hepatitis¹. There are about 170 million chronic HCV carriers throughout the world with an estimated global prevalence of 3%^{2,3}. In Africa epidemiological data are deficient but a prevalence of 6% has been documented^{4,5}.

The development of haemodialysis, peritoneal dialysis and renal transplantation has considerably improved the life expectancy of patients with chronic kidney failure, a situation that has however, led to the emergence of various concurrent diseases, including viral hepatitis B and C. HCV infection can detrimentally affect patients throughout the spectrum of chronic kidney disease (CKD): it can lead to cryoglobulinemic glomerulonephritis and have a negative effect on the survival of chronic dialysis patients^{6,7}. This seems to be a consequence of blood transfusion and, in the case of patient undergoing haemodialysis, there is an additional risk due to blood handling in the haemodialysis unit.

The prevalence of hepatitis C viral infection in haemodialysis units varies from 8-51%⁸⁻¹⁰. Agbaji in Jos Nigeria found a prevalence of 22% among their haemodialysis patients¹¹. This variation results from the region in which the haemodialysis unit is located, the amount of transfusion and the duration of haemodialysis. A higher prevalence of HCV

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infection has been reported in patients on both haemodialysis and peritoneal dialysis than in the general population¹².

Following exposure to hepatitis C virus, approximately 85% of individuals develop chronic infection¹³. Transmission of HCV takes place most readily through serum¹⁴. Sexual transmission is rare because of the usually low level of viraemia. Vertical transmission is possible with marked viraemia. The spread of HCV in renal patients on haemodialysis has been reported not to occur via the haemodialysis machine but is presumably carried over by medical personnel in spite of preventive measures.^{14,15} It has also been reported that the rate of anti HCV positivity is related to the length of time on dialysis treatment and number of transfusions.¹⁶

Factors associated with poor prognosis for chronic HCV infection include male sex, age at HCV acquisition of more than 40 years, alcohol consumption, iron overload, high titres of viral ribonucleic acid (RNA), immuno-suppression and high gamma glutamyl transferase and bilirubin levels^{17,18}. Hepatitis C viral infection is a significant cause of membranoproliferative glomerulonephritis (MPGN), especially in countries where HCV is highly prevalent. The virus is present in about 60% of patients with MPGN in Japan and in 10 - 20% of patients with MPGN in the United States¹⁹. The greater prevalence of MPGN in some developing countries may be due to greater prevalence of chronic HCV infection¹⁹. Also, HCV infection has been reported to be present in about 7 - 9% of patients with kidney failure who have not undergone dialysis and who have no history of blood transfusions²⁰. Nosocomial transmission of HCV during dialysis may occur, independent of blood transfusions²⁰.

The number of chronic kidney failure patients sustained by haemodialysis has been on the increase in Maiduguri perhaps due to the availability and increased awareness of renal replacement therapy by the people.

Our dialysis unit, which was established 14 years ago (2000), only commenced HCV screening 10 years ago (2004). The implication of this is that there might have been cross infection and HCV infected blood might have been transfused to our patients, hence our decision to embark on the study.

Justification for the study

There is paucity of information on the

prevalence of HCV infection among patients with chronic kidney disease in Nigeria in general and North East in particular, it is therefore necessary that the extent of the problem be ascertained in our centre.

Hitherto, screening for antibodies (abs) to HCV was not a routine practice in our centre and so we may have dialyzed many patients with this infection with any of our machines. Now that it is mandatory to screen for Abs to HCV before dialysis in our centre, it is justifiable to screen all our patients and see how many patients are actually hepatitis C viral Abs positive.

MATERIALS AND METHODS

This was a cross-sectional study involving 100 consecutive patients with stage 5 chronic kidney disease requiring haemodialysis and attending the nephrology clinic or admitted into the medical wards of the University of Maiduguri Teaching Hospital. Patient's demographic data including age and sex, were recorded. Blood samples were drawn at entry for creatinine clearance, serum electrolytes, urea, and creatinine, including serum calcium and phosphate, liver function tests, HIV screening, HCV abs, HBsAg and full blood count (FBC). Estimated glomerular filtration rate (eGFR) was calculated using the Cockcroft-Gault equation⁶³. Abdominal ultrasound scan was also done on all the patients. The controls were 198 patients attending medical outpatient clinics or admitted to medical wards that do not have CKD. Patients were matched for age, sex and GFR and their clinical characteristics and laboratory findings were compared. The aim of this study was to evaluate the prevalence of hepatitis C virus infection among haemodialysis-requiring CKD patients in Maiduguri. Ethical approval for the study was obtained from the Research and Ethics Committee of the University of Maiduguri Teaching Hospital.

RESULTS

One hundred consecutive kidney failure patients made up of 68 males (68%) and 32 females (32%) were enrolled into the study. Table 1 shows the age and sex distribution of the patients. Most of the patients (53%) were in the 3rd and 4th decades of life. Their ages ranged between 15 and 74 years with a mean (\pm SD) of 39.9 ± 13.58 years. The mean (\pm SD) age of the male patients was 41.7 ± 13.3 years and that

of female patients was 36.1 ± 13.6 years. Seventy nine (79%) -patients comprising of 52 males and 27 females were married while 21 (21%) of the patients comprising of 16 males and 5 females were single.

Table 1 also shows most of the patients (32%) had secondary education followed by tertiary

unemployed. Semiskilled workers followed with 27%. Twenty-three percent of the study patients were professionals while 14% were artisans.

Table 2 shows that 15 (15%) of the study patients were positive for HCV antibody, while the remaining 85 (85%) were negative. This number

Table 1: socio-demographic characteristics and Anti-HCV Status

Parameters	Frequency n (%)		Total
Age groups (years)	male n(%)	females n(%)	
=19	3(3)	3(3)	6(6)
20-29	9(9)	8(8)	17(17)
30-39	17(17)	7(7)	24(24)
40-49	20(20)	9(9)	29(29)
50-59	11(11)	3(3)	14(14)
60-69	6(6)	2(2)	8(8)
=70	2(2)	0(0)	2(2)
Total	68(68)	32(32)	100(100)
	Anti-HCV status		
Age groups (years)	negative n (%)	positive n (%)	
=19	5(1)	1(1)	6(6)
20-29	14(14)	3(3)	17(17)
30-39	22(22)	2(2)	24(24)
40-49	23(23)	6(6)	29(29)
50-59	12(12)	2(2)	14(14)
60-69	7(6)	1(1)	8(8)
=70	2(2)	0(0)	2(2)
Total	85(85)	15(15)	100(100)
Gender	anti-HCV negative (%)	anti-HCV positive n(%)	
Male	59 (59%)	9 (9)	
Female	26 (26)	6 (6)	
Total	85(85)	15(15)	
Occupation	frequency n (%)		
Professionals	23 (23)		
Semi-skilled	27 (27)		
Artisans	14 (14)		
Unemployed	36 (36)		
Total	100(100)		
Educational status	frequency n (%)		
Primary	7(7)		
Secondary	32(32)		
Tertiary	31(31)		
Non-formal	30(30)		
Total	100(100)		

education in (31%). Thirty patients (30%) had non-formal education whereas 7 (7%) had primary education. Majority of the study subjects (36%) were

reflects the prevalence among patients with stage 5 chronic kidney disease. Eight (4%) patients among them were positive for HCV antibody while the

Table 2: Comparison of anti-HCV status between cases and controls

Anti-HCV status	Case n(%)	Controls n(%)
Positive	15 (15)	8(4)
Negative	85 (85)	190(96)
Total	100(100)	100(100)

remaining 190 (96%) were negative. There is statistically significant difference in the prevalence of infection with HCV among cases and controls (χ^2 value = 11.205, $p = 0.001$).

Tables 1 also show the age and sex distributions of HCV antibody among the study patients. The age group that has the highest prevalence of HCV infection is 40 – 49 years. This age group equally has the highest number of patients recruited into the study. When subjected to statistical analysis, we found no statistically significant difference in the age distribution of infection with HCV (χ^2 value = 2.077, $p = 0.91$). Nine (14%) out of the 68 male patients in this study were HCV positive, while 6 (18%) out of 32 female patients were HCV positive (χ^2 value = 0.519, $p = 0.47$).

DISCUSSION

This study revealed that the prevalence of HCV infection in haemodialysis requiring CKD patients was 15%. This was far higher than the prevalence of HCV infection in the control group (4%), the general population worldwide (which was 3%), and African epidemiological data, which was reported as 6%²⁻⁵. The prevalence of HCV infection in haemodialysis units worldwide varies from 8-51%⁸⁻¹⁰. Agbaji in Jos Nigeria found a prevalence of 22% among their haemodialysis patients¹¹. This wide range is influenced by factors such as location of haemodialysis unit, blood transfusion and the duration of haemodialysis²¹. Our dialysis unit, which was established 7 years ago (2000), only commenced HCV screening 3 years ago (2004). The implication of this is that there might have been cross infection and HCV infected blood might have been transfused to our patients, hence our relatively high HCV positive prevalence rate. As a way of stemming the trend,

we now screen our patients routinely for HCV abs and HBsAg before haemodialysis. In addition we have dedicated separate dialysis machines for HCV and HBV positive patients, and we now screen all blood donors routinely before bleeding them. Dialyser reuse, which could favour transmission of infection, could not have been contributory because since inception in our centre we discard all dialysers, femoral catheters, bloodlines, and syringes and needles after single use. A major contributory factor to the high prevalence may be transfusion of blood to the patients in many peripheral hospitals around Maiduguri prior to presentation in our haemodialysis unit. This is particularly common among patients that have been on haemodialysis for long and those coming from far places for haemodialysis. The fact that most centres in north eastern Nigeria have no facilities to screen for HCV abs may also confound the picture.

From our study we did not find any age or sex predilection of HCV infection. It is clear that the age group that has the highest number of patients who are positive for HCV abs also has the highest number of cases recruited into the study ($p = 0.91$). This agrees with the study by Sahin *et al* who found no significant difference in the mean ages of HCV positive cases and that of HCV negative controls²².

Even though we found that males have the highest number of patients with HCV abs, it is just a reflection of the population of patients recruited into the study. We did not find any statistical difference between gender and HCV seropositivity. This is similar to the findings of Sahin *et al* who also established that there was no sex predilection for HCV infection²².

CONCLUSION

Hepatitis C virus infection is prevalent in haemodialysis patients with chronic kidney disease. Routine screening for HCV should be done before blood transfusion. All safety measures should be taken in our haemodialysis units to prevent cross infection among patients and staffs. These safety measures include; discarding syringes, needles, gloves, bloodlines and dialysers after single use, and the use of sterile dressings on each patient visit.

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Resident Doctors' Knowledge and Practice of Chronic Kidney Disease: Diagnosis and Referral Pattern

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ABSTRACT

Background: The prevalence of chronic kidney disease (CKD) in Nigeria is on the increase. Most patients with CKD present first to non-nephrologists and later to nephrologists with complications or in end-stage renal disease (ESRD). To prevent early progression of CKD to ESRD, early diagnosis, optimal care and timely referral to nephrologists are crucial. The aim of this study is to assess the knowledge of CKD diagnosis, care and referral practices amongst resident doctors in Nigeria.

Methods: Self-administered questionnaires were distributed to resident doctors in diverse subspecialties attending an update course on medical ethics organized by the West African College of Physicians in August 2013 at the main auditorium in University College Hospital, Ibadan Nigeria. The questionnaires were designed to elicit their knowledge of CKD diagnosis, common causes of CKD, screening of patients at risk of CKD, target blood pressure control and referral pattern.

Results: Three hundred and forty (340) questionnaires were analyzed. Respondents were spread across the six geopolitical zones of Nigeria and different subspecialties. These comprised of 24.4% in internal medicine 17.4% in paediatrics, 16.8%, 30% and 11.4%, in community medicine, family medicine and surgery respectively. Among the respondents, 280 (82.3%) would use glomerular filtration rate (GFR)

as the main diagnostic criterion for CKD while its use as an indicator for assessing the severity of CKD was considered by 282 (82.9%). Up to 68.8% did not know the correct blood pressure targets in CKD management. Furthermore, 27.4% of the respondents would use GFR in making decisions for referrals while 60.9% would use serum creatinine in taking such decisions. For referral to nephrologist, 40.6% would refer completely to the nephrologist, 55.4% would consider co-management while 4% did not intend to refer to the nephrologist at all. The mean scores of knowledge of the internal medicine residents was significantly higher than that of non-internal medicine residents ($p < 0.01$).

Conclusion: Resident doctors in Nigeria have good knowledge of CKD diagnosis and criteria for referral to a nephrologist. Internal medicine residents have better knowledge of CKD diagnosis, screening and nephrology referral compared to residents in other specialties.

Keywords: Resident doctors, Chronic kidney disease, GFR, Proteinuria, Nephrologist, Nigeria.

INTRODUCTION

Chronic kidney disease (CKD) is defined as kidney damage or glomerular filtration rate (GFR) $< 60\text{ml}/\text{min}/1.73\text{m}^2$ for three or more months with implications for health [1]. It is an increasingly

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prevalent health problem worldwide that may lead to poor outcomes of end-stage renal disease (ESRD) and cardiovascular disease [2-3]. Data from around the world suggest that CKD prevalence is between 10-16%, [1] with an annual growth rate of 8% [4]. The exact prevalence of CKD in Nigeria is not known; while hospital based data indicate prevalence of 8-10% [5-7] community based studies showed prevalence of 11-27.3% [8-10].

The cost of management of end stage kidney disease is exorbitant and far beyond the reach of an average patient in developing countries like Nigeria [11]. The average monthly cost of three sessions per week haemodialysis (if consumables are not recycled) is about N300,000 (1,765USD). This is largely unaffordable by most Nigerians, as there is no social security system or health insurance scheme in place to assist the patient on renal replacement therapy. As such the burden is borne solely by the patient and relatives [12]. Meanwhile, 70% of Nigerians live below the poverty line [13]. Hence, most patients are under dialyzed, and only less than 2% of patients who commence dialysis are able to maintain it for more than 12 months [14].

In the light of the tendency of CKD to progress to ESRD, the economic burden of ESRD management and the excess morbidity and mortality associated with it, current clinical practice guideline emphasize the need for CKD prevention largely by screening of persons at increased risk of CKD. Examination of urine for markers of kidney damage (proteinuria, haematuria, urine sediment abnormalities) and estimation of kidney function from glomerular filtration rate (calculated from serum creatinine measurement) constitute the cornerstone of screening for CKD. These criteria for definition of CKD are objective and can be ascertained by means of simple laboratory tests without identification of the cause of disease, thereby enabling detection of CKD by non-nephrologist physicians and other health professionals

Most patients with CKD presenting to tertiary hospitals are likely to be seen by a non-nephrologist first. It has been reported that non-nephrologists are less likely than nephrologists to recognize CKD and to refer patients at the appropriate referral time [15]. A physician's insufficient awareness of CKD can cause late diagnosis of CKD, late or lack of referral to the nephrologist, and failure to apply established care guidelines, all of which may lead to poor outcomes

for CKD patients, frequent hospitalization and the urgent need for dialysis [16].

This study is therefore aimed at investigating the pattern of CKD screening, diagnostic tools employed, initial evaluation and treatment, and referral practices among non-nephrologists in Nigeria. We also sought to find out if there was any difference in the knowledge of resident doctors in internal medicine compared to those in other subspecialties with regards to the different domains of CKD evaluation. Findings from this study will help initiate concerted efforts towards educating the resident doctors on basics of CKD diagnosis, need for screening patients at first contact, especially at risk patients and the need and time for referral to the nephrologist. This will improve outcome of management of CKD in our hospitals.

METHODOLOGY

This was a cross sectional study involving doctors in the residency training program for the award of the fellowship of the West African College of Physicians in their respective faculties. The study was conducted during a nationally organised continuing medical education workshop on medical ethics held between 8th and 9th August 2013 at the main auditorium of University College Hospital Ibadan, Nigeria. A previous study showed that 33% of specialist physicians in West African sub region have good knowledge of CKD diagnosis [17]. The sample size in this study was extrapolated from this value at 95% confidence level with a 5% margin of error using appropriate formula [18]. This gave a minimum sample size of 339. However, a total of 400 questionnaires were distributed to accommodate non-responders. The questionnaires were distributed consecutively to consenting participants.

Questionnaire development and contents: Existing guidelines for detection and management of CKD were reviewed.^{1, 19, 20} Themes pertinent to resident doctors who may be offering pre-ESRD care were identified. We designed questions testing for knowledge of definition, risk factors, screening of at risk patients, laboratory evaluation, initial management of CKD, identification of complications and indications for nephrology referral. Questions on hemodialysis adequacy, peritoneal dialysis, vascular access, transplantation, and management of dialysis patients were considered to be outside the realm of the doctors. A 44-item paper questionnaire was

developed consisting of clinical vignettes with multiple-choice questions. Face and content validity were evaluated by two nephrologists, one cardiologist, and two resident doctors. Approval for the study was obtained from the Health Research and Ethics Committee of Federal Medical Center (FMC) Umuahia, Abia State, Nigeria.

A pilot study was performed among doctors at the residency program in FMC Umuahia, Abia State, made up of internal medicine residents ($n = 25$) and family medicine residents ($n = 15$). These were excluded from the subsequent analysis. On the basis of the feedback obtained, one question on complications of CKD was added, the clarity of the questions improved, and the option "I don't know" was also added to few questions.

The questionnaires were self-administered consecutively to consenting participants and consisted of multiple choice questions organized into five sections. The questions on the first section bothered on awareness of practicing guidelines and diagnosis of CKD. The second section bothered on identification of risk factors for CKD and screening of at-risk subjects. The knowledge of laboratory evaluation necessary in the initial evaluation of CKD was assessed in the third section while the fourth section bothered on identification of potential complications of CKD and institution of measures necessary to slow progression of CKD. Finally, the fifth section evaluated the knowledge of the participants on indication for referral of patients to Nephrologist.

Statistical Analysis

Statistical package for Social Science (SPSS) version 21.0 (IBM Corp, Armonk, NY, USA) was used in data analysis. Data were presented as descriptive and inferential statistics. Chi-square test was employed to detect any differences in categorical data between the internal medicine and non-internal medicine residents for each question. Responses were evaluated against a panel of pre-defined ideal answers. A score of 22 out of 44 (50%) was used as cut-off for adequate knowledge. Independent sample t-test was used to compare the mean knowledge scores between the internal medicine resident doctors and the non-internal medicine resident doctors. A p value < 0.05 was considered statistically significant.

RESULTS

Four hundred (400) questionnaires were distributed, 367 were returned (a response rate of 92%). Of the returned questionnaires, 340 were completely filled and thus used in the analysis. The characteristics of the respondents are shown in Table 1.

Ninety one (26.7%) of the respondents correctly identified existing Nigerian and international guideline for management of CKD while 249 (73.2%) were not aware of any practicing guideline. Estimated glomerular filtration rate from prediction equations, urinalysis/microscopy and renal imaging were correctly identified as parameters for diagnosis of / screening for CKD by 280 (82.3%), 160 (47%) and 142 (41.8%) of respondents respectively. There was a statistically significant difference between the different specialties in terms of use of urinalysis/urine microscopy (Int.Med-53%, Paed-40.7%, Comm.Med-22.8%, Fam.Med-46.1%, Surg-35.9%; $X^2=14.10$, $df=4$, $p<0.01$) as a useful diagnostic tool. Furthermore, 282 (82.9%) would use GFR in monitoring severity of CKD, 5.8% and 4.5% would respectively use serum creatinine level and clinical features while 6.8% were not sure of which parameter to use in monitoring of CKD severity.

Fifty three (15.6%) respondent would screen all patients they come in contact with for CKD, 279 (82%) would only screen for CKD in patients considered at risk of CKD while 7 (2%) would not screen patients at all for CKD.

Table 2 shows the positive responses of the respondents in terms of knowledge of risk factors, complications of CKD and measures that retard CKD progression. There was a statistically significant difference between the different specialties across all the domains of knowledge assessed. The frequency of screening for CKD in "at risk" patients vary among the doctors. Using Diabetes mellitus as an example, only 146 (42.9%) and 148 (43.5%) would screen the patients for proteinuria every 6 months. Others will do so at other intervals like 3 monthly (29.7%), annually (20.3%) and every 2 years (1.2%).

After a diagnosis of CKD, the laboratory investigations identified by the participants for initial evaluation of the patients are shown in figure 1. There was a statistically significant difference across the specialties with regards to evaluation for anaemia (Int.Med-81.7%, Paed-81.4%, Com.Med-63.2%, Fam.Med-54.9%, Surg-48.7%; $X^2=26.40$, $df=4$, $p<0.01$) and dyslipidaemia (Int.Med-62.7%, Paed-45.8%, Com.Med-12.3%, Fam.Med-17.6%, Surg-

Table 1. Characteristics of the respondents

Variable	Number	Frequency (%)
<i>Gender</i>		
Male	214	62.9
Female	126	37.1
Mean age ± SD (years) = 33.6±4.5		
<i>Specialties</i>		
Internal Medicine (Int.Med)	83	24.4
Paediatrics (Paed)	59	17.4
Community Medicine (Com.Med)	57	16.8
Family Medicine (Fam.Med)	102	30.0
Surgery	39	11.4
<i>Geopolitical zone of practice</i>		
North-West	57	16.8
North-Central	72	21.2
North-East	45	13.2
South-West	42	12.4
South-South	54	15.9
South-East	70	20.6

Number of years of experience post degree qualification

< 5 years	165	48.5
>5 years	175	51.5

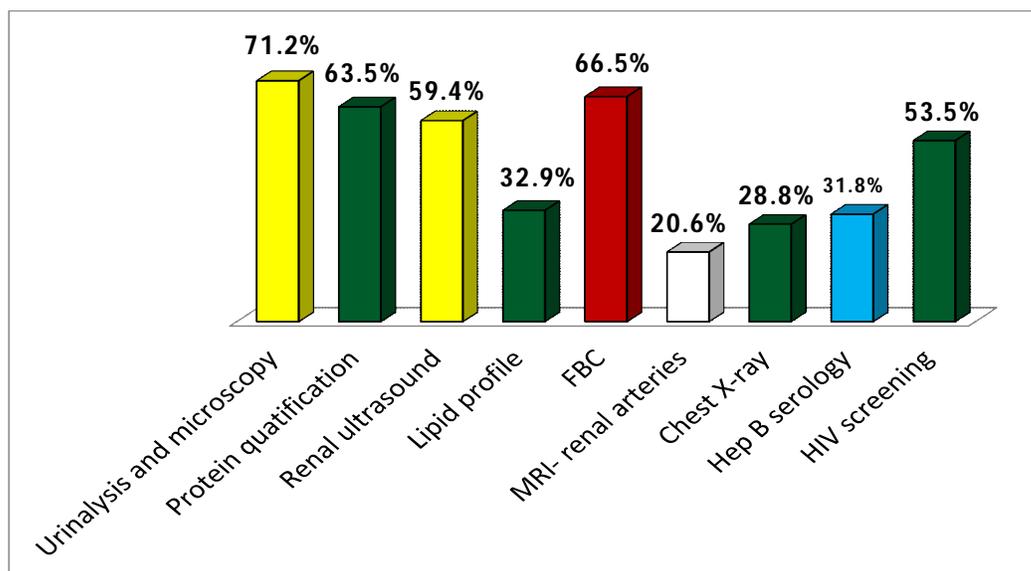


Figure 1. Laboratory evaluations employed by respondents in the initial evaluation of patients with CKD.

FBC- Full blood count; MRI- Magnetic resonance imaging; Hep- Hepatitis; HIV- Human immunodeficiency virus.

Table 2. Knowledge of respondents regarding risk factors, complications and measures that retard progression of CKD

Variable	All	Int. Medicine Medicine	Pediatrics	Family Medicine	Community Medicine	X ² value	p-value
<i>Risk Factors for CKD</i>							
Hypertension	95.3	97.6	94.9	96.1	87.7	10.30	0.035
Diabetes	90.3	100	91.5	89.2	80.7	16.58	0.002
Herbal Medications	72.1	85.5	79.7	64.7	66.7	16.07	0.003
NSAIDS	44.1	61.4	41.8	36.3	33.3	15.56	0.004
Low Birth Weight	67.1	87.6	83.1	64.7	43.9	47.50	0.000
Age>60years	55.6	45.8	40.7	38.0	43.9	15.52	0.004
Family history	43.2	72.3	54.2	28.4	24.6	51.13	0.001
<i>Complications of CKD</i>							
Anaemia	76.8	98.8	74.6	66.7	71.9	31.55	0.000
Bone disease	65.6	86.7	76.3	53.9	57.9	33.62	0.000
Malnutrition	49.7	77.1	59.3	45.1	15.8	28.71	0.010
Neuropathy	67.4	92.8	67.8	55.9	59.6	37.24	0.001
Hypertension	71.8	96.4	71.8	59.8	57.9	39.16	0.001
Coronary artery disease	37.6	71.1	37.6	22.5	12.3	68.96	0.000
Stroke	38.8	79.5	38.8	22.5	14.0	85.93	0.020
Growth restriction	56.8	77.1	78.0	45.1	38.6	43.45	0.000
<i>Measures that retard CKD progression</i>							
Blood sugar control in DM	71.8	94.0	74.6	56.9	66.7	32.85	0.001
Control of blood pressure	69.4	92.8	76.3	55.9	63.2	36.93	0.000
Use of ACE/ARB	63.8	89.7	67.8	48.0	59.6	48.88	0.000
Ceassation of smoking	60.6	90.4	62.7	46.1	64.4	47.08	0.004
Weight management	67.4	89.8	67.8	55.9	59.6	35.27	0.001
Optimizing nutrition	72.9	96.4	71.2	64.7	63.2	32.04	0.000
Avoiding Nephrotoxins	70.3	92.8	61.7	55.9	58.6	35.08	0.000
Lipid control	69.4	92.8	67.8	62.7	59.6	30.55	0.001

Values in percentage are percentages within specialty

20.5%; $X^2=62.10$, $df=4$, $p=0.01$). Seventy participants would request for magnetic resonance angiogram of renal arteries in the initial evaluation of a patient identified with CKD. Among them, 18% were within 5 years post qualification while 82% are above 5 years post qualification. This difference was statistically significant ($X^2=15.62$, $df=1$, $p=0.02$).

The target blood pressure control in patients with CKD was identified as less than 140/90mmHg

in 68.8%, less than 130/80mmHg in 7.1%. There was no statistically significant different between the internal medicine residents and their counterparts in other specialties on this knowledge ($X^2= 0.72$, $df=1$, $p=0.52$). Number of years post MBBS degree qualification did not significantly influence this knowledge ($X^2=0.67$, $df=1$, $p=0.41$)

After a diagnosis of CKD, 103 (30.3%) will carry out further investigations to determine the

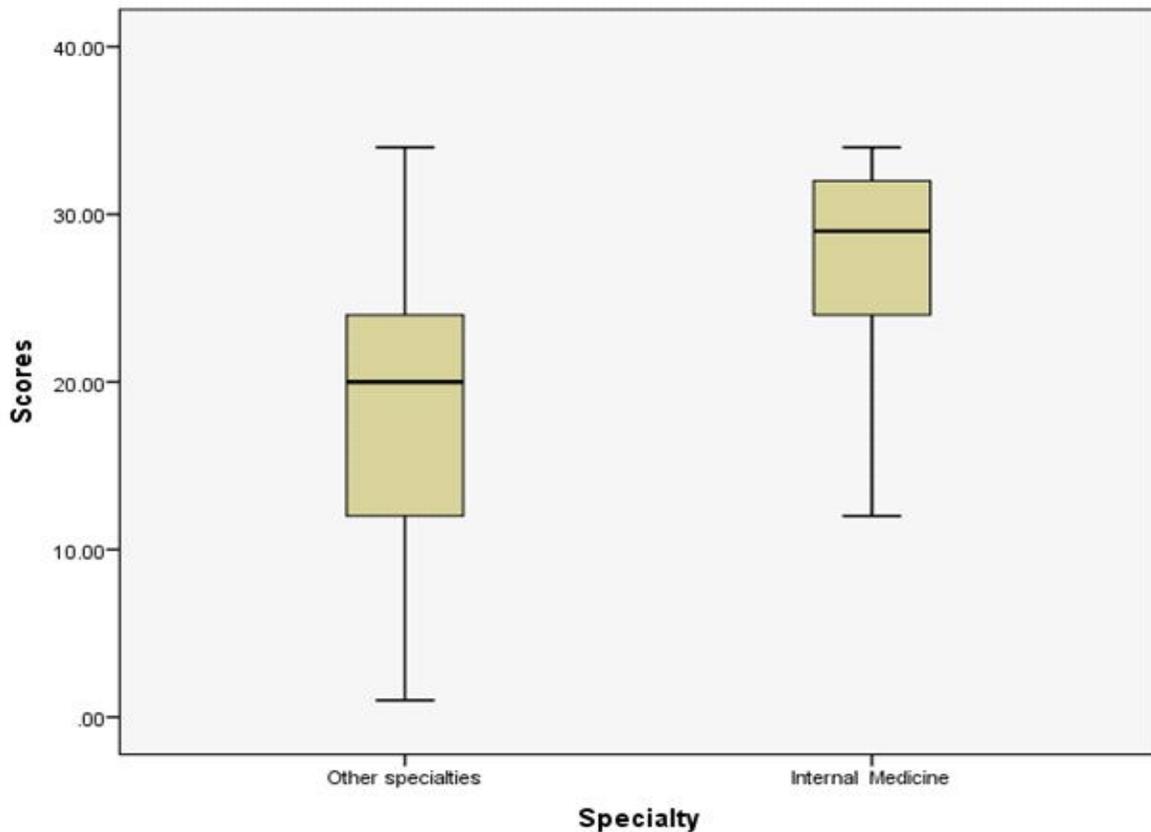


Fig. 2. Parallel box plots comparing the distribution of scores of overall knowledge of CKD among resident doctors in internal medicine with resident doctors in other specialties

severity of CKD and presence of complications, 56 (16.5%) will institute measures to retard CKD progression, while 181 (53.2%) will refer immediately to the nephrologist, whatever the stage of CKD. While 93 (27.4%) would use GFR in making decision for referral, 207 (60.9%) would use the level of serum creatinine increase alone in taking such a decisions, 20 (6%) were not sure of which criteria to use while 19 (5.7%) would use other criteria apart from GFR and creatinine level. There was a significant different among the specialties in the use of GFR ($X^2=9.94$, $df=4$, $p=0.04$); more resident doctors in internal medicine (59.5%) would use this parameter for referral to the Nephrologist than their counterparts in other specialties (paediatrics-31%, community medicine-16%, surgery 39%), No statistically significant difference was obtained in the use of serum creatinine for referral decision between the different groups ($X^2=6.45$, $df=4$, $p=0.50$).

For referral to nephrologist, 138 (40.6%) would refer completely to the nephrologist, 188

(55.4%) would consider co-management while 14 (4%) did not intend to refer to the nephrologist at all; reasons being lack of nephrologist in the respondents' centre, personal preference of the doctor managing the problem and patient's preference.

Adequate knowledge of CKD was demonstrated in 54% of the doctors. Resident doctors in internal medicine had a higher mean score of knowledge of CKD than their colleagues (29.6 ± 5.42 vs 18.67 ± 7.84). This difference was statistically significant ($t = 9.08$, $df=337$, $p<0.01$). There was no statistically significant difference between the mean knowledge scores of resident doctors less than 5 years experience post MBBS qualification and those more than 5 years (20.6 ± 8.4 vs 21.1 ± 8.2 respectively; $t=-0.619$, $df=337$, $p=0.54$).

DISCUSSION

This survey was conducted to investigate the pattern of CKD screening, diagnostic tools employed, initial evaluation and treatment, and referral practices among non nephrologists in Nigeria. Majority of the participants were not aware of practicing guidelines in CKD. Despite this, most have a good knowledge of parameters for CKD diagnosis. Majority (82%) will screen patients considered at risk for CKD if they come in contact with them. In addition to most participants (68.8%) not knowing the target BP in the management of patients with CKD, the knowledge of- and evaluation for cardiovascular complications of CKD was poor. Furthermore, more than half of the participants (53.2%) will refer to the nephrologists once the diagnosis of CKD is established regardless of the grade of disease; serum creatinine serving as a guide in making such decisions in most instances.

Clinical practice guidelines published in 2002 by the National Kidney Foundation Kidney Disease Outcome and Quality Initiative (NKF/KDOQI) and revised in 2012, serve as a resource to guide physicians' delivery of appropriate care for patients with CKD all over the world [19]. Nigeria Association of Nephrology detailed a schema of this guideline in 2011 with some modifications that reflect the realities of managing CKD in resource constrained settings [20]. These guidelines prescribed a core set of clinical tests for the diagnosis and ongoing management of CKD. Low awareness level of these guidelines in the management of CKD among doctors was recorded in this study. This finding corroborates with earlier studies in Taiwan [21] and in USA [22] where less than half of the participating physicians were unaware of any existing guidelines in CKD.

Adequate overall knowledge was recorded in 52% of our participants. This is comparable to 54% reported by Charles *et al* [22] amongst family physicians and 54.7% by Agrawal *et al* [23] amongst internal medicine resident doctors in USA. It is, however, higher than 10% reported by Agaba *et al* among Nigerian resident doctors in family medicine, [24] and 37.7% [17] among non-nephrology specialists and family physicians in West Africa sub region; In this, study a lower cut-off of 50% for adequate knowledge was used as compared to 70% used in the latter study. We used a lower cut-off because we studied doctors that are within the first 2-3 years of their training and from diverse specialties.

So expectations from them may not be comparable to that from specialist physicians.

Practicing guideline recommends that persons at increased risk for developing chronic kidney disease should undergo testing to identify markers of kidney damage and to estimate the GFR [20]. In this study 82% of the respondents would screen for CKD in patients that are at risk. Using diabetes as a case scenario, nearly 100% of the participants will investigate for proteinuria within a year. This is in contrast to an earlier finding among 76 family physician residents in Nigeria where 80% never screened for proteinuria in DM patients. [24]

Although more in-depth evaluation when warranted is supported by guidelines, obtaining some additional tests as part of the initial evaluation is not explicitly recommended and could increase cost of management of CKD especially in our environment (Figure 1). In this study, 20.6% of the respondents would request for a magnetic resonance angiography of the renal arteries as part of initial evaluation (Figure 1). Years of experience post qualification influenced this knowledge; only 18% of doctors within the first 5 years of practice would utilize this investigation. This compares with the finding by Charles *et al* among physicians in United States of America [22] in which physicians with less than 10 years' experience were more adherent to practicing guidelines in terms of laboratory investigations needed in initial evaluation of a patient with CKD than those more than 10 years of practice. This investigation is not cost effective and, together with other additional tests, have been shown to increase the aggregate cost of investigations by 58% [22].

Meticulous control of blood pressure to target is perhaps the most important single measure in retarding the progression of CKD [25]. Blood pressure targets in CKD depend on the level of proteinuria but levels less than 130/80 mmHg is acceptable generally [26]. Only 27% of our participants are aware of the correct BP target in CKD patients in contrast to 50.7% reported by Agaba *et al* [17] and 90% by Agrawal *et al* [23]. There is need for concerted efforts to increase the knowledge of practising doctors on the peculiarities of BP target in CKD population.

Only few participants (37.6%) identified coronary artery disease as a complication of CKD and a fewer number (32.9%) would order for a lipid profile for a patient with CKD. This highlights the

ignorance of the need for cardiovascular assessment in the light of the fact that CKD adds to the cardiovascular burden in patients. As most patients with CKD die of cardiovascular disease long before reaching end stage kidney disease, it is pertinent to identify and treat cardiovascular disease in CKD.

Proteinuria has been shown to be a risk factor for CKD progression, and its amelioration shown to retard progression of CKD [27-28]. Over 60% of our respondents identified the anti-proteinuric effect of angiotensin-converting enzyme inhibitors/angiotensin II receptor blockers. This is similar to the rates reported previously by Agrawal *et al* [23], Agaba *et al* [17], and Israni *et al* [29]. Use of angiotensin-converting enzyme inhibitors/angiotensin II receptor blockers forms the cornerstone of retarding progression of CKD. This is a management strategy that can be employed at all levels of care to effectively reduce progression of CKD.

After detecting CKD, existing guidelines recommend staging the disease and taking appropriate measures depending on the stage. Referral to nephrologist should be considered from stage 3-5 of CKD. Special circumstances exist when referral to nephrologist is acceptable irrespective of the stage e.g. stage 1 CKD when the cause is unknown, CKD with nephrotic range proteinuria, CKD with polycystic kidney disease or ectopic kidney, CKD in pregnancy, children, or with haematuria where a urological or other cause is not evident. More than half of the participants in this study will refer immediately to the nephrologist on detecting CKD whichever stage it may be. Considering the number of nephrologists available in Nigeria and their spread across the country, this practice may lead to overcrowding of nephrology clinics. On the other hand, late referral to nephrologist.

CONCLUSION

This study showed that there is improvement in the knowledge of CKD diagnosis and care among non-nephrologists in Nigeria compared to previous studies. However, knowledge of complications, especially cardiovascular complications, blood pressure targets and their referral practices is still an outcry. Doctors within the first 5 years of their practice post MBBS qualification were found to request for cost-effective investigations more than those more than 5 years of practice. Resident doctors in internal medicine had better overall knowledge of CKD and more likely to

offer better pre-ESRD care than their colleagues in other specialties. Also, years of experience post qualification did not influence the knowledge level significantly

RECOMMENDATIONS

There is need for more education of the resident doctors on screening of individuals at risk of CKD, initial laboratory evaluation, detection of complications, measures that retard progression of CKD and referral of individuals with CKD to nephrologists. This can be achieved through inclusion in the postgraduate training curriculum and widespread distribution of practice guidelines. The laboratory personnel may have a role to play in this by way of automated reporting of eGFR. This will facilitate early recognition of CKD and institution of appropriate care. Finally, despite the constraints of few specialists compared to the teeming population of patients with CKD in Nigeria, we recommend referral to the nephrologist as early as possible to maximize care for patient with a diagnosis of CKD.

LIMITATION OF THE STUDY

We surveyed only doctors in the junior residency training. Senior residents and specialists were not involved. Hence, we did not evaluate the impact of training of the doctors on knowledge and practices patterns of CKD in this study.

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Prevalence of Hypertension and Associated Cardiovascular Risk Factors in Patients Attending a Family Practice Clinic in Ile-Ife, Southwest Nigeria

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ABSTRACT

Background: The prevalence of hypertension and its complications amongst the black race is high and constitute a significant disease burden worldwide. Even though Hypertension is common, majority of affected individuals are not aware. This study determined the prevalence of hypertension amongst the family practice population and ascertained the anthropometric and clinical correlates of the studied population.

Methods: All new patients attending the family practice clinic over a period of six months were screened for hypertension. Patients were taken through a brief medical history and had their socio-demographic data and anthropometric data taken. Laboratory investigations assessed include: Serum chemistry, fasting blood glucose and lipid profile.

Results: One thousand one hundred and six (1106) patients were screened; out of which two hundred and fifteen (215) were hypertensive representing a prevalence of 19.6%. Age range was 17 to 82 years (Mean \pm SD; 57.53 \pm 13.02yrs). Majority were

females (61.4%). 4.7% smoked while 12.1% consumed alcohol. Fifty-eight percent of the patients were either overweight or obese, 5.8% had hyperglycaemia while 40% had glomerular filtration rate (GFR) less than 60 ml/min. There was a positive correlation between age and Systolic BP ($r=0.231$, $p<0.001$) as well as Diastolic BP ($r=-0.304$, $p<0.001$). Also, there was a positive correlation between serum creatinine and Systolic BP ($r=0.158$, $p=0.04$) as well as Diastolic BP ($r=.272$, $p<0.0001$). There was also positive correlation between Triglyceride levels and BMI ($r=0.176$, $p=0.035$) as well as waist - hip ratio ($r=.226$, $p=0.007$).

Conclusion: The prevalence of hypertension and associated CVD risk factors were high among the study population. A high proportion of our patients had chronic kidney disease (CKD). Regular community screening and preventive programme at the primary and secondary care levels would reduce this trend.

Keywords: Hypertension, kidney disease, proteinuria, GFR, CKD

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INTRODUCTION

Hypertension is a common public health problem as well as cardiovascular risk factor in both developed and developing countries^{1,2}. Hypertension is estimated to cause 4.5% global disease burden and 6% of adult death worldwide^{3,4}. In the recent NHANES survey in the US, it affects 24% of all adults above 18 years and 67% of those greater than 60 years⁵. Hypertension causes end-organ damage, including left ventricular hypertrophy, congestive heart disease, coronary heart failure, stroke, renal failure, and PAD⁶⁻¹⁰. In Nigeria, the crude prevalence of hypertension has been reported to be 11.2% using blood pressure threshold of 160/90mmHg¹¹. However, based on the current definition of hypertension according to seventh Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) guidelines¹², 25% of Nigerians can be classified hypertensives. Similarly, major target organ damage has also been well documented by various workers in Nigeria¹³⁻¹⁸. Despite current high prevalence rates of hypertension in Nigeria, there is inadequate assessment of blood pressure as well as low hypertension control rates¹³⁻¹⁸. In addition, many patients cannot afford the cost of treatment thus, leading to increased morbidity and mortality¹³⁻¹⁸. We therefore carried out this study to determine the prevalence of hypertension and associated cardiovascular risk factors among our family practice population and also to ascertain the anthropometric and clinical correlates in the studied population.

MATERIALS AND METHODS

Study site

Obafemi Awolowo University Teaching Hospital Complex (OAUTHC), Ile-Ife, Osun State, Nigeria started operations as the Ife Teaching Hospital Complex. It is made up of 6 units that is the Ife hospital unit; Wesley Guild Hospital, Ilesa; the Dental Hospital, OAU, Ife; Urban Comprehensive Health Centre, Eleyele, Ife; Rural Comprehensive Health Centre, Imesi-Ile; and Multipurpose Maternal and Child Health Centre, Ilesa.

This study took place at the Ife hospital unit which is a 342 bedded hospital OAUTHC catchment area is extremely large including the whole of Osun, Ekiti, Ondo, part of Oyo state, Kwara, Kogi, Lagos and Edo states. While the primary base is the Ife/

Ijesa senatorial district, the institution provides tertiary, secondary and primary health care services to the areas mentioned.

Sample size calculation: The required sample size of 317 was calculated using an appropriate statistical formula for estimating the minimum sample size in descriptive health studies [$n = Z^2pq/d^2$] and finding from a previous study where 26% studied were hypertensive.¹⁹ The minimum sample size was increased by 10% to take care of attrition during the study.

Participants: All new patients attending the family medicine clinic of Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Osun State, Nigeria over a period of six months (April-September, 2007) were recruited and screened for hypertension. All patients who gave their consent were included in the study. Very ill and non-consenting patients were excluded from the study.

Screening Protocol: The screening was conducted by trained physicians and nurses. After giving an informed consent, Patients were taken through a brief medical history including their socio-demographic characteristics and anthropometric data. Weight was recorded in kilograms using a standard weighing scale on a firm horizontal surface with the patient wearing light clothing; measurement of height was done using a stadiometer in a standing position on a flat surface and recorded in meters with the patient not wearing shoes or headgear. Body mass index (BMI) was calculated as the ratio of measured weight to the square of the measured height (Kg/m^2) and was categorized as not obese ($<25\text{kg}/\text{m}^2$), overweight (25 to $29.9\text{kg}/\text{m}^2$) or obese ($\geq 30\text{kg}/\text{m}^2$) according to the 2000 WHO criteria²⁰. Waist circumference and hip circumference were also recorded. Subject had abdominal obesity or central obesity if waist-to-hip ratio was over 0.9 for males and 0.85 for females²¹, or if the waist circumference is $\geq 102\text{cm}$ for males and $\geq 88\text{cm}$ for females²². Blood pressure (BP) was measured in the left arm in the sitting position using Accoson mercury sphygmomanometer with appropriate cuff size after the patient had rested for at least 5 minutes. The average of 3 readings was recorded. Hypertension was defined as a systolic blood pressure $>140\text{mmHg}$ or diastolic blood pressure

> 90mmHg and/or commitant use of antihypertensive medications by self report²³. BP was categorized according to the Seventh Joint National Committee Report on Detection, Evaluation and treatment of High Blood pressure²³.

Serum chemistry, lipid profile and fasting blood sugar were assessed using standard laboratory procedures:

1. Serum Creatinine level determination using the standard hospital laboratory method of Jaffe's method (kinetic alkaline picrate).
2. Serum urea level determination using the colorimetric test i.e. the diacetyl mono-amine oxidase method.
3. Serum fasting plasma glucose was determined using glucose oxidase method.

Glomerular filtration rate (GFR) was determined using the Cockcroft and Gault equation for creatinine clearance (CrCl)²⁴ and GFR of < 60 mls/min/1.73m² body surface area was taken as suggestive of Chronic Kidney Disease (CKD).

Serum total cholesterol and high density lipoprotein cholesterol (HDL) were analyzed using cholesterol oxidase method; triglyceride assessment was by glycerol kinase method while low density lipoprotein cholesterol (LDL) was obtained using Friedewald formula:

$$LDL = \text{Cholesterol} - HDL - (TG/2.19) \text{ in mmol/L.}$$

Dyslipidaemia was defined using the National Cholesterol Education Program (NCEP)/ATP III guidelines²⁵.

The data were entered and cleaned, and statistical analyses performed using the Statistical Package for Social Sciences (SPSS), version 11 (IBM, Chicago, USA). The data were summarized using mean and standard deviation (SD) for continuous variables and frequencies/percentages for categorical variables. Tests of significance were conducted using the Pearson's correlation coefficient.

Ethical approval was obtained from the OAUTHC Ethics and Research Committee. Informed consent was obtained from each respondent before administering the questionnaire. No names were recorded to ensure anonymity though subject's hospital numbers were recorded to avoid multiple recruitment of participants. Confidentiality of

collected data was maintained throughout the study. Data were stored by the principal investigators on a password protected computer.

RESULTS

One thousand one hundred and six (1106) patients were screened; out of which two hundred and fifteen (215) were found to be hypertensive representing a prevalence of 19.6%. Age range: 17 – 82 years (Mean

Table 1: Clinical and Laboratory parameters in studied patients

Parameter	Value	SD
Age (Years)	57.53	13.02
Mean systolic BP(mmHg)	172.9	±19.20
Mean diastolic BP(mmHg)	95.42	±14.72
Mean serum creatinine (µmol/L)	94.50	±42.13
Mean serum urea (mmol/L)	5.94	±11.62
Total cholesterol(mmol/L)	4.39	±0.99
LDL (mmol/L)	3.3	±2.10
Triglyceride (mmol/L)	1.07	±0.66
HDL (mmol/L)	1.20	±0.61

± SD; 57.53 ± 13.02yrs). There was female preponderance (61.4% being females). Five percent smoked while 12.1% consumed alcohol. Mean systolic blood pressure (SBP), diastolic blood pressure (DBP), serum creatinine, serum urea were 172.9mmHg (±19.20mmHg), 95.42mmHg (±14.72mmHg), 94.50µmol/L (±42.13µmol/L), 5.94mmol/L (± 11.62mmol/L) respectively (Table 1). The mean total cholesterol, LDL, triglyceride, HDL and Fasting blood glucose were 4.39mmol/L ± 0.99mmol/L, 3.3±2.1mmol/L, 1.07mmol /L ± 0.66mmol/L, 1.20mmol /L ± 0.61mmol/L and 7.5±1.8mmol/L respectively. Twenty-three percent had dyslipidaemia while 5.8% had fasting hyperglycaemia. Fifty-eight percent of the patients were either overweight or obese while 40% had glomerular filtration rate (GFR) less than 60 mls/min. There was a positive correlation between age and Systolic BP(r=0.231, p<0.001) as well as Diastolic BP (r=-0.304, p<0.001) (fig 1-2).

The correlations were sustained even after correcting for age on multivariate analysis. There was a positive correlation between serum creatinine and Systolic BP (r=0.158, p=0.04) as well as Diastolic

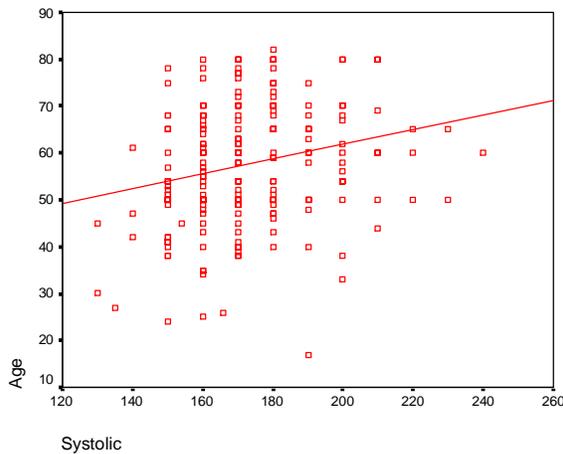


Fig. 1: Correlation between age (years) and systolic BP (mmHg) ($r=0.231, p<0.001$)

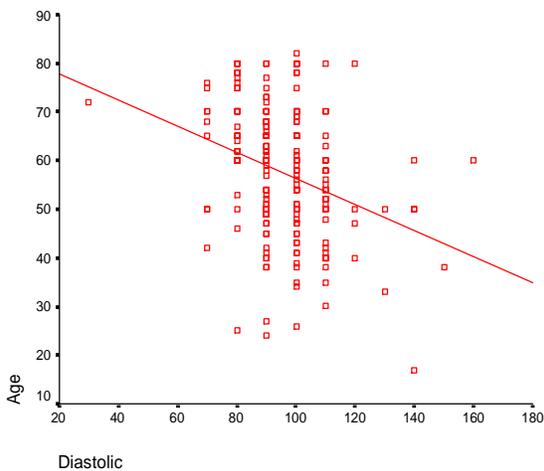


Fig. 2: Correlation between Age (years) and diastolic BP (mmHg) ($r=-0.304, p<0.001$)

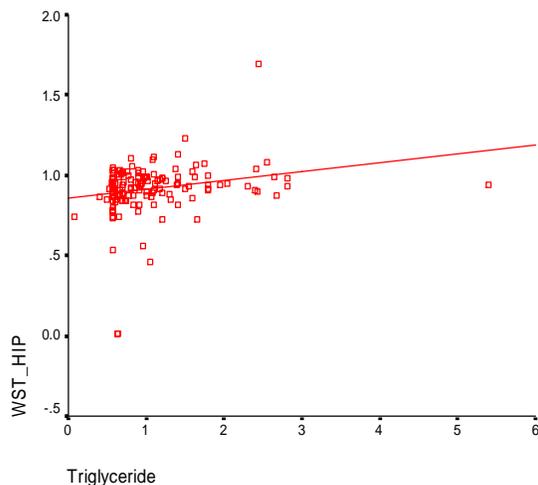


Fig. 3: Correlation between Waist-Hip (years) and Triglyceride ($r=0.226, p=0.007$)

BP ($r=0.272, p<0.0001$). There was also positive correlation between Triglyceride levels and BMI ($r=0.176, p=0.035$). Figure 3 shows a positive correlation between waist-hip ratio and triglyceride levels ($r=.226, p=0.007$). There was a negative correlation between GFR and age ($r=-0.493, p<0.0001$) (fig 4) as well as systolic blood pressure ($r=-0.249, p=0.002$).

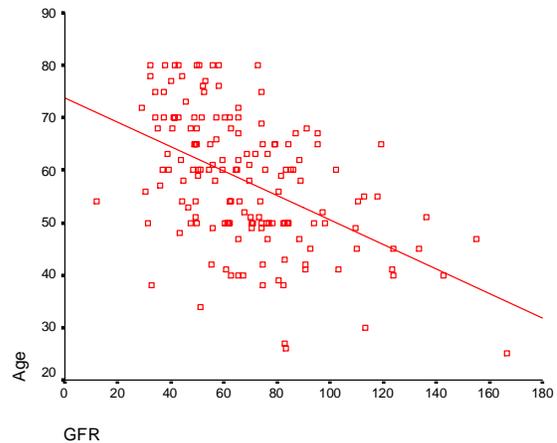


Fig. 4: Correlation between age (years) and GFR (mls/min) ($r=-0.493, p<0.0001$)

DISCUSSION

Hypertension is a major risk factor for the development of cardiovascular complications, including the development and progression of chronic kidney disease. The findings of our study showed that hypertension together with chronic kidney disease is prevalent in our family practice setting. About 19% of our studied population was documented to be hypertensive. This is in agreement with the findings of Ulasi *et al*²⁶ who reported prevalence of hypertension to be about 18% in their CKD population in Enugu, south-eastern Nigeria. Kadiri *et al*²⁷ however reported a lower prevalence of 9.3% in their urbanized population survey in Ibadan. The disparity may be due to the high prevalence of chronic kidney disease in our study population since hypertension can be a cause or consequence of CKD. It is also possible that there may have been a transition in the population with a change in the prevalence as the latter study was carried out more than 15 years ago.

The prevalence of chronic kidney disease (defined as $GFR < 60$ mls/min) has assumed epidemic

proportion globally and this conforms with our finding in this study. The prevalence of CKD as defined by glomerular filtration rate less than 60ml/min was 40%. This is significantly higher than that of two previous community-based studies carried out in this environment^{28,29}.

The prevalence of 26% and 19% were documented in the northern and southern Nigeria respectively^{28,29}. The magnitude of CKD in this study could be due to high prevalence of hypertension in the studied population. Hypertension is a strong independent risk factor for ESRD. It is a major promoter of decline in GFR in both proteinuric and non-proteinuric kidney disease³⁰⁻³¹. It is therefore not surprising that our study demonstrated a strong inverse relationship between blood pressure and kidney function. This is in support of findings of Multiple Risk Factor Interventional Trial (MRFIT). The relative risk for ESRD in male patients with severe HT (SBP >210 mmHg or DBP >120 mmHg) was 20-fold higher than for male patients with optimal BP levels (SBP <120 mmHg and DBP <80 mmHg)³². Furthermore, Okinawa study³³ in Japan also confirmed this relationship in female patients as well. Hsu et al³⁴ in their study also suggested that the relationship between level of blood pressure and risk of development and progression of CKD among individuals without baseline kidney disease is linear. Hence, there exist a graded relationship between elevated blood pressure and risk of CKD.

It is also worthy of note that a sizeable number of the participants in this study had obesity, dyslipidaemia, fasting hyperglycaemia and metabolic syndrome. Epidemiological studies have showed that hypertension is most commonly associated with obesity and metabolic syndrome³⁵⁻³⁶; these risk factors in turn accelerate development and progression of CKD³⁷⁻³⁸. This again may explain the magnitude of CKD in this study.

It is therefore a call to action to aggressively institute lifestyle intervention as a primary prevention strategy for hypertension and the associated cardiovascular risk factors in the general population; and this includes weight reduction to maintain normal body weight, adopting the dietary approach to stop hypertension (DASH) plan, reducing sodium intake to 6g sodium chloride in a day and increasing physical activity to at least 30mins for most days of the week. Moreover, 5% and 12% of the participants in our

study smoked cigarette and consumed alcohol respectively; it is therefore plausible to encourage cessation of smoking as well as limiting alcohol consumption to not more than about 20g per day. Therefore, prevention and control of these cardiovascular risk factors should form the cornerstone of our CKD prevention program. Individual with CKD or elevated serum creatinine will be an excellent candidate for angiotensin converting enzyme inhibitors and/or angiotensin receptor blockers¹².

In conclusion, hypertension and associated cardiovascular risk factors including CKD is prevalent in our general medical practice. There is need to ensure early blood pressure monitoring and scrutinizing CVD risk factors in order to have maximal impact on CKD prevention.

ACKNOWLEDGEMENTS

The authors thank the patients, management and staff of the Family Practice clinic, OAUTHC, Ile-Ife for their cooperation during the study period.

Competing interest: The authors declare that they have no competing interests.

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The Challenges of Renal Equipments Handling in the Management of Chronic Kidney Disease (CKD) in Nigeria

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ABSTRACT

Background: Renal equipments handling encompasses proper care (maintenance) and manipulation (application) of dialysis equipments for proper treatment and care of patients with kidney problems. In Nigeria this is still a common challenge as many of us do not have the required handling skills or do not really take it serious where the skills exist. This has resulted in the dumping and underutilization of many of these machines. A visit to many of our dialysis centers shows that most dialysis and reverse osmosis (RO) machines have been abandoned soon after installation or are in poor state of disrepairs. In some cases, even the few functioning ones often breakdown due to poor handling thereby causing frequent disruption of services and forcing clients to either wait or seek care elsewhere. Most times where these services are rendered, the quality of care becomes a challenge due to poor functioning of the machines. Therefore there is the need to address this problem.

Aims: The aim of this work is to closely examine these challenges and presents the Planned Preventive Maintenance (PPM) approach which is a new concept as a way forward using my local and international experiences. PPM is a schedule of planned maintenance actions geared towards the prevention of breakdowns and failures. It involves

regular repetitive work done to keep the equipment in a good working condition so as to optimize its efficiency and accuracy.

Methods: The PPM concept is intended to create attitudinal change among operators from the maxim of 'I operate to breakdown and the maintenance personnel (Engineer) fix'. to 'Operator involvement in preventive maintenance activities'. What this means is that the operator does not only operates but doubles as the maintenance person involving in simple maintenance activities like regular inspection, cleaning of dialysis machines etc and strict compliance with equipment safety/ standard operating procedures (SOPs) as stated by the manufacturer.

Conclusion: This guarantees continuous functioning of the machines, reduces cost and equipment downtime to enhance affordability and the quality of care for our dialysis patients in Nigeria. Therefore PPM highly recommended for all dialysis centers in Nigeria.

Keywords: Poor Maintenance culture, Planned preventive maintenance (PPM), Equipment handling, quality renal care in Nigeria.

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INTRODUCTION

Generally, maintenance in any form implies some measure of inspections, tests, observations, calibrations, measuring, cleaning, repairs etc in order to have an acceptable result.⁽¹⁾ There are basically two types of maintenance; breakdown (corrective/reactive) and preventive or planned preventive (predictive) maintenance.

1. *Breakdown maintenance*: Implies fixing of faulty equipments to restore functions⁽²⁾. The altitude is 'I operate to breakdown and the maintenance personnel (Engineer) FIX'.⁽³⁾ This means the user of for example dialysis machine has no business with even simple maintenance activities as stated earlier but stick strictly to the business machine operation only. The common language often heard is 'it is not my work'. Breakdown maintenance is best for equipment whose downtime does not significantly affect health outcomes and more expensive to maintain than replace.
2. *Preventive maintenance (PM) or Planned preventive maintenance (PPM)*: Involves daily inspection, cleaning, oiling, fine turning or adjustment etc to keep the equipment in a healthy condition.⁽⁴⁾ It encompasses those actions geared towards the prevention of breakdowns and failures. It is regular repetitive work done to keep equipment in good working condition and to optimize its efficiency and accuracy⁽⁵⁾. Here the operator is also the maintenance person engaging in preventive maintenance activities as highlighted earlier.

Just like human life is extended by preventive medicine, the equipment service life can be prolonged by doing PPM⁽⁶⁾. In fact the ideal preventive maintenance program would prevent all equipment failures and prolong its service life. This type of maintenance is good for equipments like dialysis and reverse osmosis machines whose downtime significantly affect health outcomes and as such most preferred to breakdown maintenance. It is important to note that while the dialysis patient waits for the faulty machine to be fixed, complications and even death may result.

In the developed world like the united states of America and Europe PPM is taken seriously to

guarantee system and of course equipment functionality and reliability⁽⁷⁾. This is one of the reasons why many countries in the developing world including Nigeria seek renal care services in such countries at every slightest opportunity.

In Nigeria; the public and private health sectors lack the culture of PPM⁽⁸⁾. This can be seen in so many sectors cutting across health, education, transportation etc. In the health sector for instance many of our dialysis equipments like dialysis and reverse osmosis machines etc are affected as stated earlier. The structures are not left out as some of these buildings that were beautifully builds to provide care are now in bad shape of disrepairs.

This is affecting the quality of care for dialysis patients in Nigeria as no faulty (sick) dialysis machine can give quality treatment or result. This may not be far from the justification while many Nigerians are seeking renal care services abroad especially in India.

Figure 1 is a typical structure of a Nigerian primary health care centre (PHC) that has suffered from poor maintenance. Poor maintenance culture is either due to lack of trained staff or poor altitude⁽¹⁰⁾.

In Nigeria for instance we currently have about 107 dialysis centers (Government and private) but only twenty (20) original equipment manufacturer (OEM) trained technical staff to man these centers. This ratio of trained technical staff to dialysis centers is obviously inadequate hence the need for user involvement in what to do to prevent frequent breakdown of dialysis equipments.

In this article, attempt has been made briefly look at types of PPM, its benefits in the management of chronic kidney disease and the scope as it affects the key actors: the policy maker, the engineer and the user in Nigeria. The PPM activities in a Nigerian dialysis unit where there had been a paradigm shift from break down maintenance to PPM shall be x-rayed and compared.

Common Equipments in a Typical Dialysis Center

The major equipments include: dialysis machines, reverse osmosis (RO) machines, suction machines, hospital beds and trolleys, weighing scales, wheel chairs, oxygen cylinders with humidifier. Others are water pumps, generators, uninterruptable power



Fig. 1: Owolona primary health care centre (PHC), an example of poorly maintained health structure

supply (UPS). Experience shows that all these require PPM for proper functioning.

Types of PPM

PPM can either be in-house or outsourced⁽¹¹⁾. In-house PPM simply means raising a maintenance team within the system while outsourced PPM is raising the same team but outside the system⁽¹¹⁾.

The in-house PPM team is preferred over the out-sourced team⁽¹²⁾. This is because of its obvious advantages that include; quick response time to distress calls due to proximity to point of service thereby reducing equipment downtime. There is also ease of control within the system and drastic reduction in cost of maintenance as in most cases there are no issues of transportation and accommodation cost⁽¹²⁾.

In Ahmadu Bello university teaching hospital (ABUTH) Zaria, an in-house PPM team has been inaugurated in order to reap these benefits. This can be emulated other dialysis centres and hospitals for the sake of better quality and cost of care for our dialysis patients.

Objectives/Benefits of Planned Preventive Maintenance

- To maintain effective use of existing dialysis equipments.
- To ensure accurate management of dialysis equipments and tools.
- To educate, train and build manpower for effective dialysis equipment maintenance and enhance quality of care.
- To make dialysis centres comfortable and friendly.
- To increase reliability of dialysis service delivery in all our centres.
- Reduction of client loss to follow up due to service disruptions arising from frequent breakdowns.
- To create attitudinal change among operators from *'I operate to breakdown and maintenance personnel fix'* to *'operator involvement in preventive maintenance activities'*
- Decreased in cost of maintenance and services and

- Check dialysis equipment downtime.

Scope of Practicing PPM

The policy maker, the engineer, and the user are the three actors involved at different stages/levels of PPM. This means that the maintenance of dialysis equipments is every body’s business, including the doctor and the nurse.

Let us look at some typical examples of break downs that can be checked by practicing PPM and level of involvement of the three actors.

1. *At the level of Policy Makers:* Basically involve policy formulation to guarantee equipment functionality and sustainability. Complete system failure or under utilization can be checked by good maintenance policy formulation and implementation. It starts right at the procurement stage where the equipment serviceability and OEM’s training for staff ought to be considered and factored in the agreement before the award. This must also include regular staff re-training programs, selection of design to improve on weakness of presently in use equipment etc. The failure of Government or Management to have a well defined maintenance policy for proper management of all medical (dialysis) equipments and infrastructures will result in poor service delivery cum frequent service disruption. A renal care policy that will fully embrace the concept and practice of PPM will check these ugly trends and improve the quality of care in Nigeria.

2. *At the level of the engineer:* Leakages from worn out rubber tubing resulting in F16 positive pressure error common with Fresenius 4008 family dialysis machines causing un-necessary delays or even complete disruption of services is a typical example. Here, lack of adequate skills of staff or I don’t care altitude can be responsible.

3. *At the level of the user:* Is non compliance with equipment safety/standard operating procedures (SOPs) and lack of regular inspection and cleaning of dialysis machines. This can results to un-necessary breakdowns cum service hiccups. Training and change of altitude required to check this trend. Certainly, practicing PPM will help check the burden of CKD patients in Nigeria. Let us consider the

maintenance activities in a Nigerian dialysis unit where there had been a paradigm shift from break down maintenance to PPM.

Case Study

We review the dialysis equipments maintenance service reports from June 2007 to December 2013.

The differences in down time and maintenance costs before and after the drastic change were compared. The effect of PPM on equipment failure rate tabulated, periods of service loss and costs were worked out for the duration when breakdown maintenance was the main focus. These were compared with the same parameters when the focus shifted to planned preventive maintenance (PPM).

Some technical challenges and lessons learnt were also reviewed during the same period. Table 1 below illustrates the effect of practicing PPM on dialysis machine failure rate as represented by the

Table1: The effect of PPM on dialysis machine failure rate⁽¹³⁾

Period in years	No of PPM per year	Equipment failure rate
2007	1	7
2008	2	6
2009	2	5
2010	3	3
2011	4	3
2012	4	2
2013	4	1

service report. As seen, in year 2007; there was practically very little or no attention was given to PPM (i.e. only PPM was done only once) and seven breakdowns (ie.equipment failure rate) were recorded even though the machine was new. In year 2008, there was an improved altitude towards PPM. The machine was serviced twice (2) in that year reducing breakdown to six (6) times within the period. As the shift in altitude from breakdown maintenance to PPM was intensified (i.e. PPM carried out 4times per year), a drastic reduction in dialysis machine breakdown

was recorded. Infact even as low as one (1) breakdown per year despite the aging of the machine. Details are as tabulated in table 1.

From the table 1, one can imagine the benefits of practicing PPM when failure rate of the machine has been reduced from 7 times a year to once (1) a year.

Let us look at some of these benefits in terms of percentage and compare them with the consequences of poor maintenance culture. Specifically, the frequency of equipment break down, period of service loss and cost were considered. See details in table 2.

1. Equipment Inventory: Equipment Selection for PPM
2. Information system and library: Vendor/ manufacturer recommended PPM (e.g. use of manuals etc)
3. Equipment experience: Training of PPM Personnel
4. Policy formulation: Definition of task like a well defined maintenance policy to, include PPM funding etc
5. Establishing Intervals/ schedule of maintenance e.g. daily, weekly, monthly etc

Table 2: PPM Benefits

Description	Before PPM	After PPM
Frequency of equipment breakdown	90%	15%
Perod of service loss due to down time (no dialysis)	65%	10%
<i>Cost</i>		
(a) Direct Cost(spare parts, transport, service charge, etc)	70%	40%
(b) Indirect cost (Time wastage resulting		

RESULT ⁽¹⁴⁾

1. Return on investment: up to 3 times
2. Reduction in costs: up to 30%
3. Elimination of breakdowns: up to 75%
4. Reduction in downtime: up to 45%
5. Increase in out put: up to 25% etc

Setting Up PPM

What does it takes and who is involved?

The major resources are: Diagnostic tools, Repair tools, Service parts, OEM manuals, Maintenance Software (e.g. win cash), PPM Committee (personnel) ⁽¹⁴⁾

A functional workshop or tool shop (This may cost \$18,875.00) ⁽¹⁵⁾

PPM Task: ^(16, 17)

6. Reminder system (use of maintenance soft wares e.g. Maintenance-pro)
7. Dialysis patients and health care worker's (HCW) safety.
Training duration 3-12 weeks depending on the equipments involved.
All equipment users and engineers should be trained and retrained on PPM.

Success Measures ⁽¹⁸⁾

- The life span achieved for the equipment
- The rate of decay of infrastructure is checked
- The improved service delivery
- Expansion of active equipment inventory
- The active response and participation of dialysis staff trained in PPM

- The emergence of Master trainers/ Supervisors from our dialysis centres
- Reduction to about zero incidences of equipment down time inclusive of emergency (unplanned) breakdown

(e) The fund will usually cover basic health care, like treatment of dialysis, HIV and TB, patients etc.

PPM Financing

In Nigeria maintenance has not received the attention it deserves. Since 1960, many government policies aimed at improving health care delivery system in Nigeria make little or no provision for maintenance of medical equipments and infrastructures. Even where the provision is made, one wonder where the money goes as little or nothing is seen at the implementation stage. The reason is not far from our poor attitude towards maintenance including corruption. A typical example is as seen in the structure shown in figure 1. We are however happy of the new National health care policy which has just been signed to law as adequate provision for maintenance is provided. We hope that this will be well implemented so that our dialysis patients in Nigeria can reap fully the benefits of PPM.

There are different options of PPM financings all over the world, some of which i have highlighted below. Nigeria can also tap in to these options.

Community Based Health Insurance Fund ^(19, 20)

Community Based Health Insurance Fund is a mechanism to fund health care for the poorest people in the world. It has been tried out in various developing countries. The essential components are:

- (a) The community pays an insurance premium to a Health Maintenance Organization (HMO) which provides care through a network of public & private medical (dialysis) service providers
- (b) The HMO provides financial administration of the fund
- (c) There is often co-funding by donor, government etc
- (d) The approach is community based with shared risk. Community members participate in management

Outsourcing of Renal Centres Management

Many countries have experimented with outsourcing of primary and secondary health facilities including renal centers to try and improve services. An example is the Rogi Kalyan Samiti (Patient Welfare Committee / Hospital Management Society) in India. ⁽²⁰⁾

It is a registered society that acts as trustee to manage affairs of dialysis centers and hospitals. Trustees include government, non Governmental organization (NGOs), and professional bodies. It imposes user charges and may raise funds elsewhere (government, donors etc). It has a specific focus on declining infrastructure and medical (dialysis) equipment maintenance. This has worked well and today most Nigerians renal patients are seeking quality care in India. We can do same in Nigeria.

Dilaysis Revolving Fund

Most hospital charge for each dialysis session / laboratory tests provided to patients. This is part of the cost recovery for such services. The money is put into a dialysis revolving fund account of the hospital where it is also used for purchase of dialysis consumables and maintenance of dialysis machines. A LRF is different from a Drug Revolving Fund (DRF) as it provides more oppportunity to evolve into a business model.

Some renal centers in Nigeria have already tapped into this but most of them have no budget for maintenance which is highly needed. If well manage, it will created a surplus that could be used for staff motivation and other hospital services.

PPM Feedback and Review Mechanisim ⁽²¹⁾

- Continuous mentoring and follow up is very important for the success of PPM.
- There is always room for improvement and this must be explored and employed continuously

- Continuous reporting and documentation of experiences must be encouraged.

RECOMMENDATIONS

(1) All dialysis centers in Nigeria should as matter of urgency set up PPM committees so as to reap the benefits.

(2) Government/management of all hospitals rendering renal care services must include OEM training for staff of dialysis units as a pre-condition for buying any dialysis equipment from vendors and manufactures so as to prevent dumping and underutilization.

(3) An advocacy to include ppm in the biomedical engineer's national training curriculum and that of all equipments users (doctors, nurses, laboratory scientist, etc) necessary in order to catch them young.

(4) It is imperative that we should practice PPM on all our dialysis equipments so as to optimize their accuracy and efficiency in order to provide quality and affordable dialysis care services to all our patients and reduce their burden.

(5) Our dialysis centres should endeavour to include PPM/equipment maintenance as a line budget item where it does not exist.

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Congenital Mesoblastic Nephroma : Case Report

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ABSTRACT

Congenital mesoblastic nephroma is a rare neonatal renal tumor, comprising of different histologic types. It constitutes 2% of neonatal renal tumors and 10% of renal mass in infants younger than 6months. Recurrence is higher when they are younger without chemotherapy.

A term neonate with abdominal mass with associated septicemia, had nephrectomy of the right kidney, but represented at 6months with recurrent tumor.

Pathologist should be encouraged to pay close attention to renal tissues to minimize misdiagnosis and clinician to be mindful of recurrence of diagnosis is made.

Keywords: *Neonate , Congenital Mesoblastic Nephroma, Recurrent*

INTRODUCTION

Congenital mesoblastic nephroma (CMN) described in 1967 and also called leiomyomatous hamartoma is the most common neonatal renal neoplasm with a distinct entity which should be differentiated from wilms tumor [1]. It comprises 3%-10% of paediatric tumor .CMN is the most common tumor in children less than 6montDepartment of Paediatrics Olabisi Onabanjo University Teaching Hospital, Sagamu, Ogun State [2]. Renal masses in neonates are usually benign and CMN constitute 2% of renal masses in

the neonates [3]. Wigger and Bogdan are of the opinion that the tumor is hamartomatous while Bolande believed the origin is from renal blastema [1]. CMN and infantile fibrosarcoma and are likely to represent a single neoplastic entity because of the association with polysomies for chromosome 8,11,17,20 [4].

Synder *et al* in explaining the histogenesis proposed a theory using “two-hit” model that CMN would occur after a neoplastic mutation in early embryogenesis whereas atypical cellular will develop in later stages before blastema undergoes metanephric differentiation. In both second mutations is therefore necessary to produce malignant transformation. These are aptly supported by immunohistochemical study [5-7].

It is not yet possible to identify variability in biological behavior of tumor and this is further strengthened by DNA diploid study where the typical CMN demonstrated diploid and others were aneuploid [8]. CMN was thought to be initially benign but recent advances have suggested it as a spectrum, incidence of cellular is 42%-63% [9]. No identifiable predisposing factor[8]. Incidence is 8 per million in children less than 15 years [10].

Male preponderance has been reported [11]. Age at presentation is dependent on the histologic type [2] , 14% will have associated congenital anomaly [12]. The overall prognosis is good however the course can become unpredictable when present in the perinatal period as well as atypical case [13].

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This patient posed a diagnostic challenge because he was referred as intestinal obstruction probably because of vomiting and abdominal distention, he was however managed for septicemia and wilms'. CMN was not thought of until recurrence. This case is being reported so that clinically when neonates presents with renal mass this entity should come to mind and chemotherapy should be considered in the protocol of management to prevent recurrence. To the best of our knowledge this is the first case from our centre.

CASE REPORT

OA a male neonate product of term gestation was delivered by spontaneous vertex delivery was referred on the 12th day of life with a diagnosis of intestinal obstruction. History is that of abdominal swelling which was noticed on the 10th day of life, progressive and diffuse with associated fever and vomiting and no hematuria. There was no history of polyhydramnious but mother had a febrile illness associated with vaginal bleeding in the first trimester. At presentation he had a temperature of 40c, weight of 3.1kg. Right -sided abdominal mass measuring 8cm by 10cm was found on examination. Blood pressure was 80/50mmHg.

He was subsequently managed for neonatal septicemia and renal mass. There was neutrophilic leucocytosis, electrolyte urea and creatinine were normal.

He had right nephrectomy on the 24th day of life (pix1) measuring 11cmx10cmx6cm and histology of the mass was reported grossly as renal mass with areas of nodularity and tumor involving over 90% of kidney, some areas are cystic hemorrhagic infarctions and microscopy revealed poorly circumscribed neoplasm consisting of sheets and nests of proliferating spindle cells, cigar shaped nuclei, infiltrating renal parenchymal. Focal areas showing abortive glomeruli. Loose stroma containing adipose tissue and cystic cavities lined by flattened cells. It therefore concluded it was mesoblastic nephroma. This was repeated at another pathology laboratory after an initial diagnosis of nephroblastoma was made.

Patient there-after remained well till 6th month of life when he presented again with recurrence of abdominal swelling, a repeat scan (cost of which

was paid by the author) confirmed the presence of cystic swelling and parents refused fine needle biopsy and was subsequently lost to follow up as parents declined further treatment.

DISCUSSION

The diagnosis of CMN may be made antenatally when there is polyhydramnious as reported in 71% of cases [14]. On renal imaging a "ring sign" consisting of concentric hyper and hypo-echoic ring pattern on ultra-sound, polyhydramnious and fetal hydrops both on Renal ultrasound (RUSS) and magnetic resonance imaging (MRI) is seen in the typical intra renal CMN prenatally [15].

The diagnosis might have been missed in utero either because there was no ultra sound done during pregnancy or the mass that is operator dependent was missed as opined by Lisa, *et al* [16]. Pre-operative diagnosis is difficult. Non availability and affordability by the parents limited other investigation like MRI and contrast enhanced computerised tomography as well as identification of immune-reactive markers made diagnosis more difficult.

MRI is the most accurate diagnostic tool depicting the local and regional extension of the mass though confirmation is still histology. These facilities were not available at our center.

Congenital mesoblastic nephroma presentation is dependent on the type, the classic type will usually present within 16 days of life, cellular at 5 months and the mixed at 2 months. The age at presentation of our patient would suggest the classic type and the reason for recurrence as reported by Futwaegner *et al* [2]. Pix 2 shows the leiomyomatous appearance of the tumor.

It has also been found recently by Brian *et al* that there is similarity in histologic appearance of CMN and infantile fibrosarcoma and are likely to represent a single neoplastic entity because of the association with polysomies for chromosome. Chromosome analysis however was not done in this patient [4].

The differential diagnosis of this tumor will include multicystic nephroma, cystic partially differentiated nephroblastoma and multicystic dysplastic kidney [17]. Multicystic nephroma, a type

of cystic nephroma has diagnostic criteria which includes unilateral involvement, solitary lesion, multilocular nature, non-communication of cysts with one another, loculi lined by epithelium and normal renal tissue when present [17, 18]

The gross appearance of this tumor will make one consider multicystic nephroma but histology differentiates them thus emphasizing the need for histology in the diagnosis though this too has its challenges. The presenting blood pressure was normal, he would have benefitted from long term follow up for detection of hypertension and proteinuria because of the nephrectomy but was unfortunately lost to follow up.

Hyper-calcemia has been suggested as a possible mechanism for polyhydramnios seen antenatally and as a paraneoplastic syndrome linked to hypertension but this could not be confirmed in this patient because serum calcium was not documented. Many patients have been reported to do well after nephrectomy.

Recurrence within first year post surgery without chemotherapy as occurred in this child has been reported by Lina *et al* [19] and this was possibly why this child represented as chemotherapy was not included in the management, though attempt had been made by the use of flow cytometry to determine the extent of management this was not conclusive⁸ Recurrence is higher within the first year of life, rupture during resection, positive tumor margin, histologic cellular subtype and age. Recurrence in this patient will suggest the cellular type that is aggressive [4].

Challenges faced in the management of this patient included a misleading diagnosis at point of referral as intestinal obstruction, poor investigation due to lack of funds by the parents and non availability of facility for such. Therapeutically the patient was not offered chemotherapy at first presentation and this may probably have discouraged the parents when tumor recurred.

CONCLUSION

Neonatologist should be aware of this entity in neonates and chemotherapy should be given as an adjunct to prevent recurrence. Pathologists should

be encouraged to pay more attention to kidney tissues to minimize misdiagnosis.

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Abstracts Presented at the Nigerian Association of Nephrology Conference, Abuja 2013

Theme: Hypertension and CKD

1. ABS/2013/HTN-CKD-01

PREVALENCE OF CHRONIC KIDNEY DISEASE IN TYPE 2 DIABETIC PATIENTS ATTENDING UNIVERSITY OF BENIN TEACHING HOSPITAL

Iyawe IO, Adejumo OA, Olorok AB, Okaka EI, Unuigbo EI, Ojogwu LI

Background: Diabetes mellitus is a common cause of CKD worldwide and its prevalence is on the increase in Nigeria due to adoption of westernized life style. Early detection and institution of appropriate treatment will slow down the progression to end-stage renal disease; hence these should be the priorities of physicians taking care of these patients. This study was carried out to determine the prevalence of CKD and its associated factors in type 2 diabetic patients at the University of Benin Teaching Hospital (UBTH).

Methodology: This was a descriptive cross-sectional study in which 144 consenting type 2 diabetic patients were recruited over a period of 16 weeks. Weight (kg), height (m) and hip circumference(cm) were measured and body mass index was calculated. Fasting blood glucose (FBG) and blood pressure (BP) were assessed during 3 consecutive clinic attendances and their mean values calculated. Venous blood was taken for estimation of fasting serum lipid profile and serum creatinine.

Estimated GFR was calculated using the MDRD formula. Poor glycaemic and blood pressure control were defined as FBS >130mg/dl and BP >130/80mmHg respectively. CKD was defined as the presence of persistent proteinuria on dipstick for e⁺ 3 months and/or GFR < 60mls/min. The data were analysed using SPSS version 16.

Results: A total of 144 (53 males and 91 females) type 2 diabetic patients were screened. The mean age of the study population was 57.49±11.49 years. The prevalence of CKD was 30.6% and of these 18 patients had CKD stage 1 (40.9%), 17 had CKD stage 2 (38.6%), 4(9.1%), 3(6.8%) and 2(4.5%) had CKD stages 3, 4 and 5 respectively. The mean age of those with and without CKD were 59.05±10.6 years and 56.81±11.83 years respectively. There was no statistical difference in the age distribution of those with and without CKD (p value = 0.27). There were 27 females (61.4%) and 17 males (38.6%) who had CKD. There was statistical significance in the systolic BP, duration of diabetes and serum triglyceride between those who had and those without CKD with p values of 0.04, 0.03 and 0.03 respectively. However, there was no difference in the average fasting blood glucose of both CKD and non-CKD groups.

Conclusion: CKD is prevalent in type 2 diabetics. Systolic blood pressure, duration of diabetes mellitus and serum triglyceride were significantly higher in diabetics with CKD.

2. ABS/2013/HTN-CKD-02

RENAL AND PATIENTS' SURVIVAL IN HYPERTENSIVE CHRONIC KIDNEY DISEASE CHILDREN

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Hypertension prevalence and impact on renal and patients' survival were retrospectively determined in chronic kidney disease (CKD) children.

The median age was 10.0 (0.2-15.5) years. 77 of 154 (50.0%) were hypertensive with 23 (30%) and 54 (70.0%) having stages I ($123.0 \pm 12.5/82.4 \pm 10.6$ mmHg) and II hypertension ($161.0 \pm 32.3/111.0 \pm 23.0$ mmHg), respectively. 70.0% of the patients received two or more anti-hypertensives for satisfactory blood pressure (BP) control. BP control was good, fair and poor in 43 (56.0%), 18 (23.4%), and 16 (20.6%) patients, respectively. Post-treatment BP in hypertensives with good control was similar to normotensives', $p=0.541$. One/5 years renal survivals in normotensives (97.0/80.0%) were similar to hypertensives with good BP control (96.2/63.0%, $p=0.362$). Normotensives, however, demonstrated significantly better one/ five years renal survival (97.0/80.0%) than patients with fair (75.0/25.0%, $p=0.014$) and poor BP control (50.0/0.00%, $p=0.003$). By Kaplan-Meier pairwise comparisons and the log-rank test, patients with good BP control survived (66.7%) better than patients with either fair (24.1%; $p=0.002$) or poor (0.0%; $p=0.000$) control. Hypertensives with good BP control (66.7%) and normotensives (90.4%) survived similarly, $p=0.198$. Normotensives survived (90.4%) better than patients with either stage I (46.8%, $p=0.014$) or II (49.3%, $p=0.000$) hypertension. Stages I and II hypertension survived similarly ($p=0.353$). Cumulative mortality was significantly higher in hypertensive (62.4%) than non-hypertensive (9.5%) CKDs [Hazard ratio: 0.54, 95% CI: 0.35-0.83, $p=0.005$].

In childhood CKD, hypertension is a highly prevalent comorbidity and a significant risk factor for renal disease progression and mortality.

3. ABS/2013/HTN-CKD-03

TELMISARTAN USE LED TO REGRESSION OF PROTEINURIA AND IMPROVEMENT IN GLOMERULAR FILTRATION RATE (GFR) IN SICKLE CELL DISEASE PATIENTS WITH NEPHROPATHY

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Background: Kidney disease is a common cause of morbidity and mortality in Sickle Cell Disease patients with up to 5% of them developing end stage renal disease. Whereas as high as 38% of SCD patients have covert nephropathy which could be retarded by drugs. We set out to assess the usefulness or otherwise of Angiotensin Receptor Blocker (Telmisatan) Therapy in SCD patients with microalbuminuria, overt proteinuria and/or reduction in GFR.

Methodology: Forty SCD patients who satisfied the inclusion criteria were recruited after an informed consent. Their socio-demographic characteristics was determined and detailed history and clinical examination performed. Baseline serum chemistry, complete blood count and renal ultrasonography were determined.

They were given Telmisartan (40 - 80 mg) daily and patients monitored fortnightly. Biochemical parameters were assessed at 6 weeks and after 12 weeks. They were then repeated after 6 months of stopping Telmisartan therapy. The result was analysed using SPSS package version 16.

Results: Thirty nine (97.5%) completed the study, 25 females and 14 males, 37 patients had SS Hb genotype while only 2 had HbSC. The ages ranged between 18 and 56 years with a median of 27 years. The mean arterial blood pressure was 79.5 ± 97.5 and 98.0 mmHg at 0, 6 and 12 weeks respectively ($p < 0.0001$). The median microalbuminuria level for 27 patients with microalbuminuria regressed from 15 to 10 and 5.0 mg/g at 0, 6 and 12 weeks respectively ($p < 0.0001$) while the mean 24-hour urinary protein level for 12 patients with overt proteinuria was 1.03 ± 0.49 , 0.57 ± 0.16 and 0.45 ± 0.10 g/day at 0, 6 and 12 weeks respectively ($p < 0.0001$). The median glomerular filtration rate (GFR) for 38 patients progressively increased from 54.75 to 70.25 and 72.5 ml/min/1.73m² Body Surface Area at 0, 6 and 12 weeks respectively ($p < 0.0001$).

Conclusion: Telmisartan therapy led to a reduction in proteinuria and microalbuminuria and also improve glomerular filtration rate (GFR) in SCD patients without compromising blood pressure.

4. ABS/2013/HTN-CKD-04 CARDIOVASCULAR RISK PROFILE IN CKD PATIENTS AT NATIONAL HOSPITAL , ABUJA NIGERIA

Hussain Haruna, E. A. Anteyi, M.A Araoye, T. Uwaezuoke

Introduction and Objective: Cardiovascular disease (CVD) remains the leading cause of morbidity and mortality in patients with CKD. There is accumulating evidence that the increase in CVD burden is present in patients prior to dialysis, due to both conventional risk factors as well as those specific to kidney disease. The cardiovascular risk factor detection and control is of paramount importance in improving quality of living; and reducing morbidity/ mortality in CKD patients. Hence this study attempted to determine the prevalence of the traditional cardiovascular risk factors in stage 3 – 5 CKD.

Methods: A hospital based case control study of 149 CKD patients in stages 3 – 5 (73 stage 3 & 4 and 76 dialysis) compared with age and sex-matched 71 controls that had normal eGFR from patients attending the National Hospital Abuja (NHA) Nigeria, evaluating CVD risk factors such as advanced age, male sex, smoking, sedentary life style, hypertension, diabetes mellitus, Insulin resistance/ obesity, dyslipidemia.

Results: Data was collected from all of 220 studied subjects, 149 CKD patients in stages 3 – 5 (73 stage 3 & 4 and 76 dialysis) compared with age and sex-matched 71 controls. The data was checked for wrong entries and inconsistencies. It was then transferred to Epi-info 2005 version.

5. ABS/2013/HTN-CKD-05 PREVALENCE OF PERIPHERAL ARTERY DISEASE IN CKD PATIENTS

Hussain Haruna, E.A. Anteyi, M. A. Araoye and T. Uweazuoke

Introduction and Objective: PAD is very common in the CKD patients with prevalence rates of 24 to 37%. Both CKD and PAD share the same cardiovascular risk factors and are clinical manifestations of diffuse atherosclerosis. ABI cutoff of < 0.9 not only has been shown to be a good screening tool for PAD (90% sensitivity and 98% specificity) but is also associated with increased cardiovascular and all-cause mortality

Methods: A hospital based case control study of CKD patients in stages 3 – 5 (73 predialysis and 76 dialysis) compared with age and sex-matched 71 controls that had normal eGFR from patients attending the National Hospital Abuja (NHA) Nigeria, evaluating **Ankle Brachial Index (ABI)** This was determined by calculating the ratio of the highest systolic blood pressure (SBP) in the posterior tibial and dorsalis pedis arteries to the highest SBP of the brachial arteries. Of the two ABI measurements for each patient, the lower ABI was selected. ABI less than 0.9 are reduced.

Results: Data was collected from all of 220 studied subjects, 149 patients were CKD patients and 71 were controls. The data was checked for wrong entries and inconsistencies. It was then transferred to Epi-info 2005 version ¹³⁹ and rechecked, before it was analyzed. The controls had 4% prevalence of peripheral artery disease despite their advanced age, stage 3&4 CKD had 56.9% prevalence while stage 5 hemodialysis dependent had 66% with $p = 0.000$.

THEME: ACUTE KIDNEY INJURY AND TOXIC NEPHROPATHIES/DIALYSIS AND KIDNEY TRANSPLANTATION

1. ABS/2013/AKI-DIAL-TRANS-01

OUTCOME OF RENAL FUNCTION AFTER HAEMODIALYSIS IN WOMEN WITH POSTPARTUM RENAL FAILURE AT AHMADU BELLO UNIVERSITY TEACHING HOSPITAL

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Background: Post-partum renal failure is an important but often unrecognized complication occurring after pregnancy or delivery. Most patients reportedly die and few have the opportunity to be dialyzed. The aim of this study was to review the renal status of patients dialyzed after developing post partum acute kidney injury (AKI).

Method: Retrospective audit of dialysis done at the Dialysis unit of Ahmadu Bello University Teaching Hospital, Zaria.

Results: Eight women aged 18 to 35 years were referred for haemodialysis over a 7 year period (2006 to 2012). All except one came from other hospitals. Causes of renal failure were eclampsia 3(37.5%), Sepsis 3(37.5%), postpartum haemorrhage 1(12.5%), and uncontrolled diabetes with hypertension 1(12.5%). Four patients (50%) had severe haemorrhage. The commonest presenting complaint was oliguria of 1 to 10 days duration. Five patients had multi-organ dysfunction. The patients received a total of 31 dialysis sessions (ranging from 2 to 8 per patient). Two patients developed hypotension, one restlessness and one died during dialysis. Three patients (37.5%), were unable to continue dialysis due to financial problems. Post dialysis, 4(50%) patients developed Chronic Kidney disease and 1(12.5%) sustained hypertension. The rest were lost to follow up.

Conclusion: AKI following postpartum renal failure can have serious long term consequences on renal function. Efforts should be made to prevent development of AKI through improved antenatal care. Further urine output should be routinely monitored in women after delivery and those with sustained oliguria referred early for possible dialysis.

2. ABS/2013/AKI-DIAL-TRANS-02

FACTORS ASSOCIATED WITH INTRADIALYSIS DEATHS: FIVE YEAR RETROSPECTIVE STUDY OF RENAL FAILURE PATIENTS IN UDUTH, SOKOTO

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Introduction: The incidence of endstage renal disease requiring renal replacement therapy is rising globally. This is associated with the increasing prevalence of non communicable diseases globally. Intermittent haemodialysis as a form of Renal replacement therapy remains one of the viable options in the management of patients with both Acute kidney injury and chronic kidney disease. However, like all other therapeutic interventions, it has potential complications. We therefore reviewed the clinical parameters of our patients who died within the premises of our dialysis centre over a five year period to assess the factors that may have contributed to intradialysis deaths. This may offer potential therapeutic interventions to future patients that may reduce the risk of intradialysis deaths.

Methods: This is a retrospective study. We reviewed the medical records of all our 487 patients who had haemodialysis between 1st July, 2007 and 30th June, 2012. Information retrieved from all folders include Age, gender, occupation, type of renal failure, cause of renal disease, number of days from diagnosis to first dialysis, number of dialysis sessions ever received, inpatient status at time of last dialysis, day and time of death, level of consciousness at last dialysis, last pre-dialysis systolic and Diastolic Blood pressures, Packed cell volume and Serum Potassium prior to last dialysis, time on haemodialysis machine prior to death and outcome of dialysis. The data obtained was analyzed using IBM SPSS Version 20. Numerical data were reported as mean+SD. Comparison of means of continuous variables was done using student t-test. Chi square was used for comparing proportions. P value <0.05 was considered significant.

Results: A Total of 33 patients died within the premises of our dialysis centre during the 5 year period. Their mean age was 47.8±20.59 standard deviation (range 20-85 years). There were 28(84.8%) males and 5 females (15.2%). Indication for dialysis was for CKD in 51.5%, Acute on Chronic Kidney Disease in 30.3% and AKI in 18.2% of the patients. 23 patients (69.7%) died during dialysis, while 9(27.3%) died prior to commencement of dialysis and one(3%) died immediately after dialysis. The mean number of haemodialysis sessions ever received was 5.27±8.85 SD (range 0 to 40 sessions). These and other clinical parameters were compared with the clinical data of 33 randomly selected patients who did not die within the premises of the dialysis centre.

Conclusion: Presence of pulmonary oedema, impaired level of consciousness, advanced age and patients having their first session of haemodialysis are associated with high risk of intradialysis mortality. Strategies aimed at reducing these factors will go a long way in reducing intradialysis deaths.

3. ABS/2013/AKI-DIAL-TRANS-03

ENCAPSULATING PERITONEAL SCLEROSIS IN A SOUTH AFRICAN PERITONEAL DIALYSIS PATIENT: A CASE REPORT

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Background: Encapsulating Peritoneal Fibrosis (EPS) is a rare but serious complication of peritoneal dialysis. It is characterized by dense fibrosis and thickening of the peritoneum with bowel adhesion and encapsulation. We report a South African male peritoneal dialysis patient who developed EPS.

Case Report: B.S is a 53 year old male patient with End Stage Renal Disease from Malignant Hypertension. He was commenced on Continuous Ambulatory Peritoneal Dialysis for 7 years but was switched to Hemodialysis due to multiple episodes of peritonitis. He presented initially with vague abdominal pain and distension which subsequently became associated with vomiting and constipation. Physical examination of the abdomen revealed an ill defined mass around the epigastric and umbilical regions. Plain abdominal X ray revealed multiple air fluid level with some fecal loading while his abdominal CT scan showed loculated and non loculated ascites, thick ring enhancing parietal peritoneum with multiple adhesions. Treatment consisted of Tamoxifen and prednisolone in addition to nasogastric drainage of stomach contents, total perenteral nutrition and intravenous fluids. His condition gradually improved with resolution of the intestinal obstruction and was discharged to continue maintenance hemodialysis.

Conclusion: EPS although rare can occur in peritoneal dialysis patients and efforts should be made to address factors known to be associated with it.

4. ABS/2013/AKI-DIAL-TRANS-04 PREVALENCE AND TYPES OF INTRA-DIALYTIC COMPLICATIONS IN PATIENTS DIALYSING AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL

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Background: Despite the improvement in the safety of dialysis over the years, complications are still encountered. These complications reduce the quality of life and are associated with increased mortality and morbidity.

Objectives: To determine the prevalence and types of intra-dialytic complications in UBTH renal unit.

Methodology: This is a descriptive retrospective study in which records of patients who had hemodialysis (HD) over a one year period were reviewed. The socio-demographic information, aetiology of renal disease, number of HD sessions, blood pressure readings during HD and recorded complications were obtained. The data was analysed using SPSS version 16.

Result: 861 sessions of HD in 167 patients (99 males, 68 females) were reviewed. 144 (86.2%) had ESRD while 23 (13.2%) had AKI. Hypertension, CGN, DM were the commonest causes of ESRD accounting for 27%, 26.3% and 12% respectively. The mean age of males and females were 48.77±15.39 years and 40.75±15.29 years respectively; this difference was statistically significant (p= 0.001). The mean HD sessions was 5.16±9.17. The common complications encountered were hypertension (28.9%), hypotension (10.9%), seizures (3.0%), disequilibrium syndrome (2.9%), vomiting (2.2%), cramps (2.1%). Others were fever, chest pain, back pain, bleeding from vascular access, headache and hypoglycaemia which accounted for < 2% each.

Conclusion: Intra- dialytic hypertension and hypotension were the commonest complications encountered.

5. ABS/2013/AKI-DIAL-TRANS-05

A REVIEW OF DIALYSIS-TREATED PATIENTS AT THE UNIVERSITY OF BENIN TEACHING HOSPITAL (2004 – 2011)

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Introduction: Haemodialysis is the most available modality of renal replacement therapy in Nigeria today and is indicated in the treatment of patients with acute kidney injury, end stage renal disease and acute exacerbation of chronic kidney disease.

Objective: To review all new admissions into our dialysis facility from January 1st 2004 to December 31st 2011 and to observe any trend in presentation of the patients over the period under review.

Methodology: The dialysis records of the facility were reviewed, patient demographic characteristics and diagnoses obtained. Analysis was done using SPSS version 17.

Results: A total of 1,278 patients were admitted to have haemodialysis during period under review. There were 778 males (60.9%) and 500 females (39.1%) with 45.4% and 11.5% of patients being below 40 years and greater than 65 years of age respectively. Majority had CKD (81.1%) with chronic glomerulonephritis, hypertensive nephropathy and diabetic nephropathy diagnosed in 374 (29.3%), 245 (19.2%) and 133 (10.4%) of cases respectively. Patients admitted for AKI were 241 (18.9%) with severe sepsis, pre-renal causes, acute glomerulonephritis and eclampsia being responsible for 31.5%, 17.4%, 10.7% and 6.2% respectively. Number of dialysis cases due to CGN peaked in 2007 but has been stable over the past 3 years.

Conclusion: Chronic glomerulonephritis was commonest diagnosis among patients requiring dialysis; there was a preponderance of males and patients aged less than 40years dialysed during the review period.

6. ABS/2013/AKI-DIAL-TRANS-06

MISSING GUIDE WIRE DURING FEMORAL VEIN CANNULATION: A CASE REPORT

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Introduction: All routes of central venous access are associated with complications and possible failure. One of the most common methods to gain central venous access in emergent situation is via femoral vein catheterization. The technique of accurately placing a femoral vein catheter depends on appropriate patient selection and a sound knowledge of anatomy. The modified Seldinger technique is used initially described in 1953. Femoral site is advantageous in patient who are critically ill because the femoral area is relatively free of other monitoring and airway devices, if bedridden patient require central venous access, the femoral site allows for relatively free movement of arms and neck without impeding the access line and risk of developing a haemothorax or pneumothorax both potential complication of supraclavicular venous access.

Femoral venous cannulations are generally associated with less severe complication largely because the risk of traumatizing intrathoracic structures is avoided. The following complications are commonly associated with femoral venipuncture; Arterial puncture, Pseudo aneurysm formation, Haematoma formation, Bowel penetration more likely in patients with femoral hernias, Bladder puncture more likely to occur with a distended bladder, In addition to the common complications with femoral vein catheterization there are some rare

usually preventable side effects related to guide wire and catheter. A case of migration of guide wire through the systemic circulation from the femoral vein to the jugular vein has been previously reported in Tehran.

Case Report: We report here the case of a 70 year old male, retired police officer diagnosed with type 2 diabetes mellitus and hypertension 7 years before presentation but who was been treated for kidney failure due to diabetic nephropathy. While attempting femoral catheterization on the 29/11/12, the guide wire accidentally got dislodged and disappeared completely into the left femoral vein. The guide wire was successfully removed via surgery by our vascular/cardiothoracic unit. Although this complication is rare, care should be taken during femoral cannulation in order to reduce morbidity and mortality among end stage kidney failure patients.

THEME: DIALYSIS AND TRANSPLANTATION

1. ABS/2013/DIAL-TRANS-01

HLA (DNA) TYPING USING SEQUENCE SPECIFIC PRIMER TECHNIQUE: PRELIMINARY REPORT FROM A UNIVERSITY TEACHING HOSPITAL, ILE-IFE, NIGERIA

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Background: Human Leukocyte Antigen (HLA) polymorphism determination is very important for transplantation procedures. As part of her kidney transplantation programme, the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, south west Nigeria acquired equipments for the HLA (molecular DNA) typing of recipients and donors of kidneys in organ replacement programme. Before now, this is done in South Africa and/or Europe. In this communication, we attempt to present our experience and a preliminary report of our results over a 12 month-period.

Patients and Methods: From December 2011 to December 2012, we prospectively determined the HLA types of 20 individuals referred to the tissue typing laboratory of OAUTHC, Ile-Ife. DNA was extracted from the patient's peripheral blood sample, using the QIAmp Blood DNA Mini kit, (Qiagen). PCR was done using Olerup® low-resolution PCR-SSP typing kit. Electrophoresis of the PCR product was done in 2% agarose gels, and the bands visualized under UV light. HLA types were reported using provided tables and/or Helmberg software. Data were presented using inferential statistics while HLA frequencies were expressed in percentages.

Results: A total of 20 individuals (13M and 7F) consisting of 7 renal transplant recipients and their 7 prospective donors; a stem cell recipient and 3 donors and a migrant pair for kinship determination were typed. Age ranged from 4-65 years. 44 HLA alleles were detected, while HLA A, B, C, DRB1 and DQB1 were 7, 10, 11, 8, 8 alleles respectively. The alleles were heterogeneic in distribution while 6 antigens were in high frequency (e"25%).

Conclusion: Renal transplant procedure is the major indication for HLA (DNA) typing in our setting; this is feasible in Nigeria including both low and high resolution typing. The HLA antigens with high frequency

(e"25% frequency) observed commonly in our population are HLA A02*, B30*, C15*, DRB103*, DRB108*and DQB106*.

2. ABS/2013/DIAL-TRANS-02
THE CHALLENGES OF ESTABLISHING A KIDNEY TRANSPLANT PROGRAM IN NIGERIA: EXPERIENCE FROM THE FIRST CASE IN ILORIN IN THE NORTH-CENTRAL ZONE OF NIGERIA

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Background and Aims: Kidney transplantation is globally accepted as the best treatment for patients with end stage kidney disease. It offers better quality of life and cost savings compare with dialysis. Apart from South Africa perhaps, kidney transplantation in sub-Saharan Africa (SSA) is still at developmental stage. In Nigeria with 160million population and endstage kidney disease burden of 10% of hospital admissions, 161 cases have so far been performed [from 7centres in the country] with 75% of this done at the pioneering private hospital which started twelve years ago. The limited growth of transplantation program in SSA is intricately connected with the myriad of socio-economic, cultural, political and infrastructural problems. This report highlights the challenges from experience of the first case of living related kidney transplantation in Ilorin in the north-central zone of Nigeria.

Methods: The patient is a 28year old junior employee of a private construction company who had ESKD from chronic glomerulonephritis and had been on dialysis and erythropoietin for a year. His donor is his elder brother, a 30years old teacher. He had a fistula created by our vascular surgeons which he used for the dialysis. Majority of the pre-transplant laboratory tests (Kidney function, Liver function, cardiac function, thyroid function, biochemical, hematological, viral, serological and radiological tests) were done in our hospital with exception of the Renal angiography (done in Lagos), HLA typing, CMV and EBV serology (done in South Africa through Lagos). Overall, the results were satisfactory with 50% HLA match.

Results: The surgery was done on the 10th of September, 2012. He had delayed graft function due to AKI while the doppler scan consistently showed good graft perfusion and eventually started to function after 20days. The patient was maintained on Mycophenolate mofetil/Tacrolimus/Prednisolone regimen. The tacrolimus level was assayed at a South African Laboratory through a facilitating centre in the country. He had severe fungal UTI and sepsis which was managed. He made considerable clinical progress with the serum urea, creatinine and haemoglobin attaining normal values and was discharged. The donor also was discharged and both are on follow up. The treatment was by his employer and UITH management.

Conclusions: The challenges involved in establishing a transplant program in Nigeria include inadequate facilities, logistic problems, poverty, lack of political will, transplant tourism and high risk for infections.

3. ABS/2013/DIAL-TRANS-03
EFFICACY OF WATER TREATMENT FOR HAEMODIALYSIS IN SOUTH EAST NIGERIA

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Introduction: Current guidelines by Association for Advancement for Medical Instrumentation (AAMI) recommend minimum standard of purity for water use in haemodialysis. Impure water used for haemodialysis has been associated with morbidity and mortality in dialysis patients. It is not known if local haemodialysis centres in South east Nigeria are complying with the recommendations. This study assessed the pretreatment and post treatment water used for haemodialysis in 8 haemodialysis in 6 towns in South east Nigeria

Methods: Water samples were collected from pretreatment and post treatment points in the dialysis circuit. The samples were tested for aluminium, calcium, magnesium, potassium, sodium, chloramines, nitrate and free chlorine. Water samples were cultured in tryptone glucose extra agar at 37^oc for 48hours. Endotoxin analysis was done using limulus Amaeboctye assay.

Results: The mean concentration of sulphate, calcium, chloramines, aluminium and nitrate in pretreatment water exceeded the AAMI recommendation while the mean concentration of sodium, potassium, magnesium and fluoride were within the AAMI recommendation. After treatment, the concentration of chloramines and aluminium reduced to within AAMI recommendation. The mean concentration of other elements investigated after treatments were within normal AAMI recommendation. The mean total coliform count and concentration of endotoxin level in both pre-treated and post-treated water in all haemodialysis centres were within the recommended AMMI levels.

Conclusion: This study has shown that water used for haemodialysis centres in South Nigeria meets the AAMI recommendations to a great extent. Water used for dialysis in haemodialysis centres in South east Nigeria is reasonably safe.

4. ABS/2013/DIAL-TRANS-04

PERCEPTION AND PRACTICE OF DOCTORS TOWARD KIDNEY DONATION AND TRANSPLANTATION IN UBTH

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Background: Therapeutic strategies for patients with ESRD are dialysis and kidney transplantation. Haemodialysis is more readily available for Nigerian patients but cannot be sustained by most because it is expensive. Thus HD is sub-optimal with resultant poor quality of life (QOL) and death. Kidney transplantation although also expensive, offers better QOL. However a major drawback for kidney transplantation is unavailability of kidney donors. Poor knowledge about kidney donation in itself may partly be responsible for low donation rates and well informed doctor can better educate potential kidney donors and recipients on kidney transplantation. This survey was carried out to assess knowledge and attitude of doctors in UBTH to kidney donation and transplantation.

Methods: 150 self-administered questionnaires were distributed to physicians, surgeons and family physicians in UBTH. Response rate was 75%. Data was analysed using SPSS version 16.

Results: There were 76 (67.9%) males and 36 (32.1%) females with age range 24 – 55 years; 42 (37.5%) physicians, 43 (38.4%) surgeons and 27 (24.1%) family physicians. 110 (98.2%) had heard of kidney donation, 2(1.8%) had never heard. Of those that had heard 50 (44.6%) had good knowledge of the term kidney donation, 32 (28.6%) had fair knowledge and 23 (20.5%) had poor knowledge. 69(61.6%) would be willing to donate a kidney, most common reason being to save lives. Specialty, designation and religion had no

influence on their knowledge and attitude; neither did their knowledge influence their attitude to kidney donation.

Conclusion: Knowledge of kidney donation and transplantation amongst the doctors studied was good but same cannot be said of their attitude; constraints to kidney donation were fear of post-surgical complications and fear of developing kidney disease in future. Education and enlightenment programs are still needed to help improve the knowledge and attitude toward kidney donation.

5. **ABS/2013/DIAL-TRANS-05**
SINGLE CENTER EXPERIENCE WITH INTERNAL TUNNELED CUFFED
CATHETER: A PRELIMINARY REPORT

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Introduction: Hemodialysis catheters are integral part of the delivery of hemodialysis and represent a major access source in our practice. Even though catheters play an important role in the patient undergoing hemodialysis, catheters are considered a bridge to more permanent forms of dialysis access in most patients. In the past vascular surgeons were called in to place tunneled central venous catheter (TVC) for hemodialysis patients, however with the advent of per cutaneous increasing number of interventional nephrologists are inserting it. We present here a preliminary report of assessment of the outcome and complications of internal jugular tunneled cuffed catheter insertions carried out by nephrologists and residents at the Owena dialysis center, University College Hospital, Ibadan.

Methods: Twelve patients who were able to afford the cost of tunneled catheter were recruited for internal jugular tunneled catheter insertion. Procedure was well tolerated in all cases. Catheters were put to use immediately following insertion.

Results: The age range of the participants was 20-99 years. Chronic glomerulonephritis was the commonest cause of CKD among them followed by diabetes nephropathy. Right internal jugular vein was the preferred site in the majority of participants. The main complications were pain, exit site blood ooze, catheter block or thrombosis and kink.

Conclusion: Tunneled central venous catheters could find a niche as the primary access of choice for pre-transplant patients with end stage renal disease in view of its immediate usage and high blood flows.

6. **ABS/2013/DIAL-TRANS-06**
HEMODIALYSIS FOR END STAGE RENAL DISEASE AT THE UNIVERSITY OF
ILORIN TEACHING HOSPITAL

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Background: Hemodialysis (HD) has sustained life of more than a million end stage renal disease (ESRD) patients worldwide and is the commonest form of renal replacement therapy available in Nigeria. ESRD frequently resulted in unnecessary suffering and premature death of our patients because most can neither

afford nor sustain the high cost of therapy. It is unclear if the outcome of these patients has improved in recent times.

Methods: A four year (2008-2012) retrospective appraisal of ESRD patients who underwent HD since the establishment of a dedicated renal care centre at University of Ilorin Teaching Hospital was undertaken. Socio-demographic data were summarized and a comparison made with specific reference to dialysis and patient outcome. Data result analysis utilized SPSS version 16

Results: The male to female ratio was 2.6:1 with mean ages of 46.9 ± 10.3 and 44.0 ± 21.1 years respectively. Chronic glomerulonephritis was the commonest cause of ESRD. A total of 418 sessions were carried out in the period under review with 68.9% performed among males. The median duration of hemodialysis was 4 weeks (range 1-69 weeks) among males and 4 weeks (range 1- 64 weeks) among females respectively; 97.5% of patients paid for all their dialysis sessions out-of-pocket. Only 7.5% of patients could afford three sessions of dialysis weekly while 20.0% of patients dialyzed at irregular intervals whenever money was available. Overall mortality was 55.0% with 58.6% occurring in males. Majority of the dead (40.9%) dialyzed once a week, 22.7% whenever funds were available and none could afford thrice weekly sessions.

Conclusions: The outcome of our ESRD patients on hemodialysis remains poor as they can hardly afford or sustain dialysis due to cost. We strongly advocate preventive nephrology and inclusion of renal subsidy into the current National Health Insurance Scheme of Nigeria.

THEME: EXPERIMENTAL NEPHROLOGY

1. ABS/2013/EXP NEPH-01

THERAPEUTIC EFFICACY OF MODIFIED PERITONEO-VENOUS SHUNT IN THE MANAGEMENT OF REFRACTORY ASCITES IN ADULT PATIENTS WITH NEPHROTIC SYNDROME

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Background: Refractory oedema is a major cause of morbidity whose management remains a challenge in nephrotic syndrome patients. Administration of parenteral diuretics and salt poor albumin achieve desired effect in only a few patients, and repeated paracentesis results in hypotension, malnutrition, infection and sometimes acute kidney injury. Modified peritoneo-venous shunt may reduce hypoproteinaemia but could also be complicated. We performed intravenous reinfusion of ascitic fluid (modified peritoneo-venous shunt) in twenty-six nephrotic syndrome patients and hereby report the efficacy and safety of the procedure.

Methods: Twenty-six consecutive patients with anasarca and refractory oedema were recruited for this study. A total of 165 sessions of intravenous reinfusion of ascitic fluid (modified peritoneo-venous shunt) was performed after necessary screening. Regression of oedema was assessed using weight reduction, abdominal girth measurement and diuresis. Renal biopsy was subsequently performed to determine histological diagnosis. Data obtained were analyzed using statistical package for social sciences (SPSS) version 16.

Results: There was male preponderance (M: F; 3.3:1). The mean \pm SD age was 26.1 ± 3.8 years while their duration of oedema was 12.1 ± 3.3 months. There was significant weight loss in all of the patients by the

end of second week of initiation of intravenous reinfusion of ascitic fluid (modified peritoneo-venous shunt). The mean weight loss, reduction in abdominal girth and increase in serum albumin by the end of 2nd week were 15.1kg, 28.1cm and 1g/L respectively ($p<0.0001$). The mean increase in urinary output at the end of 2nd week was 665mls ($p<0.001$). The mean session of IRA per patient was 6.4 ± 1.3 sessions. None of the patients bled from puncture wound site or developed intra-abdominal haemorrhage. No mortality was recorded. The commonest histological diagnosis was focal segmental glomerulosclerosis.

Conclusion: Intravenous reinfusion of ascitic fluid (modified peritoneo-venous shunt) is a safe, useful and effective technique to control refractory oedema in nephrotic syndrome.

2. ABS/2013/EXP NEPH-02

CLINICO-PATHOLOGICAL STUDY OF SICKLE CELL NEPHROPATHY IN NIGERIANS

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Introduction: Sickle cell disease (SCD), a genetically inherited disease, often presents with disabling acute complications which can occasionally be fatal. Improvement in the management of SCD has improved survival into adulthood but is marked by occurrence of end-organ damage including kidney dysfunction. This study determined the relationship between clinical parameters, kidney function, renal histopathology and haematologic parameters.

Methodology: The study prospectively studied 70 patients with SCD for the presence of proteinuria (microalbuminuria or overt proteinuria), glomerular filtration rate (GFR) $<60\text{ml/min}$ and tubular dysfunction and renal biopsy was performed in those with indications. Data was analysed using descriptive and inferential statistics in SPSS package (version 16).

Results: The age of the patients ranged between 18 and 56 years (Mean \pm SD; 27.5 ± 8.9 years) with a female preponderance, M: F ratio (1:1.3). Of the 70 patients screened, 25 (35.7%) had CKD as defined by GFR $<60\text{ml/min}$ and/or proteinuria. CKD was common among HbSS (42.1%) than HbSC (7.7%) subjects. GFR correlated positively with haematocrit ($r=0.472$; $p<0.0001$) and BMI ($r=0.518$; $p<0.0001$) while microalbuminuria correlated negatively with GFR ($r=-0.255$; $p=0.04$). Tubular function was assessed using fractional excretion of sodium (FENa), fractional excretion of potassium (FEK), specific gravity and pH; mean (\pm SD) of (FENa), (FEK), specific gravity and pH were $6.5 (\pm 2.2)$, $31.1 (\pm 10.1)$, $1.0 (\pm 0.01)$ and $6.3 (\pm 0.5)$ respectively. All recruited patients had markedly elevated FEK while 98.6% had elevated FENa. Hyposthenuria was present in 85.7%. GFR correlated negatively with percentage sickle cell count ($r=-0.616$, $p<0.0001$), FEK ($r=-0.448$, $p<0.0001$) and FENa ($r=-0.336$; $p=0.004$). Of the 25 patients with CKD, 23 underwent renal biopsy out of which 22 were successful and the remaining 2 declined. Glomerulosclerosis was demonstrated in 9 (39.1%) of the patients, 6 (69.6%) had matrix expansion while 15 (65.2%) had mesangial hypercellularity. Tubular thickening was found in 7 (30.4%) patients while tubular atrophy was demonstrated in 14 (60.9%) of the patients. Interstitial fibrosis was demonstrated in 14 (60.9%) patients while interstitial cellular infiltration with inflammatory cells was demonstrated in 2 (8.7%) of the patients. Medial arteriolar thickening was seen in 4 (17.4%) patients while intimal fibrosis was found in 7 (30.4%) of the patients. Pattern of histological diagnosis were mesangioproliferative glomerulonephritis in 11 (50%)

patients, 6 (27.3%) had minimal change disease, 3 (13.6%) had focal segmental glomerulosclerosis while interstitial nephritis was diagnosed in 2 (9.1%) patients.

Conclusion: CKD is common among SCD patients. It is more prevalent in homozygous SS than heterozygous SC patients. Kidney disease was characterized by a preponderance of tubular dysfunction and mesangioproliferative glomerulonephritis.

3. ABS/2013/EXP NEPH-03

HAEMOGLOBIN CONCENTRATION PROFILE OF RENAL PATIENTS SEEN IN DELSUTH OUTPATIENT CLINIC

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Background: Anaemia is defined as a decrease in circulating red blood cell mass; the usual criteria being haemoglobin below 14g/dl in males and <12g/dl in females. It is one of commonest features of significant decline in renal function. Haemoglobin concentration of renal disease patients vary and depend on a number of factors, however it is largely directly proportional to glomerular filtration rate. Adequate and sustained management of anaemia is known to slow the progression of chronic kidney disease and improve quality of life

Aim: To determine the haemoglobin concentration profile of patients referred to the renal outpatient clinic. To determine the relationship between haemoglobin concentration and renal function of patients.

Method: This is a hospital-based prospective observational study. Consenting 74 patients were recruited consecutively as they presented for initial assessment at the renal outpatient clinic. Sociodemographic data was collated using an open ended questionnaire. Haemoglobin concentration and serum creatinine were measured using the Reflotron® analyser and appropriate strips. GFR was estimated using MDRD formular Anaemia was defined as haemoglobin d" 12g/dl. Data analysis was done using SPSS version 17.

Results: Mean age was 50±16 years while sex ratio was 1.64: 1 in favour of males. Prevalence of anaemia among patients was 761.6%. Mean haemoglobin concentration was 10.0 ±2.8g/dl. Serum creatinine ranged between 0.5-10.0mg/dl while mean estimated GFR was 63.2±50.8ml/min. There was a significant negative correlation between haemoglobin concentration and GFR as well as serum creatinine (Pearson's correlation -0.647 and -0.687respectively).

Conclusion: Anaemia is highly prevalent among patients seen in the renal outpatient clinic. Haemoglobin concentration is directly proportional to GFR of patients. There is no significant relationship between haemoglobin concentration and age of the patients.

4. ABS/2013/EXP NEPH-04

ESTIMATED GLOMERULAR FILTRATION RATE AT INITIATION OF HAEMODIALYSIS IN A NIGERIAN TERTIARY CENTRE.

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Background: Decreasing glomerular filtration rate generally depicts progression of renal disease and renal replacement therapy is indicated as patients approaches end stage renal disease. The GFR of end stage renal disease patients at initiation of haemodialysis varies depending on factors including, comorbidities, physicians practice, geographical region amongst others.

Aim: To determine the levels of estimated GFR of ESRD patients at initiation of haemodialysis. To determine the association between variables such as sex, age, comorbidities on one hand and time of initial dialysis.

Method: This is a hospital-based retrospective observational study. Records of all ESRD patients dialysed over a 6 month period were collated. Patients with acute on chronic kidney disease were excluded. GFR was estimated using MDRD formula. Early dialysis was defined as dialysing at an estimated GFR of >10ml/min. Data analysis was done using SPSS version 17.

Results: Mean age was 45 ± 18 years while male to female ratio was 1.2: 1. Prevalence of hypertension and diabetes among patients was 57.7% and 20.5% respectively. Mean serum creatinine concentration was 12.6 ± 7.1 mg/dl while mean estimated GFR was 14.3 ± 7.6 ml/min. The early dialysers constituted 65.4% of the patients studied. There was no significant association between age, sex, hypertension, diabetes on one hand and time of dialysis on the other.

Conclusion: Majority of ESRD patients in the centre dialysed early and no predictor of the time of dialysis was identified. Further research geared towards identifying possible predictors of early dialysis among ESRD patients is required.

5. ABS/2013/EXP NEPH-05

PREVALENCE, RISK FACTORS AND HISTOLOGICAL PATTERN OF KIDNEY DISEASE IN PATIENTS WITH HIV/AIDS AT AMINU KANO TEACHING HOSPITAL, KANO, NIGERIA

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Introduction: Renal disease in HIV/AIDS contributes significantly to the morbidity and mortality associated with HIV infection worldwide. This cross sectional study was aimed at providing data on the prevalence, risk factors and histological pattern of kidney disease in HIV positive patients in Kano, Nigeria.

Methods: Four hundred consecutive HIV positive treatment-naïve adults satisfied the inclusion criteria and were screened for proteinuria and decreased GFR between May 2010 and October 2010. Patients with other condition known to cause kidney disease were excluded. Socio-demographic and clinical features were documented using an interviewer-administered questionnaire. Proteinuria was tested using dipstick and repeated after four weeks if positive, spot urine was used to estimate 24-hour urine protein excretion using protein creatinine ratio. Complete blood count, CD4 cell count, serum urea, electrolytes and creatinine, serum proteins and cholesterol were determined. Twenty patients were biopsied.

Results: The male: female ratio was 1: 1.5 and mean age was 34.03 ± 10.23 years. Renal disease defined by the presence of proteinuria or decreased GFR (<60 ml/min/1.73 m²) or both was found in 227 patients (56.8 %), with 141 (35.3%) and 64 (16%) having proteinuria and low GFR respectively. Prevalence was higher in females 121 (53.3%). Commonest clinical features were anaemia 162 (71.4%) and low BMI 64 (28.2%). Risk factors for kidney disease were low CD4 cell count ($p=0.034$) and anaemia ($p=0.0001$).

Collapsing FSGS was found in 11 (55%) while 5 (25%) had interstitial nephritis. One patient had normal histology on light microscopy despite proteinuria of 2.7 g/day suggestive of minimal change disease.

Conclusions: The prevalence of renal disease in HIV positive patients is high in Kano, Nigeria. Low CD4 cell count and anaemia were risk factors identified. Collapsing FSGS was the predominant histological type. Routine screening of HIV positive patients for the presence of kidney disease is recommended.

6. ABS/2013/EXP NEPH-06

PROTEINURIA, GRAFT OUTCOME AND CARDIOVASCULAR RISK AMONG KIDNEY TRANSPLANT RECIPIENTS IN A SOUTH AFRICAN PUBLIC HOSPITAL

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Introduction: Proteinuria is an excellent marker of poor long term graft survival and an independent risk factor for total and cardiovascular mortality in renal transplant population. It is associated with inflammatory markers, such as C-reactive protein (CRP) and cardiovascular risk factors. The risk of death from all cause and from cardiovascular disease is increased with increasing amounts of proteinuria. In this study, we aimed to determine the prevalence of proteinuria in our kidney transplant recipients (KTRs) and its relationship with graft function and cardiovascular risk factors.

Methodology: Patients aged 18 years and above who received kidney transplant at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) between January 2005 and December 2009 were recruited. A questionnaire that captured various cardiovascular risk factors was administered. Patients records were assessed for information on their post-transplant follow up. Height, weight and waist circumference of all patients were recorded. Body mass index (BMI) was calculated as weight in kg divided by the square of height in meters. All patients had carotid Doppler and echocardiography done using Philips iE33 machine (Philips Corporation USA). Framingham Risk Score was used to categorize patients into low, moderate, high and very high cardiovascular risk groups. Graft dysfunction was defined as estimated GFR based on the modification of diet in renal disease (MDRD) of less than 60 ml/min/1.73m². Results were analyzed using statistical package for social sciences (SPSS) version 17, p value of 0.05 was considered significant.

Results: Proteinuria was present in 51 patients (51%), the mean \pm SD 24 hour urinary protein excretion per day was 1.67 ± 2.00 with a range of 0.4 to 9.4 g/day. When proteinuria as a categorical variable was compared across the CVD risk strata, there was a statistically significant difference, $X^2 = 14.687$, $df = 3$ and $p = 0.002$. The table below shows the correlation of proteinuria with some CV risk variables.

Table 1 Correlation of proteinuria with some clinical variables

Variable	Spearman's correlation	P value
LVMI	0.206	0.04
SBP	0.373	<0.0001
DBP	0.327	0.001
MAP	0.404	<0.0001
Haemoglobin	-0.337	0.001
eGFR	-0.299	0.002
Cumulative steroid dose	0.214	0.032

High cardiovascular risk 0.381 <0.0001

Proteinuria correlated with graft dysfunction, increased left ventricular mass index and anaemia. Graft function had significant positive correlation with physical exercise. Proteinuria is a marker of graft dysfunction and is associated with high cardiovascular risk in this study. Strategies aimed at reducing proteinuria including blood pressure control and physical exercises in kidney transplant recipients are recommended.

THEME: PREVENTIVE NEPHROLOGY

1. ABS/2013/PREV NEPH-01

SCREENING FOR RISK FACTORS FOR CHRONIC KIDNEY DISEASE (CKD) IN TYPE 2 DIABETIC PATIENTS ATTENDING THE UNIVERSITY OF BENIN TEACHING HOSPITAL

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Background: Incidence of diabetes mellitus is increasing worldwide and 20-30% of diabetics develop diabetic nephropathy (DN). DN is the leading cause of end-stage renal disease in US and Europe. Prevalence of DN is on the increase in Nigeria and ranks 3rd amongst causes of chronic renal failure in Nigeria. Poor control of blood glucose, blood pressure and dyslipidaemia are some of the risk factors for development CKD in diabetics. Early identification and modification of risk factors for CKD should form part of the preventive strategies in the management of diabetic patients. This study screened for risk factors for CKD in type 2 diabetics attending the University of Benin teaching Hospital(UBTH).

Methodology: A descriptive cross-sectional study where 144 (53 males and 91 females) type 2 diabetics were screened for risk factors for CKD. Average fasting blood glucose and blood pressure of 3 consecutive clinic attendance were done. Weight (Kg), height (m) and hip circumference (HC) were measured and body mass index (BMI) was calculated. Mean blood pressure and fasting blood glucose of 3 clinic visits were calculated. Fasting serum lipid profile was assessed. Metabolic syndrome (MetS) was defined using the NCEP-ATP III 2001 criteria. Poor glycaemic and blood pressure control were defined as FBS > 130mg/dl and BP > 130/80mmHg respectively. The data were analysed using SPSS version 16.

Results: The mean age of the study population was 57.49±11.49 years with a M:F ratio of 1: 1.7 The average duration of DM and hypertension were 6.02±6.02 years and 7.19±6.91years respectively. The average BMI and HC were 28.32±5.03kg/m² and 103.4±12.82cm respectively. The mean systolic and diastolic BP were 132.76± 15.73mmHg and 70.32±8.91mmHg respectively. The total cholesterol, HDL-C, triglyceride, LDL-C were 177.94±45.52mg/dl, 52.6±18.58mg/dl, 111.94± 42.59mg/dl and 104.22±38.28mg/dl respectively. 97 (67.4%) of the 144 patients were hypertensive and of these, only 29 (29.9%) had good BP control. Good glycaemic control was found in only 77 (53.5%) patients. Dyslipidaemia and metabolic syndrome were present in 93 (64.6%) and 102 (70.8%) patients respectively. 107 patient (74.3%) were overweight and obese. There was a positive correlation between the age and systolic BP (p < 0.001), BMI and diastolic BP (p = 0.01). There was significant association between MetS and BP control (p <0.001), but no association between MetS and glycaemic control.

Conclusion: The risk factors for CKD in type 2 diabetic patients attending UBTH are highly prevalent. Efforts should be geared towards modifying these risk factors in order to prevent or slow down development of CKD.

2. ABS/2013/PREV NEPH-02

CLINICO-PATHOLOGICAL STUDY OF DIABETIC NEPHROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Introduction: The prevalence of Diabetes Mellitus and its complicating nephropathy have assumed epidemic proportion globally. It is now the commonest cause of end-stage renal disease (ESRD) in the USA and Europe and the prevalence is increasing in developing countries. There have been scanty studies to look at the relationship between renal function and histology in Nigerian diabetics hence this study.

Methodology: Type 2 Diabetic patients being followed up in Endocrinology Unit were screened for renal disease defined as presence of proteinuria and/or reduced GFR less than 60ml/min. Clinical characteristics and laboratory parameters and renal histopathology were assessed in those with kidney disease. Data was analysed using SPSS package 15.

Results: Of the 183 diabetics screened for CKD, 88 (48.1%) had evidence of CKD. Only 28 patients consented to renal biopsy, the mean (\pm SD) age was 57.82 (\pm 5.81) years with a M:F ratio of 1:1.15. The mean (\pm SD) duration of DM, age at diagnosis, BMI, SBP and DBP were 9.46 (\pm 4) years, 48.36 (\pm 6.52) years, 25.88 (\pm 3.64) kg/m², 143.6 (\pm 21.6) mmHg and 86.9 (\pm 12.9) mmHg respectively. Diabetic retinopathy was present in 12(42.9%) and 4(14.3%) had concomitant hypertensive retinopathy. The median daily protein excretion was 0.55g/day with a range of 0.1 to 6.4g/day, the FBG was 6.74 \pm 1.94mmol/L. the mean serum creatinine was 124.14 \pm 41.69 μ mol/L. the mean estimated GFR was 46.01 \pm 11.47ml/min. the mean PCV was 35.18 \pm 6.77%. The mean total cholesterol was 5.13 \pm 1.04mmol/L. the HDL was 1.53 \pm 0.58mmol/L. Renal histopathology (light microscopy) revealed 27(96.4%) with GBM thickening. 13(46.4%) had mesangial expansion, while 3(10.7%) had nodular sclerosis. 15(53.6%) had diffused sclerosis. 22(78.6%) had hyaline arteriosclerosis. 3(10.7%) had capsular drop.

Conclusion: The main clinical characteristics in diabetics with nephropathy were concomitant hypertension and proteinuria while the main histological finding was hyaline arteriosclerosis and diffuse sclerosis. Nodular sclerosis was uncommon.

3. ABS/2013/PREV NEPH-03

ADHERENCE TO AAMI GUIDELINES BY HAEMODIALYSIS CENTRES IN SOUTH EAST NIGERIA

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Introduction: The Association for Advancement for Medical Instrumentation (AAMI) current guidelines recommend that haemodialysis centres test water for haemodialysis every three months to ensure safety of dialysis water. This is necessary to ensure safety of water used for dialysis. Use of impure water for haemodialysis has been associated with morbidity and mortality in dialysis patients. This study assessed the compliance of haemodialysis centres with this guideline in 8 haemodialysis centres in 6 towns in South east Nigeria.

Method: A structured questionnaire was administered to each of eight haemodialysis centres to assess source of feed water, method of water treatment, water monitoring techniques, and frequency of water testing.

Result: Four (50%) of the centres were in government owned tertiary health institutions (three federal government owned and one state government owned hospital), two (25%) were in hospitals owned by religious organisations, while the remaining two (25%) were owned by private individuals. Three (37.5%) centres tested pre and post treatment water for dialysis for both bacteriological and chemical contaminants every three months, 2 (25%) centres tested every six months, 2 (25%) centres tested water rarely, and one (12.5%) centre never tested water. The centres in public hospitals adhered better to the guideline than the privately owned institutions.

Conclusion: Adherence to AAMI guideline with respect to testing of water for haemodialysis is poor in haemodialysis centres in South east Nigeria as only 38% of the centres complied with guideline. Efforts including education and possibly sanctions should be deployed to ensure better compliance.

4. ABS/2013/PREV NEPH-04 RENAL RISK PROFILING IN NEWLY DIAGNOSED HYPERTENSIVES

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Objectives: The study was aimed at determining the occurrence and pattern of renal risk factors in newly diagnosed hypertensives. It was also aimed at detecting the relationship between the risk factors and the kidney function. It would also explore the relationship if any, between the level of blood pressure at diagnosis and kidney function.

Methods: This was a cross-sectional study involving 250 newly diagnosed hypertensive patients and 250 aged and sex- matched controls. Respondents were recruited from General Outpatient Departments of both LAUTECH Teaching Hospital and General Hospital, Asubiaro, Osogbo. Structured questionnaires were used to extract information on socio-demographic characteristics and renal risk habits. Biophysical measurements of the participants were also done. Participants were screened for the presence of macroalbuminuria, albumin-creatinine ratio and serum creatinine were also assessed. Glomerular filtration rate was estimated using Modification of Diet in Renal Disease equation. Prevalence of the risk factors for chronic kidney disease was determined and the association (s) between the risk factors and chronic kidney disease was assessed.

Results: The mean age of cases was 55.7 years (SD = 11.3) compared to a mean of 55.2 years (SD = 12.5) for controls. There was no significant difference between the mean ages or the gender distribution, about 40.4% of cases compared to 41.2% of controls were males ($p=0.856$). Newly diagnosed hypertensives had significantly higher prevalence of analgesic use (86.4% vs 41.6%, $p<0.001$), alcohol use (20.8% vs 12%, $p = 0.008$), herbs use (51.6% vs 26.1%, $p<0.001$), use of salted food (18.8% vs 8.4%, $p = 0.001$), and central obesity (36.1% vs 26.8%, $p = 0.025$) compared to controls. The prevalence of impaired kidney

function in the newly diagnosed hypertensives using GFR $<60\text{mls/min}/1.73\text{m}^2$ was 28.0%. The overall prevalence albuminuria among the newly diagnosed hypertensives was 47.6%, with prevalence of macroalbuminuria and microalbuminuria being 5.6% and 42% respectively. The newly diagnosed hypertensives with risk factors have significantly lower mean eGFR when compared with newly diagnosed hypertensive without risk (59.80 ± 17.55 vs 74.68 ± 20.92 mls/min, $p = <0.0001$). There was a significant negative correlation between eGFR and magnitude of risk factors ($r = -0.597$, $p < 0.001$), the greater the magnitude of renal risks (0 – 3, $>3 - 6$, >6) the lower the eGFR. Among newly diagnosed hypertensives logistic regression of CKD on variables showed that males were less likely than females to have CKD or females are more likely to develop the disease compared to male participants (OR = 0.244, 95% CI = 0.108 – 0.551). Increasing age (OR = 1.064, 95% CI = 1.043-1.085), fasting hyperglycaemia (OR = 4.799, 95% CI = 1.602 – 14.374) and diastolic blood pressure (OR = 1.045, 95% CI = 1.007 – 1.084) were predictive of chronic kidney disease.

Conclusion: There is high magnitude of renal risk factors in the newly diagnosed hypertensive patients. These risk factors exhibit significant impact on renal function with the critical ones being age, female sex, fasting hyperglycaemia and diastolic blood pressure. Majority of these risk factors are modifiable risk factors. Health awareness programme and policies should be formulated to reduce the burden and risk for chronic kidney disease in this study population and thus cardiovascular mortality.

5. ABS/2013/PREV NEPH-05

SPOT ASSESSMENT OF CHRONIC KIDNEY DISEASE RISK IN A POPULATION OF TRADERS IN CENTRAL BENIN CITY

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Introduction: The prevalence of chronic kidney disease (CKD) is on the increase in Nigeria. There is no national screening programme for CKD. As part of the world kidney day activities of 2012, we proceeded to screen traders in central Benin City for the presence of CKD risk factors.

Methodology: Traders in Oba Market and environs in central Benin City were invited to the town hall at the Ring Road in Benin City. Parameters obtained from participants included age, sex, height, weight, random blood sugar, urinalysis and blood pressure. Data was analysed using SPSS16.

Results: A total of 178 persons screened were 85(47.8%) males and 93(52.2%) females with a mean age of 42.7 ± 13.1 years. About half of participants (52.2%) had normal range BMI while 49(27.5%), 30(16.9%) and 6(3.4%) were overweight, obese and underweight respectively. Hypertension was observed in 57.3%, elevated random blood sugar in 13(7.3%) and proteinuria in 11(6.2%). There was significant positive correlation between: BMI and Systolic BP ($p = 0.001$); BMI and Diastolic BP ($p < 0.001$); Age and Systolic BP ($p = 0.003$); Age and Diastolic BP ($p = 0.027$).

Conclusion: The most prevalent risk factor for CKD in the population studied was hypertension. We propose a nationwide hypertension survey programme to identify persons with undiagnosed hypertension as well as screening for diabetes and proteinuria.

THEME: MISCELLANEOUS

1. ABS/2013/MISC—01

HEPATITIS B ASSOCIATED NEPHROPATHY (HBVAN) IN A TERTIARY HOSPITAL IN SOUTH WEST NIGERIA

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Background: There are few reports on HBVAN in Nigerian children.

Methodology: A retrospective study of HBsAg seropositive children managed for kidney disease in our hospital between January 2006 and December 2012 was performed.

Results: Sixteen (16) children (12 males), aged 3 -13 (mean 9.4 ± 2.8) years were identified. The clinical presentation were nephrotic syndrome (NS) in 11 children, glomerulonephritis (GN) in 4 and acute kidney injury (AKI) in another child. Among children with GN 2 needed dialysis at presentation, on account of end stage kidney disease (ESKD) and AKI in 1 child each. 9 renal biopsies were performed and showed minimal change disease (n=4), FSGS (n=3), and MPGN (n=1) in the children with NS; and Focal Global Sclerosis in a child with GN. Management of NS included use of corticosteroids in 9 patients combined with the use of lamivudine in 3. 1 child with GN received corticosteroids and this was in combined with lamivudine. Remission occurred only in 8 children with NS and followed steroid therapy in 7, and was spontaneous in 1. 5 children who were not in ESKD at presentation progressed to ESKD, 2 patients with GN and 3 with NS, one of whom did not receive corticosteroid therapy and 2 with FSGS and steroid resistance.

Conclusion: In Nigeria the clinical picture of GN, steroid resistance and FSGS appear to be poor prognostic factors in HBVAN.

2. ABS/2013/MISC—02

GALACTORRHOEA WITH HYPERPROLACTINEMIA IN A PATIENT WITH LUPUS NEPHRITIS – A CASE REPORT

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Background: Hyperprolactinemia is observed in multiorgan specific autoimmune diseases of which Systemic Lupus Erythematosus (SLE) is among. Prolactin is known to have an immunostimulatory effect and promotes autoimmunity, there is however no correlation between prolactin levels and disease activity. We report a patient with lupus nephritis presenting with galactorrhea from hyperprolactinemia.

Case Report: T.J is a 26 year old female diagnosed with SLE 2 years ago who subsequently developed renal impairment and was clinically assessed to have lupus nephritis and on steroid therapy. She presented with an episode of generalized tonic clonic seizures associated with headache and vomiting with an incidental finding of galactorrhea. Her essential examination findings were that of cushingoid facies, elevated blood

pressure and demonstrable galactorrhoea. Her pupils were normal with no papilloedema on fundoscopy. Investigation results show positive anti nuclear factor, anti-double stranded DNA, anti SM and anti SSA antibodies. Her brain MRI scan showed no intracranial mass with normal pituitary fossa. She had elevated prolactin levels of 37.3 ng/ml and normal levels of FSH, LH and Estradiol at 5.8mIU/ml, 4.2mIU/ml and 79pg/ml respectively. The patient was then commenced on bromocriptine with subsequent reduction in galactorrhoea.

Conclusion: Hyperprolactinemia in lupus is uncommon but can occur and should be considered in the evaluation and management of such patients.

3. ABS/2013/MISC—03

QUALITY OF NATIVE WATER FOR HAEMODIALYSIS IN SOUTH EAST NIGERIA

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Introduction: The quality of source water determines to some extent the rigor of purification required and the composition and safety of the final water for dialysis. The sources of water for haemodialysis in the centres studied were borehole, well water, and municipal tap water, water from streams, spring, and dam. This study assessed the quality of native source water at 8 haemodialysis centres in 6 towns in South east Nigeria

Method: Structured questionnaire was administered to the participating centres to determine the source of native water for dialysis. Water samples were collected from source water and tested for aluminium, calcium, magnesium, potassium, sodium, chloramines, nitrate and free chlorine. Water samples were also cultured for organisms. Endotoxin analysis was done using limulus Amaeboctye assay.

Results: Borehole was used solely in five(63%) centres, tap water in one(12.5%) centre, well water was used solely in one(12.5%) centre, while the remaining one(12.5%) centre used water from a dam. The mean concentration of sulphate, calcium, chloramines, aluminium and nitrate in the native water source exceeded the Association for Advancement for Medical Instrumentation (AAMI) recommendation while the mean concentration of sodium, potassium, magnesium and fluoride in the feed water were within the AAMI recommendation. Chloramines were above the acceptable level. The turbidity and hardness were less than 1 and 5 respectively.

Conclusion: Native source water in South east Nigeria is largely soft but has significant levels of chemical contaminants. It is however free of pathogenic organisms. It should be suitable for haemodialysis with the standard purification methods.

4. ABS/2013/MISC—04

A 2 YEAR REVIEW OF RENAL ADMISSIONS IN THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL, PORT HARCOURT

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Introduction: The magnitude of the burden of renal disease especially chronic kidney disease (CKD) is enormous, and the prevalence of CKD is on the increase globally. The objective of this study was to determine the spectrum and outcome of renal disorders admitted into the medical wards of the University of Port Harcourt Teaching Hospital over a 2year period (January2010- December2011).

Method: Sample data was obtained from the hospital register of the medical wards and collated. Data analysis was done using SPSS version 17.

Results: During the period of study, 2244 patients were admitted in the medical wards, consisting of 1163 (51.8%) males and 1081(48.2%) females. Renal diseases accounted for 362 (16.1%) of admissions, 149 (41.2%) in 2010 and 213 (58.8%) in 2011. Of these, males consisted 210 (58%) and females 152 (42%). The mean age of the patients was 45.3 ± 15.7 years (range 17 – 85 years). The mean duration of admission was 16.8 ± 14.9 days with a range of 1 – 92 days. Hypertensive nephrosclerosis, Diabetic nephropathy and Chronic glomerulonephritis were the most prevalent renal disorders accounting for 22.4%, 14.9% and 12.4% respectively. Patients with HIV associated renal disease accounted for 13.3%, acute kidney injury 13.3% and obstructive uropathy 2.8%. Twelve patients (3.3%) had nephrotic syndrome and 1(0.3%) had ADPKD. Analysis of outcome showed that 177 patients (48.9%) were discharged home, 29(8%) were noted to have absconded or signed against medical advice, while the outcome was not indicated in 69 (19.1%) cases. Eighty seven patients died, giving a mortality rate of 24%.

Conclusion: Renal disease, both acute and chronic kidney disease, remains a significant reason for admission in medical wards, with a high mortality rate. Efforts should therefore focus on identification of risk factors for kidney disease to reduce the mortality associated with it.

5. ABS/2013/MISC—05

ADULT NEPHROTIC SYNDROME (ANS) IN THE NIGER DELTA SUB-REGION : A SINGLE CENTRE STUDY AT THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL

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Background: Adult nephrotic syndrome (ANS) is a common cause of chronic kidney disease(CKD) globally and in sub-Saharan Africa. In Nigeria the few studies of Adult nephrotic syndrome were mostly from the south -west parts of Nigeria. This study aims at contributing to the National data on Adult nephrotic syndrome, from the perspective of the Niger delta sub region.

Method: Retrospective analysis of five -year clinical data (January 2007 to December 2011) of Adult nephrotic syndrome patients in the University of Port Harcourt teaching hospital.

Results: A total of 44 patients , accounting for 1% of medical admissions and 7.3% of adult renal cases seen during the period under study, with mean age 27.7 ± 8.5 (15-59)years .There were 32 males(72.7%) , M/F ratio of 2.7:1. Mean duration of illness was 25.3 ± 30.3 (1-96) months. Peak age group in the 20-29 year age group accounting for 52.3%. They had obesity rate of 20.5%, hypertension prevalence of 45.5%, and mean e-GFR of 73.5 ± 33.8 mls/min/1.73m² . CKD 1-3 constituted 93.2%, while CKD 4 and 5 constituted 4.5% and 2.3 % respectively. Their baseline laboratory parameters showed heavy proteinuria , with a

mean 24-hour urinary protein excretion of 13.6 ± 8.4 (4.1-34.7) grams. Twenty-four hour protein excretion of ≥ 10 grams were observed in 65.8% of the patients. Mean total serum protein and albumin were 51.4 ± 11.7 g/dl and 22.5 ± 9.9 g/dl respectively. Mean plasma lipid concentrations were T.chol . (8.1 ± 3.0), Triglycerides (2.3 ± 0.9), LDL (2.3 ± 1.5), HDL (0.9 ± 0.6) mmol/l respectively. Anemia was common (68%) ,with a mean haemoglobin conc. of 10.0 ± 2.0 (6.7-13.4)g/dl. Histopathologic patterns (light microscopy) were MCGN-(52.6%), Minimal change disease (MCD)- (21.1%),MN-(15.8%) and FSGS-(10.5%) respectively. Though response to therapy were generally poor, immunosuppressive therapy showed better outcomes than conservative and steroid therapy respectively.

Conclusions: The prevalence and pattern of Adult nephrotic syndrome (ANS) in the Niger delta sub region is similar to other parts of Nigeria. ANS is predominately a disease of adolescents and young adults with males preponderance, characterized by massive proteinuria, gross dyslipidaemia, high prevalence of hypertension , and poor histologic categories .The disease however, runs an indolent course with slow progression to ESRD.

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2. Case reports/ case series
3. Review articles
4. Conference proceedings
5. Short communications and letters to the editor

Authors should observe high standards with respect to publication ethics as set out by the Commission on Publication Ethics (COPE) and International Committee of Medical Journal Editors (ICMJE).

Authorship

Anyone who made major contributions to the research design, its conduct, analysis and interpretation of results and writing of the manuscript should be listed as an author. All authors should have been involved in the writing of the manuscript at draft and revision stages, and also must have read and approved the final version. Other individuals who made less substantive contributions should be listed in the acknowledgement section.

Originality

By submitting your manuscript to the Journal it is understood, that this it is an original manuscript: an unpublished work that is not under consideration for publication elsewhere.

Manuscript Instructions

Formatting instructions

All manuscripts must be prepared using Microsoft Word processing software. Font type should be Times New Roman, with font size of 12 points. Organization should be on A4 (21.0cm x 29.7cm) format.

Categories of Contributions

Original Articles

Must report clinically relevant research work within the Journal's scope of interests.

- Word limit: 5000 words (excluding the abstract and references)
- Abstract: structured using the headings Background, Methods, Results, and Conclusions. *Maximum of 250 words.*
- References: 40 or less
- Tables/figures/images: 5 or less; data in tables and figures should not be repeated extensively in the text

Review Articles

Review topics should be related to clinical aspects of nephrology and should reflect current trends and progress.

- Word limit: 5000 words (excluding the abstract and references)
- References: 40 or less
- Abstract: Up to 250 words, unstructured format
- Tables/figures/images: 5 or less; data in tables and figures should not be repeated extensively in the text

Case Reports and Short Communications

Must convey a focused message.

- Word limit: 1500 words (excluding the abstract and references)
- References: 15 or less
- Abstract: Up to 100 words, unstructured format
- Tables/figures/images: 2 or less

Letters to the Editor

Must express viewpoints on areas of interest or controversy in the field.

- Word limit: 250 words (excluding references)
- References: 5 or less
- Tables/figures/images: 1

Manuscript Arrangement

Articles should be submitted electronically as Microsoft Word documents. All articles **MUST** include the following parts:

Title

Author Name(s) [corresponding author should be indicated if there are more than one author]

Contact information: e-mail, mailing address, and telephone for corresponding author; e-mail addresses for all other authors.

Abstract: up to 250 words.

Keywords: 4–7 words

Main Text: Should include the following sections: Introduction, Materials and Methods, Results, Discussions, Acknowledgement, References, Tables and Figures with appropriate legends.

References: References in the main text should be cited in superscript without brackets. The List of references in the order of appearance in the text and indicated in Arabic numbers.

Authors' names should be followed by the initials, then the title of the paper, international abbreviations of the Journal, year of publication, volume, number, the first to the last page must be indicated. Where authors are more than three, et al could be used for others.

Examples:

Arije A, Kadiri S, Akinkugbe O.O. The viability of haemodialysis as a treatment option for renal failure in a developing economy. Afr. J. Med med. Sci., 2000; 29 : 311 – 314

Kleinknecht, D. Epidemiology of acute renal failure in France today. In: Acute renal failure in the intensive therapy unit (eds Bihali, D, Neild, G) 1990; pp13-22. Springer – Verlag. New-York.

Accuracy of references is the responsibility of the authors.

Tables, Figures, etc: Tables, figures, and photos/images should be placed after the list of references. Acceptable formats include Word (for tables or figures made in Word); Excel (for figures); and .jpeg for images or photos. Tables, figures, and images should be numbered consecutively using Arabic numerals.

Unit of Measurement

SI (System International) unit is recommended.

Authors are encouraged to follow the Uniform Requirements for Manuscripts Submitted to Biomedical Journals in the preparation of their manuscripts.

The electronic file should not contain embedded codes and no special fonts or formatting.

Submission of Manuscripts

All material to be considered for publication in TJN should be submitted in electronic form via the journal's e-mail at: tropicaljournal_2005@yahoo.com or through submission portal on the journal's website www.tjn-ng.com.

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