

RESEARCH PROPOSAL

Section A: *General Project Information*

1. **Country/region:** Durban, South Africa
2. **Project title:** The effect of HIV infection on the management of renal failure among patients undergoing peritoneal dialysis

3. **Coordinating Institution**

Legal name: Nephrology department, University of KwaZulu Natal

Address: Nephrology department, UKZN Medical School, P/Bag 7, Congela, 4013

Head of the Department: Professor Alain Guy Honoré Assounga

4. **Principal Investigator**

Name: Kwazi Celani Zwakele Ndlovu

Position: Specialist physician, nephrology trainee

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5. **Duration of the project:** 4 years

Section B: *Project description (maximum 10 pages)*

INTRODUCTION

Renal failure is a recognised important contributor to mortality as well as morbidity associated with Human Immunodeficiency Virus (HIV) infection. It can be directly related to HIV infection as in HIV nephropathy, HIV associated immune complex disease and HIV associated thrombotic microangiopathy or it can be caused by complications of opportunistic infections, HIV associated diseases, as well as drugs used to manage HIV infection. Furthermore, it can be caused by chronic diseases unrelated to HIV, such as diabetes, hypertension, and connective tissue diseases. However, in the presence of antiretroviral treatment, HIV associated renal failure from whatever cause can be managed with conventional methods used to manage End-Stage Renal Disease (ESRD) in the general population.

Continuous Ambulatory Peritoneal Dialysis (CAPD) in limited resourced environment, as in countries of sub-Saharan Africa, is an important renal replacement modality as it is relatively easy to teach, easy to travel with, requires no complex machine allowing for home dialysis therapy, and it allows for a more liberal diet and fluid intake. However, few studies have examined the outcomes of CAPD in HIV infected patients and all have been retrospective analysis using small sample sizes. Furthermore, important characteristics such as risk factors of infective complications, prognostic factors, and the infectivity of HIV associated CAPD fluid have not been conclusively established. Moreover, its applicability in third world countries as well as middle income countries like South Africa has not been explored.

South African has to balance many important imperatives which compete for limited available financial resources particularly the HIV epidemic has continued to be major strain limiting the country's developmental and economic potential. Although, many strides have been made in combating this epidemic, particularly the expanded ARV programme which has prevented many deaths and has turned this deadly disease to a manageable chronic disease, but the health budget is still under considerable stress.

KwaZulu-Natal along with other provinces faces major shortages of available hemodialysis slots. Many patients are diagnosed with severe renal failure requiring dialysis but not all can be accommodated in the available haemodialysis machines. Limiting the eligibility for state funded dialysis to those qualifying for transplantation has not alleviated space constraints of the haemodialysis system. Many patients in clinical practise are chronically underdialyzed because the system cannot cope with the large numbers of patients accommodated by it. The recent inclusion of the HIV positive renal population in the already overstretched dialysis system is another challenge that needs innovative solutions.

CAPD has the prospect of being able to alleviate the pressures imposed on the haemodialysis system. It has the potential of being able to decant a substantial number of patients away from the overburdened haemodialysis circuit. The traditional surgeon centred CAPD programs cannot completely fulfil this role. An expanded nephrologist operated CAPD insertion programme can increase the capacity of the CAPD programme. This approach has not been explored in the South African context. This study explores this approach and assesses the applicability and outcomes of CAPD in the HIV renal failure population.

OBJECTIVES

Primary objective

1. To evaluate the effects of HIV positivity on outcomes of CAPD among dialysis requiring renal failure patients.

Secondary objectives

2. To evaluate the effects of HIV positivity on risk factors, pattern and incidence of catheter related complication among peritoneal dialysis patients.
3. To assess the effects of HIV positivity on the *S. aureus* nasal carriage and incidence of catheter related infection among renal failure patients undergoing peritoneal dialysis.
4. To examine the presence and significance of HIV virus particles in peritoneal dialysis fluid in HIV positive patients treated with CAPD.

METHODOLOGY

Study Design:

Prospective cohort study carried out at King Edward Hospital (KEH) and Inkosi Albert Luthuli Central Hospital (IALCH), in Durban, South Africa.

Study population:

Consecutive patients admitted to KEH and IALCH PD wards during the recruitment period.

Study sample size:

One hundred and forty patients are targeted to be recruited comprising of 70 HIV positive renal failure patients and 70 HIV negative patients.

Study period:

The study was started on September 2012. Enrolment is currently ongoing and is expected to be completed by December 2014. Follow up will be over 18 month for each participant. The overall study period is expected to end by June 2016.

Inclusion Criteria

- 1) Participants in both groups must meet all of the following inclusion criteria to be eligible for enrolment into the trial:
 - a) Written informed consent obtained prior to the initiation of any study procedures, from either the patient or next of kin;

- b) Male or female subjects, younger than 60 years of age at the time informed consent is obtained;
- c) Renal Failure - as evidenced by eGFR of less than 15 ml/min
- d) Tenckhoff catheter inserted either at KEH PD ward or at IALCH PD ward within 2 weeks prior to recruitment.

2) Group stratification:

Participants are stratified according to HIV infection, confirmed by ELISA testing, into either group 1 (seropositive group) if they are HIV positive or Group 2 (Seronegative group) if they are HIV negative.

Exclusion Criteria

Subjects presenting with any of the following will not be included from the trial:

- 1) Contraindications to Peritoneal Dialysis
 - a) Previous abdominal surgery
 - b) Previous or current peritonitis
 - c) Acute abdomen
- 2) Medical exclusion criteria for the renal programme
 - a) Active, uncontrollable malignancy or short life expectancy
 - b) Advanced, irreversible progressive disease of vital organs
- 3) Presence of HIV-related conditions that may flare up or reactivate with immunosuppression
- 4) Psychological exclusion criteria
 - a) Any form of mental illness that has resulted in diminished capacity for patients to take responsibility for their actions.
 - b) Active substance abuse
 - c) Morbid obesity.
- 5) Documented poor compliance.

Study Procedures:

Potential candidates for groups 1 and 2 are sourced from consecutive dialysis requiring renal failure patients admitted to the KEH and IALCH PD wards who have been inserted a tenckhoff catheter within 2 weeks prior to screening. The research team screens each candidate for suitability to be enrolled in the study and those found suitable are registered after consent signing by the subject. Demographic information and biochemical indices are captured into in a data capture sheet. HIV positive subjects are automatically assigned to group 1 while HIV negative subjects are assigned to group 2. Nasal swabs for culture and sensitivities as well as baseline biochemical test are done for both groups. All enrolled subjects follow the normal training on continuous ambulatory peritoneal dialysis (CAPD) carried out by same renal clinic nursing team. CD4 counts of seropositive patients are assessed on enrolment and those who are ARV naïve and have CD4 counts falling within local ARV treatment protocols, are commenced on ARV treatment via their local ARV

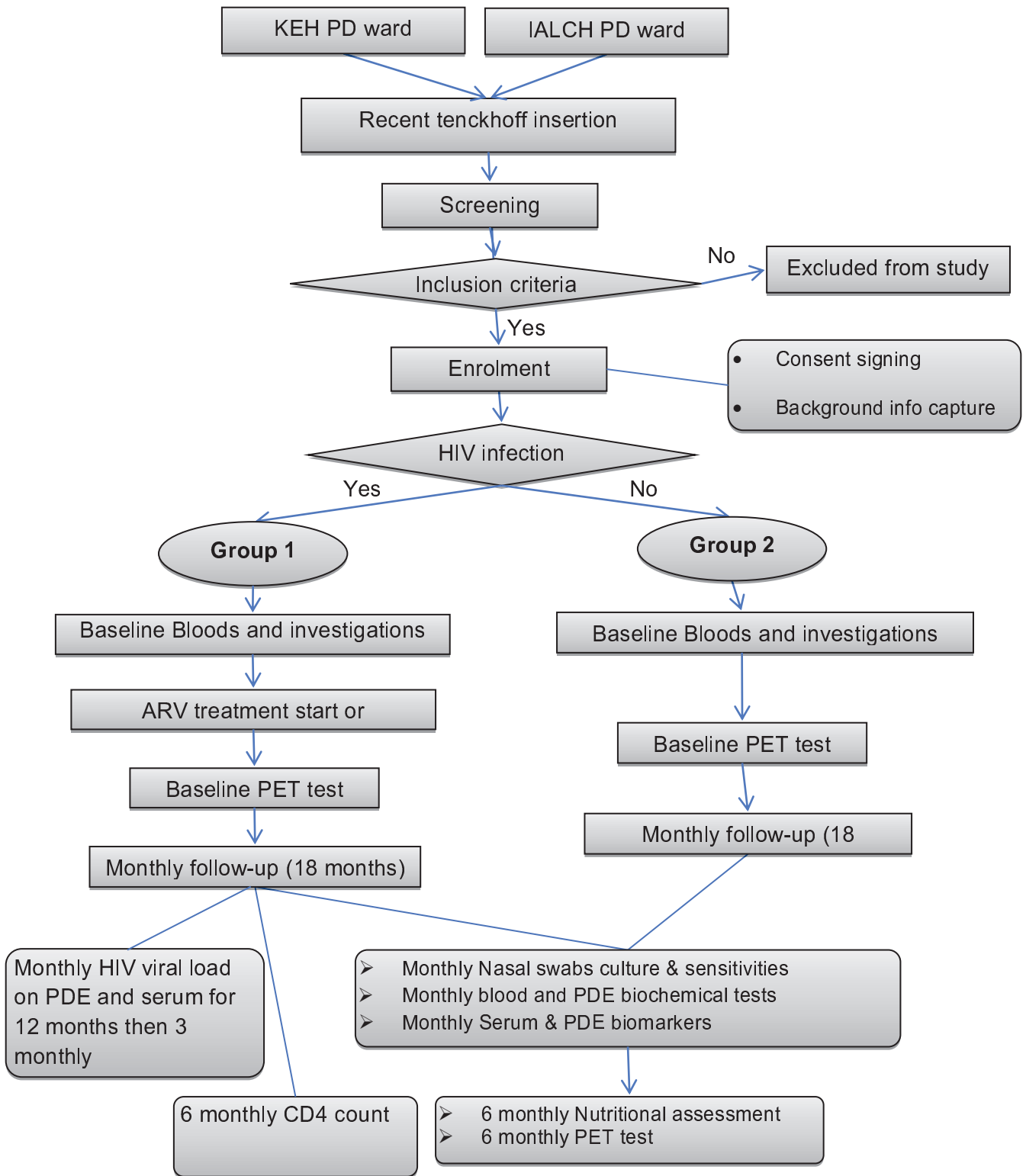
clinic. All subjects who were already on ARV prior to presentation are allowed to continue with their treatment after optimisation of their treatment for renal failure. Once adequate training is completed and optimisation of clinical condition and overall treatment, subjects are discharged from the ward and followed up as outpatient.

Follow-up takes place monthly for at least 18 months at IALCH renal clinic by the renal clinic team and the research team. Various relevant biochemical tests, nutritional evaluations, PD fluid examinations, and nasal swabs for culture and sensitivities are taken monthly during the period of follow up. PET test are done at baseline 1 month after insertion and the 6 monthly until 18 months. After 18 months of follow up the subjects are discharged from the study to be managed by the renal unit with regards to the CAPD and local ARV clinic with regards to HIV management.

Table1: Study design summary

Objective	Primary objective	Secondary 1	Secondary 2	Secondary 3
Hypothesis statement	HIV increases the risk of catheter failure and mortality among renal failure patients undergoing peritoneal dialysis.	HIV increases the risk of catheter related infective complication among renal failure patients undergoing peritoneal dialysis	HIV increases the risk of S. aureus nasal carriage thereby increasing the risk of S. aureus catheter related infections among renal failure patients undergoing peritoneal dialysis	HIV particles are present in the PD fluid in negligible amount and decrease even further with ARV treatment.
Study type:	Prospective cohort study	Prospective cohort study	Prospective cohort study	Descriptive epidemiologic study
Study population	KEH dialysis population	KEH dialysis population	KEH dialysis population	HIV positive CAPD patients
Exposures	HIV	HIV	HIV	1. Viral load 2. ARV treatment
Risk factors	<ol style="list-style-type: none"> 1. CD4 count 2. Viral load 3. ARV treatment 4. Diabetes 5. S. aureus nasal carriage 6. Constipation 7. SES 8. Level of education 9. Race 10. Alcohol intake 11. Malnutrition 12. Type of residence 13. Access to running water 14. sanitation 	<ol style="list-style-type: none"> 1. CD4 count 2. Viral load 3. ARV treatment 4. Diabetes 5. SES 6. Level of education 7. Alcohol intake 8. Malnutrition 9. Staph aureus nasal carriage 10. Constipation 11. Race 12. Type of residence 13. Access to running water 14. sanitation 	<ol style="list-style-type: none"> 1. CD4 count 2. Viral load 3. ARV treatment 4. Diabetes 5. Socio-economic status 6. Level of education 7. Alcohol intake 8. malnutrition 	<ol style="list-style-type: none"> 1. CD4 count 2. Diabetes 3. Alcohol intake 4. malnutrition
Outcomes	<ol style="list-style-type: none"> 1. Catheter patency rate 2. Survival 3. Hospitalisation rate 4. Length of hospital stay 	<ol style="list-style-type: none"> 1. Exit site infections 2. Tunnel infections 3. CAPD related peritonitis 	<ol style="list-style-type: none"> 1. Staph aureus nasal carriage 2. S. aureus catheter related peritonitis 3. Exit site infections 4. Tunnel infections 	<ol style="list-style-type: none"> 1. PD fluid HIV viral level 2. Change in PDE viral level

Figure 1: Flow diagram - Study procedures



D. Expected outcomes

- 1) An understanding of the effects of HIV infection on catheter patency rates and mortality rates in CAPD
- 2) An understanding of whether peritoneal dialysis is a safe and viable option in HIV seropositive renal failure patients started concurrently with ARV treatment
- 3) A description of the type of complications likely to afflict HIV positive renal patients on peritoneal dialysis.
- 4) An understanding of the effects of HIV infection on peritonitis rates in CAPD patients.
- 5) A description of the types of organisms associated with infective complications likely to be found in Peritoneal Dialysis HIV positive patients
- 6) An understanding of infectivity of PD fluid in HIV patients, extent of HIV virus shedding in PD fluid correlated with serum CD4 count and viral load

Progress

Ethical clearance was obtained June 2012 and research activities were started in September 2012. To date, 70 HIV negative targeted subjects have been enrolled as controls and 54 HIV positive subjects out of 70 targeted have been enrolled into group 1. The 16 outstanding subjects for group 1 are expected to be recruited over the period extending up to December 2014. In group 1, eleven subjects have died during follow-up, nine subjects reached the end point of tenckhoff removal for whatever reason and one subject has completed the targeted 18 months follow-up. In group 2, twelve subjects have died during follow-up, ten have reached the end point of tenckhoff removal and three subject has completed 18 months follow-up. After the anticipated end of recruitment in December 2014, the expected end of follow-up on the last enrolled subject is projected to be June 2016.

Studies and Results

An interim analysis of data done in August 2014 included 26 HIV positive patients and 51 HIV negative controls enrolled by 31 March 2014 using follow-up data over 6 months assessed the outcomes of peritonitis, hospital admissions and catheter patency rates. Results showed that both groups 1 and 2 had statistically comparable proportion of patients with patent catheters at 6 months (69% vs 73% respectively, p-value 0.943), catheter failure rate (0.376 vs 0.284 per-person-years, p 0.663), mortality rate (0.376 vs 0.379 per-person-years, p 1.013), and admission rates (1.1 ± 1.2 vs 0.83 ± 1.13 mean episodes; p 0.245) as well as similar Kaplan-Meier survival curves for catheter patency rate and mortality at 180 days (p-value = 0.666 and 0.976, respectively). However, the HIV positive group had an unadjusted statistically significant increased peritonitis rates (1.97 vs 0.85 per-person-years, p 0.023), and factors associated with increased infection risk being CD4 count of less than 200/ μ l, unsuppressed viral load, and ARV duration of less than 6 months associated with hazard ratios of 4.69 (CI 1.73 to 12.70, p=0.002), 5.48 (2.10 to

14.26, $p < 0.001$) and 3.21 (1.25 to 8.19, $p=0.015$), respectively. These preliminary results suggest that HIV infection in patients undergoing CAPD does not adversely influence short term catheter survival rates and mortality rates but can be associated with higher catheter peritonitis rates.

These preliminary results have been presentation in poster format at the 15th Congress for the International Society for Peritoneal Dialysis in Madrid, Spain, as well as oral presentation in the South African Renal Society Symposium in August 2014.

Figure 2: Gantt chart of projected timelines

		Start	End	2012		2013		2014		2015		2016		2017				
				Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
CAPD-HIV Study	Operational study activities	Sep-12	Sep-16	[Gantt bar spanning from Sep-12 to Sep-16]														
1	Screening and enrollment	Research nurse and Principal investigator	Sep-12	Dec-14	[Gantt bar spanning from Sep-12 to Dec-14]													
2	Baseline phlebotomy and laboratory testing	Research nurse and Principal investigator	Sep-12	Dec-14	[Gantt bar spanning from Sep-12 to Dec-14]													
3	Monthly clinical monitoring	Principal investigator and Renal clinic doctors	Oct-12	Jun-16	[Gantt bar spanning from Oct-12 to Jun-16]													
4	Monthly questionnaire	Research nurse and research administrative assistant	Oct-12	Jun-16	[Gantt bar spanning from Oct-12 to Jun-16]													
5	Monthly vital signs and weight measurements	Research nurse and research administrative assistant	Oct-12	Jun-16	[Gantt bar spanning from Oct-12 to Jun-16]													
6	Serum and plasma separation of blood specimens	Research laboratory assistant and principal investigator	Sep-12	Jun-16	[Gantt bar spanning from Sep-12 to Jun-16]													
7	Freeze storage of serum, plasma and PD fluid specimens	Research laboratory assistant and principal investigator	Sep-12	Jun-16	[Gantt bar spanning from Sep-12 to Jun-16]													
8	Monthly phlebotomy and laboratory tests:	Research nurse and Principal investigator	Oct-12	Jun-16	[Gantt bar spanning from Oct-12 to Jun-16]													
9	Data entry	Research nurse and research administrative assistant	Jan-13	Sep-16	[Gantt bar spanning from Jan-13 to Sep-16]													
10	HIV PCR laboratory work	Africa Centre laboratory (K-RITH)	Oct-14	Jul-16	[Gantt bar spanning from Oct-14 to Jul-16]													
11	Data analysis	Principal investigator and Supervisor	Apr-14	Sep-16	[Gantt bar spanning from Apr-14 to Sep-16]													
12	Journal articles write up	Principal investigator and Supervisor	Jan-16	Dec-16	[Gantt bar spanning from Jan-16 to Dec-16]													
13	PhD thesis write up and submission	Principal investigator assisted by Supervisor	Aug-16	Feb-05	[Gantt bar spanning from Aug-16 to Feb-05]													

E. Description of the Applicant's Institution.

The University of KwaZulu-Natal (UKZN) was formed on 1 January 2004 as a result of the merger between the University of Durban-Westville and the University of Natal. The latter was founded in 1910 as the Natal University College and in 1949 it was granted independent University status, as the University of Natal, owing to its rapid growth in numbers, its wide range of courses as well as its achievements in and opportunities for research. The University of Durban-Westville was established in the 1960s as the University College for Indians on Salisbury Island in Durban Bay.

UKZN has 5 campuses in two major cities, four in Durban and one in Pietermaritzburg, with a total student population of approximately 42000, 20% of whom are postgraduates, and a total staff complement of approximately 4300. It is classified by the national Department of Science and Technology as one of 5 research-led and research-intensive Universities in South Africa (Kahn M 2006). Over the past 10 years, UKZN has been consistently rated the 2nd or 3rd most research-productive university (as measured by the Department of Higher Education and Training's SAPSE Units) of the 23 universities. It has the best instruction and research staff and student equity profile of all the research-intensive universities according to Education Statistics in South Africa (Department of Education 2007). UKZN achieved all these while undergoing a merger and a major transformation through prioritising diversity as a critical factor to excellence and equity. In total, 40% of staff time is allocated to research for all academic staff at UKZN. However, approximately 15% of all full time equivalent academic staff members are exclusively research staff.

The Department of Nephrology is one of the departments of the Division of Internal Medicine. It is headed by Professor AGH Assounga, MD, CES (FRANCE), MSC (MATHS), PHD (US). It provides nephrology teaching to undergraduate and postgraduates students, clinical care for patients and offers teaching and research in immunology (including transplantation immunology) and molecular biology. It provides clinical services to patients from the province of KwaZulu-Natal as well as the northern parts of the Eastern Cape Province. There are 4 haemodialysis units, situated in Inkosi Albert Luthuli Central Hospital (IALCH), King Edward VIII Hospital, Addington Hospital and Grey's Hospital

Inkosi Albert Luthuli Central Hospital is the central hospital providing transplant services as well as an 8 bedded ward for patients on chronic ambulatory peritoneal dialysis.

Section C: Relevant references to the project

1. Rivera Gorrin M, Merino Rivas JL, Alarcon Garcelan MC, Galeano Alvarez C, Manuel O, Teruel Briones JL, et al. [Outcome of HIV-infected patients of peritoneal dialysis: experience in a center and literature review]. *Nefrologia*. 2008; **28**(5): 505-10.
2. Tebben JA, Rigsby MO, Selwyn PA, Brennan N, Kliger A, Finkelstein FO. Outcome of HIV infected patients on continuous ambulatory peritoneal dialysis. *Kidney Int*. 1993; **44**(1): 191-8.
3. Khanna R, Tachopoulou OA, Fein PA, Chattopadhyay J, Avram MM. Survival experience of peritoneal dialysis patients with human immunodeficiency virus: a 17-year retrospective study. *Advances in peritoneal dialysis Conference on Peritoneal Dialysis*. 2005; **21**: 159-63.
4. Farzadegan H, Ford D, Malan M, Masters B, Scheel PJ, Jr. HIV-1 survival kinetics in peritoneal dialysis effluent. *Kidney Int*. 1996; **50**(5): 1659-62.
5. Leung J, Lam M, Tang S, Chan L, Tam K, Yip T, et al. Roles of Neutrophil Gelatinase-Associated Lipocalin in Continuous Ambulatory Peritoneal Dialysis-Related Peritonitis. *Journal of Clinical Immunology*. 2009; **29**(3): 365-78.
6. Luzar MA, Coles GA, Faller B, Slingeneyer A, Dah GD, Briat C, et al. Staphylococcus aureus Nasal Carriage and Infection in Patients on Continuous Ambulatory Peritoneal Dialysis. *New England Journal of Medicine*. 1990; **322**(8): 505-9.
7. Flanigan M, Gokal R. Peritoneal catheters and exit-site practices toward optimum peritoneal access: a review of current developments. *Perit Dial Int*. 2005; **25**(2): 132-9.
8. Troidle L, Gorban-Brennan N, Kliger A, Finkelstein FO. Continuous Peritoneal Dialysis-Associated Peritonitis: A Review and Current Concepts. *Seminars in Dialysis*. 2003; **16**(6): 428-37.
9. Li PK, Szeto CC, Piraino B, Bernardini J, Figueiredo AE, Gupta A, et al. Peritoneal dialysis-related infections recommendations: 2010 update. *Peritoneal Dialysis International*. 2010; **30**: 393–423.
10. Piraino B, Bernardini J, Bender FH. An analysis of methods to prevent peritoneal dialysis catheter infections. *Perit Dial Int*. 2008; **28**(5): 437-43.
11. Vychytil A, Lorenz M, Schneider B, Horl W, Haag-Weber M. New strategies to prevent Staphylococcus aureus infections in peritoneal dialysis patients. *Journal of the American Society of Nephrology*. 1998; **9**(4): 669-76.

Section E: Short summary of the project (maximum 1 page)

Introduction

Renal failure is a recognised important contributor to mortality as well as morbidity associated with HIV infection either directly as in HIV associated nephropathy or as a co-morbid condition related to other chronic diseases. International experience has shown that HIV positive patients can be dialyzable and transplantable. However, in South Africa, renal replacement therapy, particularly hemodialysis, is not widely available due to limited financial and human resources. Continuous ambulatory peritoneal dialysis (CAPD) in low to middle income countries like South Africa can be a valuable renal replacement tool due to its relative ease of use. However, few studies have examined its' outcomes particularly in HIV infected patients. This study explores the efficacy and outcomes of CAPD as well as associated complications in the HIV infected dialysis requiring renal failure population.

Objectives

Primary objective

1. To evaluate the effects of HIV positivity on outcomes of continuous ambulatory peritoneal dialysis (CAPD) among dialysis requiring renal failure patients.

Secondary objectives

2. To evaluate the effects of HIV positivity on risk factors, pattern and incidence of catheter related complication among peritoneal dialysis patients.
3. To assess the effects of HIV positivity on the S. aureus nasal carriage and incidence of catheter related infection among renal failure patients undergoing peritoneal dialysis.
4. To examine the presence and significance of HIV virus particles in peritoneal dialysis fluid in HIV positive patients treated with CAPD.

Methodology

Study Design: Prospective cohort study.

Study population: Consecutive patients admitted to King Edward Hospital VIII and Inkosi Albert Luthuli Hospital PD wards for insertion of tenckhoff during the recruitment period.

Study sample size: 140 patients

Study Procedures: 70 HIV positive subjects will be enrolled into group 1 while 70 HIV negative subjects will be allocated to group 2. All subjects in both groups will be trained on adequate use of CAPD system. Group 1 patients will have ARV treatment optimised according local protocols. Various risk factors, biomarkers, and associated complications will be monitored over a 18 month period.

Section F: Informed consent document

INFORMATION DOCUMENT

Study title: The effect of HIV infection on the management of renal failure among patients undergoing peritoneal dialysis

Greetings

I Dr Kwazi C Z Ndlovu am doing research on peritoneal dialysis in renal failure in patients with or without HIV. Dialysis is type of treatment given to patients with non-functioning kidneys and it performs the cleansing function of the kidney on the body. There are two types of dialysis one called haemodialysis where blood is ran through a machine which then filters all the unwanted substances from the body. Another type is called peritoneal dialysis, where fluid is put into the abdomen (belly) for a specified period thereby allowing waste product to be removed from the body by the dialysis fluid. Research is just a tool used to learn the answer to a question. In this study we want to learn whether peritoneal dialysis can be used safely and efficaciously to help patients with renal failure and also at the same time are infected by the HIV virus.

We are asking / inviting you to participate in this research study (or asking for your permission to include your child in a research study).

We are recruiting patients who have severe kidney failure requiring dialysis. We are recruiting both patients who are HIV positive as well as those who are HIV negative. All patients in both groups will be inserted a peritoneal dialysis catheter. This is a plastic stick inserted into the abdomen (belly). A small area below the navel will be cleaned, numbed with a numbing injection and then using a small opening the dialysis catheter will be inserted into the belly. Dialysis fluid will be inserted into the belly. This process performs the cleansing function of the kidneys in the body. You will then be trained on the operation of this dialysis method. This dialysis method is used routinely in many hospitals both here in KwaZulu-Natal as well as throughout the world. This dialysis method has an advantage of allowing dialysis to be performed at home by the patient. This is particularly important since there are limited slots available in the haemodialysis system.

Like any procedure peritoneal dialysis does have uncommon complications. Very rarely internal organs can be damaged during the insertion of the dialysis catheter. Sometimes infection in the abdomen can develop later in the course of treatment. These complications are not common and every measure possible will be taken to minimize risks of such and other unforeseen complications.

If this study produces favourable results we will be able to offer more treatment options to patients presenting to King Edward hospital and surrounding hospitals with life threatening renal failure.

Alternative treatments for kidney failure such as haemodialysis are not readily available to all patients who need it due to resource constraints. This fact makes it

even more important to investigate easily implementable and cost effective treatment options.

Participation in this study does not guarantee acceptance into the chronic renal programme nor will it disadvantage any of its participants. All participants will be worked-up according to local protocols and presented to the chronic renal programme committee timeously for consideration. Participation in the project will not undermine in anyway the normal care due patients with dialysis requiring renal failure. However, participants of the study will be required to answer special questionnaires which have been adapted specifically for this project to get more information about the participants that will assist in the interpretation of study results at the end of the study. This information will be kept at the strictest of confidence and will be secured in a secure room and password protected computer with access restricted to the research team. Furthermore, extra blood tests will be drawn from participants amounting to an extra 10ml of blood withdrawn during each visit. These extra samples of blood will test for special biomarkers that are modified by renal failure and inflammation.

Participation is entirely voluntary. You may refuse to participate and that will not invoke any penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty loss of benefits to which you will otherwise be entitled.

You are entitled to reimbursements for any “out of pocket” expenses you may have incurred as a result of participating in this study, e.g. taxi fare.

Confidentiality: Every effort will be made to keep personal information confidential. Absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by law.

Organizations that may inspect and/or copy your research records for quality assurance and data analysis include groups such as the Biomedical Research Ethics Committee, Data Safety Monitoring Committee and the Medicines Control Council.

For further information / reporting of study related adverse events.

Contact details of researcher/s – **Dr Kwazi C. Z. Ndlovu, 0823388996**

Contact details of BREC Administrator or Chair – for reporting of complaints/problems:

Biomedical Research Ethics, Research Office, UKZN, Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 4769 / 260 1074

Fax: +27 (0) 31 260 4609

Administrator: Ms D Ramnarain

Email: BREC@ukzn.ac.za

Consent to Participate in Research

Greeting:

I Dr Kwazi C Z Ndlovu am doing a comparative research on peritoneal dialysis in renal failure patients with and without HIV.

You have been asked to participate in a research study to evaluate the effect of peritoneal dialysis in the treatment of severe kidney failure. You will be inserted a peritoneal dialysis catheter. This is a plastic stick inserted into the abdomen (belly). A small area below the bellybutton will be cleaned, numbed with a local numbing injection and then using a small opening the dialysis catheter will be inserted into the abdomen. Another opening will be made a few centimetres away from the first opening that will serve as an exit of dialysis catheter. Dialysis fluid will be introduced into your belly to perform the cleansing function of the kidneys. You will be trained on operation of this dialysis method and you will be expected to carry it out by yourself at home on discharge from the ward. The effect of this treatment and complications will be monitored for the next 18 months.

You have been informed that as a participant in the study you will be given required to answer special questionnaires which have been adapted specifically for this project to get more information about your background and living conditions. This information will be kept at the strictest of confidence and will be secured in a secure room and password protected computer with access restricted to the research team. Furthermore, extra blood tests will be drawn from you amounting to an extra 10ml of blood withdrawn during each visit. These extra samples of blood will test for special biomarkers that are modified by renal failure and inflammation.

You have been informed about the study by

You have been informed about any available compensation or medical treatment if injury occurs as a result of study-related procedures;

You may contact Dr K Ndlovu at 0823388996 any time if you have questions about the research or if you are injured as a result of the research.

You may contact the **Biomedical Research Ethics Office** on **031-260 4769 or 260 1074** or Email BREC@ukzn.ac.za if you have questions about your rights as a research participant.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop at any time.

If you agree to participate, you will be given a signed copy of this document and the participant information sheet which is a written summary of the research.

The research study, including the above information, has been described to me orally. I understand what my involvement in the study means and I voluntarily agree to participate. I understand that participation in this study does not guarantee acceptance into the chronic renal programme nor will it disadvantage any me in any way. I have been given an opportunity to ask any questions that I might have about participation in the study.

Signature of Participant

Date

**Signature of Witness
(Where applicable)**

Date

**Signature of Translator
(Where applicable)**

Date