of perinephric haematoma (20.5% vs 31.9%, p = 0.03) was detected in the interventional radiologist group. However, they self-report haematoma, whereas ultrasonographers report haematoma for nephrologists.

**Conclusions:** Interventional radiologists obtained significantly larger specimens than nephrologists. There were no significant differences in post procedural complications other than perinephric haematoma.

**SAT-309**

**GROWTH PATTERNS OF TYPICAL AND ATYPICAL RENAL ANGIOMYOLIPOMA IN CHILDREN WITH TUBEROUS SCLEROSIS COMPLEX**

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**Introduction:** Angiomyolipoma are the major renal manifestation of tuberous sclerosis complex (TSC). Although considered a benign tumour, angiomyolipoma can cause significant morbidity, primarily as a result of spontaneous hemorrhage. The risk of hemorrhage increases as angiomyolipoma grow, with negligible risk in lesions less than 3cm in diameter. The main goal of radiation therapy is to reduce the risk of hemorrhage. Inhibitors of mTOR have been shown to cause regression of angiomyolipomas and current guidelines recommend consideration of mTORi for management of lesions that measure 3cm or more. Data regarding the natural history of angiomyolipoma in childhood are scarce. The aim of the present study was to identify the growth patterns and growth determinants of angiomyolipomas in children affected by TSC.

**Methods:** A retrospective observational study was conducted in TSC patients from a tertiary referral center who had abdominal imaging between the ages of 0–21 years. Outcomes were presence of any angiomyolipoma and angiomylipoma size. Kaplan–Meier curves were used to display the cumulative probability of the presence of any angiomyolipoma and having an angiomyolipoma growing to over 3cm in diameter. Cox regression was used for between group comparisons. Patients were grouped according to the variables of interest of patient age, gender and genotype.

**Results:** 121 children with TSC had abdominal imaging performed on at least one occasion before age 21 years. Of these, 89 (62%) had an angiomyolipoma and 11 (9%) had an angiomyolipoma measuring 3cm or more. The size and prevalence of angiomyolipomas increased with age. Children with a TSC2 mutation were more likely to develop an angiomyolipoma than those with a TSC1 mutation (HR 11.587, 95% CI=1.586 to 84.651, p=0.016). Eleven (9%) patients had at least one angiomyolipoma measuring 3cm or more in diameter, seven of these were fat-poor. Fat-poor angiomyolipomas were found to be 7.6 times more likely to reach >3 cm than typical lesions (95% CI=2.034 to 28.747, p=0.003).

**Conclusions:** Angiomyolipomas occur in the majority of patients with TSC by adult life, particularly those with TSC2 mutations. This is the first study to show that atypical fat-poor angiomyolipomas appear to have a more rapid growth during childhood than typical angiomyolipomas. These findings have important implications for clinical monitoring as fat poor lesions may be missed by ultrasonography.

**SAT-310**

**‘ROAR’ TO PROTECT THE VEINS (AND SAVE THE LIVES) OF CHILDREN WITH CHRONIC KIDNEY DISEASE**

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**Introduction:** Vessel preservation for adult patients with chronic kidney disease (CKD) is the gold standard of care and multiple education programs worldwide actively promote this. Ideally, it should begin before dialysis access is required and should continue post transplantation. Paediatric CKD patients form a unique cohort as they are likely to require multiple episodes of dialysis and several transplants throughout their lifetime. Yet the majority of paediatric nephrology centres around the world do not routinely promote vessel preservation for their patients. We performed an audit of the current phlebotomy practices in the outpatient setting of a large paediatric nephrology centre over a three-month period. In response to the results of this audit, we created ‘Be a Lion and ROAR’. - the first vessel preservation education campaign specifically designed for a paediatric population.

**Methods:** Data was collected retrospectively from outpatient nephrology clinics (transplant, dialysis, general nephrology, tubular and nephrotic clinics) between 1st April 2017 and 30th June 2017 using the phlebotomy department’s mandatory logbook. All bloods collected via the outpatient phlebotomy service were of a routine nature in otherwise stable patients. Statistical analysis was performed using descriptive statistics.

**Results:** A total of 686 outpatient phlebotomy episodes were recorded for 472 nephrology patients over the 3-month period from 1st April 2017 to 30th June 2017. The mean age of patients attending outpatient phlebotomy was 10 years, with a range from 1 month to 18.3 years. Overall, 89.1% of these patients had bloods taken from the antecubital fossa (ACF) only. Hand veins were used in 9.7% of patients and as the first attempt in only 7.6% of patients. Foot veins were rarely utilised. More than one attempt was required in 9.9% of patients with 62.7% of these patients having all attempts taken from the ACF only. These trends were echoed across all nephrology patient subgroups, regardless of the clinic they attended. The results of this audit highlighted the need for a formal vessel preservation strategy and education awareness program in children with CKD. ‘Be a Lion and R.O.A.R’ – Respectfully Object And Re-evaluate’ is a child friendly motto specifically designed to promote vessel preservation in all renal patients. Using quality improvement (QI) methodologies we designed a Driver Diagram plan for vessel preservation. Using a multistage approach, we identified the need for vessel preservation at three key levels: leadership and staff engagement, the creation of a formal hospital policy and most importantly, active promotion of patient and parent education. Implementation and review of these health interventions will occur in stages over the coming months and years.

**Conclusions:** Vessel preservation is not actively practised for paediatric nephrology patients in the outpatient phlebotomy setting. The ‘R.O.A.R’ QI template for vessel preservation in children provides a strategic approach for the implementation of this important health intervention. This model is currently in the pilot phase at our quaternary paediatric hospital and if successful, would be applicable to other paediatric nephrology centres worldwide.
training consisted of learning all aspects of acute peritoneal dialysis (PD) and especially focused on two useful techniques for low income countries namely on bedside PD catheter insertion and the local production of PD fluids.

**Results:** Upon the return from training, in December 2017, pediatric PD activities have started, remarkably at a very low cost. From January to October 2018, 27 children with AKI mainly due to severe malaria and sepsis were eligible to dialysis. There were 15 boys and 12 girls with the median age of 8 years (4 months - 15 years). The main indications of dialysis were uremic toxicity, prolonged anuria (> 4 days) with fluid overload. Despite the low socioeconomic status of parents, almost all children have been dialyzed and 23 recovered efficient diuresis after an average of 8.0 ± 4.1 days of PD treatment. We noted that 1/27 patients developed peritonitis that was effectively treated and 3/27 died of complications of comorbidities.

**Conclusions:** This promising experience reveals the importance of South-South cooperation with the support of the Northern partners. The final goal of this program is to extend the training to practitioners in other provinces of the country in order to contribute significantly to the 0by25 objective of the ISN.

**SAT-312**

**APOL1 RISK GENOTYPES ARE ASSOCIATED WITH EARLY KIDNEY DAMAGE IN CHILDREN FROM CENTRAL AFRICA (DEMOCRATIC REPUBLIC OF CONGO)**

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**Introduction:** Apolipoprotein-L1 (APOL1) risk variants G1 and G2 increase the risk of chronic kidney disease (CKD), including HIV-related CKD, among African Americans. However, such data from population living in Africa, and especially in children, remain limited. We aimed to describe the prevalence of APOL1 risk variants in the Democratic Republic of Congo (DRC) and to assess the association between these variants and early stage of CKD in general pediatric population and in HIV-infected children.

**Methods:** In a cross-sectional study, 412 children from general population and 401 HIV infected children treated with antiretroviral therapy were recruited. APOL1 high-risk genotype (HRG) was defined by the presence of 2 risk variants (G1/G1, G2/G2, and G1/G2) and low risk genotype (LRG) if 0 or 1 risk variants were present. The main outcome was evaluated albuminuria defined as urinary albumin/creatinine ratio ≥ 30 mg/g.

**Results:** APOL1 sequence analysis revealed that 29/412 (7.0 %) participants carried HRG whilie 84 (20.4 %) carried G1/G0 and 61 (14.8 %) G2/G0 alleles. Considering the association between APOL1 HRG and kidney disease, in general population, children who carried APOL1 HRG had 2-fold increased odds of elevated albuminuria compared to those with LRG (OR 2.1, 95%CI 0.6-6.0; p=0.13). In HIV infected children, 18/23 (78.3 %) participants carrying HRG had elevated albuminuria against 54/378 (17.2 %) with LRG (OR 21.6, 95%CI 7.3-76.6; p<0.001).

**Conclusions:** The APOL1 risk variants are prevalent in children living in the DRC. Carriers of APOL1 HRG have an increased odds of early kidney disease, especially those infected with HIV.

**SAT-313**

**EFFECT OF NORMALIZATION OF 25 (OH) VITAMIN D LEVELS ON FREQUENCY OF RELAPSES IN FIRST YEAR OF CHILDHOOD NEPHROTIC SYNDROME A NON RANDOMIZED CONTROLLED TRIAL**

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**Introduction:** Low 25 (OH) Vitamin D levels have been described in childhood nephrotic syndrome (NS) due to nutritional deficiency and loss of vitamin D binding proteins in the urine. This study was done to detect the prevalence of 25(OH) D deficiency in children with the first attack of NS and to evaluate the impact of normalizing 25(OH) D levels on the number and frequency of relapses in the first year following the initial attack of NS.

**Methods:** Children presenting with first episode of NS were treated with standard steroid regime for 12 weeks. Steroid sensitivity (SSNS) was assessed at the end of 4 weeks of daily therapy. SSNS were included in the study. 25(OH) Vitamin D was estimated. Levels />30 ng/ml were considered adequate. Oral cholecalciferol 60,000 units daily for 10 days was given if levels were < 10ng/ml and 60,000 units daily for 5 days for levels >10ng/ml but < 30ng/ml. Levels were estimated again at 12 weeks and if still low, a similar second course was given. Patients not willing to test 25(OH) D were followed up as control. All patients received daily maintenance cholecalciferol (1000 IU/day) and calcium supplements and were followed up for a period of one year. Time to first relapse, number of relapses in one year, number of relapses in the first and second six months and the number of infection associated relapses were studied. The sample size was calculated for alpha of 0.05 with power of 80% and relative risk of 0.4. The number required in each arm was 44.

**Results:** 97 children presented with the first attack of NS. At 4 weeks, 4 patients were excluded (2 steroid resistant; 2 lost to follow up). Of these, 45 who underwent evaluation of serum 25(OH) D levels were included in the study group; 48 who refused evaluation were followed up as controls. 44/45 patients (93.75%) in the study group had 25(OH) D levels < 30ng/ml at 4 weeks; 24 (54%) had deficiency (<10ng/ml) and 20 (44%) had insufficiency (10-30ng/ml). The mean level of 25(OH) D at 4 weeks was 11.11±7.023 ng/ml and at 12 weeks was 37.73±18.38ng/ml. The two groups were comparable in age and sex. There was no significant difference between the two groups in time to first relapse, relapse rates, number of relapses in the first and second six months, total number of relapses or infection associated relapses. (Table 1)

**Table 1 Relapses in children with normalized 25(OH)D levels compared to standard therapy**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Study group (n=45)</th>
<th>Control group (n=48)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>4.50 +/- 2.69</td>
<td>3.80 +/- 2.75</td>
<td>0.057</td>
</tr>
<tr>
<td>Males</td>
<td>28 (68.3%)</td>
<td>28 (52.2%)</td>
<td>0.72</td>
</tr>
<tr>
<td>Time to first relapse (months)</td>
<td>8.38 +/- 5.07</td>
<td>9.53 +/- 5.96</td>
<td>0.428</td>
</tr>
<tr>
<td>Relapse rate</td>
<td>1.77 +/- 1.75</td>
<td>1.68 +/- 1.87</td>
<td>0.809</td>
</tr>
<tr>
<td>No of relapses in first 6 months</td>
<td>0.39 +/- 0.75</td>
<td>0.38 +/- 0.88</td>
<td>0.923</td>
</tr>
<tr>
<td>No of relapses in 6 months - year</td>
<td>0.76 +/- 0.80</td>
<td>0.64 +/- 0.74</td>
<td>0.497</td>
</tr>
<tr>
<td>Total relapses in first year</td>
<td>1.20 +/- 1.47</td>
<td>0.81 +/- 1.07</td>
<td>0.200</td>
</tr>
<tr>
<td>No of Frequent relapers</td>
<td>10 (22.2%)</td>
<td>11 (22.9%)</td>
<td>0.052</td>
</tr>
<tr>
<td>No of infection associated relapses in first 6 months</td>
<td>0.09 +/- 0.29</td>
<td>0.04 +/- 0.20</td>
<td>0.374</td>
</tr>
<tr>
<td>In next 6 months</td>
<td>0.20 +/- 0.46</td>
<td>0.21 +/- 0.38</td>
<td>0.700</td>
</tr>
</tbody>
</table>

**Conclusions:** Low 25(OH)D levels were found in 93% of children with SSNS. Early restoration of 25(OH) D levels to normal did not reduce the time to first relapse, the number of relapses in the first year, the number of frequent relapers or infection associated relapses.

**SAT-314**

**SYSTEMATIC REVIEW AND RECOMMENDATIONS FROM THE PEDIATRIC CONTINUOUS RENAL REPLACEMENT THERAPY (PCRRT) WORKGROUP FOR MANAGEMENT OF HYPERAMMONEMIA IN CHILDREN**

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