Effects of an education and home-based pedometer walking programme on ischemic heart disease risk factors in People Living With HIV/AIDS (PLWHA): A randomised control trial

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People infected with the human immuno-deficiency virus (HIV) are at an increased risk of developing ischemic heart disease (IHD). However the effects of an education and home-based pedometer walking programme on risk factors of IHD are not known. We conducted a 12 month randomised study of an education and home-based pedometer walking programme in 84 HIV-infected individuals with risk factors of IHD. We used generalized estimating equations and mixed effects models in our analysis. Pedometer step count started out the same at baseline (p = 0.8), but after six months the intervention group improved significantly (p = 0.02) but change was not significant at 12 months (p = 0.19). The physical activity programme resulted in significant between-group changes in perceived stress (p = 0.01) and systolic blood pressure (p = 0.03) respectively at group level and Framingham Risk Score (p = 0.01) at individual level. Multivariable generalised estimation equation analysis demonstrated an inverse association between perceived stress (log B = -0.01; 95% CI: -0.02, -0.01; p <0.00) and body mass index (log B = -0.02: 95% CI: -0.03, -0.002; p = 0.02) and the time and intervention/control interaction. No significant between-group change occurred in high sensitivity C-reactive protein at group (p = 0.25) or individual level (p = 0.06) during the intervention period. An education and home-based pedometer walking programme improved physical activity levels. Beneficial changes in other IHD risk factors were also noted.

Key words: HIV; walking; heart disease
Virologic efficacy of efavirenz maintenance therapy in nevirapine prophylaxis-exposed children

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Ritonavir-boosted lopinavir (LPV/r)-based therapy is recommended as first-line for young children in low resource settings in part to circumvent drug resistance selected following nevirapine (NVP) prophylaxis. Whether prophylactic NVP exposure precludes later use of efavirenz (EFV) among children initially suppressed on LPV/r is unknown. NEVEREST 3 was designed as a randomized clinical trial to test whether transition to EFV maintenance therapy has equivalent virologic efficacy to standard continuation of LPV/r-based therapy in children infected despite exposure to NVP-containing prophylaxis. At RMMCH 298 children, exposed to NVP prophylaxis aged 3-5 years were enrolled in a non-inferiority trial. Children were randomized to switch to EFV or to continue on LPV/r. Children were followed to 48 weeks. Primary endpoints: 1) non-suppression i.e. RNA >50 cpm ever and 2) viral failure i.e. RNA >1000 cpm confirmed. Children were an average of 4.1 years of age, had initiated therapy at a mean of 9 months and had been on therapy for a mean of 3.5 years at randomization. 150 children were randomized to switch to EFV and 148 to stay on LPV/r. Retention was 98%, there were no deaths and two children in the EFV and three children in the LPV/r arms were hospitalized during the course of follow-up. Both primary virologic endpoints were found to be non-inferior in the EFV arm relative to the LPV/r arm. Children exposed to NVP prophylaxis who are initially suppressed on LPV/r-based therapy can safely transition to EFV-based maintenance therapy without increased risk of viral rebound.

Key words: Childhood HAART ; Switch Strategy ; Lopinavir/ritonavir ; NNRTI.
Formulation, characterisation and design of an intraocular anti-inflammatory nanoparticulate drug delivery system

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The posterior segment of the eye poses challenges in terms of drug delivery. Procedures such as intraocular injections are invasive and may yield health hazards such as cataracts. This study aimed to design a layer-by-layer-originated lipopolymeric intraocular nanoparticulate system, for administration in the cul-de-sac of the eye and penetration through the ocular barriers, for the treatment of uveitis. These nanoparticulate systems were produced by dissolving lipids (cholesterol and soybean oil), buffer pH 7.4 and drug in chloroform. This emulsion was sonicated and the organic solvent was removed, followed by freeze-thawing. Following that, a layer of chitosan was added to the nanoparticles, allowed to deposit for 12 hours. Finally a layer of polyethylene glycol was added and allowed to deposit for 4 hours. Zeta-sizing was used to ensure stable particles within the nanometer range (~200nm). Drug release studies (over 24 hours) were conducted on the formulations. Images highlighted nanoparticles with a thick shell due to the reinforced layering, effectively entrapping the drug. This study demonstrated how the variables involved (i.e. time of sonication, number of freeze-thaw cycles and amount of soybean oil), affect size and stability of the drug delivery system and enabled determination of an optimized formulation. This formulation (once incorporated into a suitable suspension) will circumvent the need for invasive procedures; and improve compliance regarding anti-inflammatory drug delivery to the posterior segment of the eye for uveitis treatment. Furthermore, the optimized product will be further modified to facilitate targeted drug release, through the use of antibody conjugation.

Key words: Drug delivery nanoparticles ocular uveitis
Novel pH sensitive oral Interferon-ß delivery system for application in Multiple Sclerosis

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Multiple sclerosis (MS) affects a wide range of individuals with the statistical value of 1.3 in 1000 people affected in developed world countries. There is however, a high degree of correlation between inflammation and axonal injury in all possible stages of MS with axonal and neuronal degenerative lesions in active demyelinating neuronal tissue. Prevalently, the most successful form of therapy is the treatment with Interferon beta (INF-ß) injectables. Taking into account the demand for oral drug delivery, an oral pH-sensitive Interferon beta (INF-ß) delivery system was prepared by free radical suspension polymerization reaction. A Box-Behnken design program was employed for generating a series of formulations with varying concentrations of polymer and cross-linker, for establishment of an optimized copolymericmicroparticulate formulation. Insulin was employed as the prototype peptide for experimental design and the optimized formulation was subsequently evaluated for INF-ß. The prepared copolymeric system was characterized for morphological, porositometric and mucoadhesive properties. The optimized copolymeric particulate system had INF-ß loading efficiency of 53.25% and in vitro release of 3% and 74% in gastric (pH 1.2) and intestinal (pH 6.8) simulated conditions, respectively. The oral peptide delivery system was further evaluated for bioavailability of INF-ß employing New Zealand White rabbit model and compared to the commercial subcutaneous formulation (Rebif®) for efficacy and efficiency. The particulate system showed an astounding effective release profile for 24 hours, with higher INF-ß blood concentration than the commercial subcutaneous injection formulation. This implies successful delivery orally, providing a platform for advances in the treatment.

Key words: Oral Protein Drug Delivery
South African propolis: Antimicrobial activity, chemical properties and interactive efficacy

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Propolis is a sticky resin collected from various flora by bees (Apis Mellifera). It is used by bees to seal off holes in the hive, prevent putrefaction and prevent infections of the colony. Studies on a global scale have reported on the broad-spectrum antimicrobial activity of propolis. The chemical diversity of propolis is also clearly apparent and has been extensively studied. However, chemical and antimicrobial properties of South African (SA) propolis, has only been briefly researched. Therefore this study investigated the antimicrobial activities of 46 propolis samples from the various provinces of South Africa, using the minimum inhibitory concentration and minimum bactericidal concentration assays. Chemical fingerprinting profiles of 42 samples using high performance thin layer chromatography (HPTLC) and ultra performance chromatographic-photodiode detector-quadrupole-time of flight-mass spectrometry (UPLC-PDA-qTOF-MS) were studied. Propolis samples were found to display noteworthy antimicrobial activity with concentrations as low as 6µg/ml. Interactive efficacy studies with ciprofloxacin revealed an FIC value of 0.4 (synergistic activity) against P. aeruginosa. SA propolis is clearly chemically different when compared to the Brazilian samples.

Key words: Propolis, Antimicrobial, Chemistry, Interactive efficacy
An electro-modulated transdermal drug delivery system for the treatment of chronic pain

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The development of a Transdermal Electro-Activated and Modulated (TEAM) drug delivery device for the treatment of chronic pain using a BipolymericInterfacially Plasticized Electro-responsive Hydrogel (BiPERG) which is a combination of an Electro-Modulated Hydrogel (EMH) and a microneedle array (MNA). MNA technology has been opted to construct an ultra-minimally invasive, virtually pain-free delivery mechanism to overcome the individual limitations of both injections and patches. Design of experiments using a Box-Behnken design model was implemented for the optimization of predetermined therapeutic and pharmaceutical parameters. In vitro evaluation indicated that the formulations meet the desired pharmaceutical requirements in terms of matrix resilience, swellability and electro-responsive drug release both with the candidate drug, indomethacin, and other potent drugs such as morphine hydrochloride, fentanyl citrate and celecoxib. Ex vivo evaluation of the optimal formulation across porcine skin demonstrated that without electro-stimulation, significantly less drug release was obtained (±0.4540mg) as compared to electro-stimulation (±2.93mg). In vivo release studies were conducted to foster an in vitro/in vivo correlation, providing a more realistic clinical extrapolation of the therapeutic ability of the delivery system. In this study, therapeutic efficacy of the EMH-MNA device was evaluated following transdermal application to the Sprague Dawley rat model. In vivo profiles displayed contrasting results where the transdermal device displayed significantly higher levels of drug release in the plasma (5.71×10⁻⁷ µg/mL) as compared to conventional intravenous delivery (2.894×10⁻⁷ µg/mL) proving the developed system as an efficient electro-modulated delivery device for bioactives through the skin.

Key words: hydrogel, microneedle, transdermal
Intimate Partner Violence (IPV) at a tertiary Institution

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The study aims to ascertain the prevalence of IPV within a South African tertiary institution population with a diverse demographic profile. Undergraduate students from the University Medical School and Social Sciences were asked to complete an anonymous questionnaire, derived from international studies, which assessed demographics, the extent of IPV, whether participants were victims or even perpetrators of IPV. Permission was obtained from Head of Faculty and HREC. Students were made aware of the availability of psychological counselling services. Data was recorded in an EXCEL spreadsheet and analysed using Statistica using a Chi-squared test. Responses were obtained from 1360 of 1593 students (68% female; 32% male; 45.9% African; 32.7% White population; 14.7% Eastern ancestry). Most respondents were aged between 20 and 24 years of age (62%). Ninety four percent were heterosexual and 47% were in a relationship, engaged or married, with 57% indicating that they were sexually active. Seventy seven percent were HIV negative. Thirty five percent admitted to being emotionally abused, 19% physically abused, and 9% sexually abused. Of the total victims of sexual abuse 45% were able to negotiate protected sex. Thirteen percent of respondents admitted they had physically hurt someone close to them, without differences with respect to gender (p=0.55). Only three perpetrators of sexual abuse had been sexually abused. Fifty nine percent of respondents knew where to get help. The extent of emotional, physical and sexual abuse amongst university medical and social science students is unacceptably high. The survey should be undertaken at other centres of higher learning to determine possible region difference of this unacceptable practice.

Key words: Intimate Partner Violence
Under-estimating psycho-social issues in young women with breast cancer in South Africa, may seriously impact their ability to make informed treatment choices.

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This study is part of ongoing research prospectively gathering information from women of very differing socioeconomic and racial groups to determine the influence of these variables on psychosocial concerns and delay to presentation in breast cancer. Here we aim to determine the influence of age on psychosocial concerns in breast cancer patients currently undergoing active management at either of two centres (government and private) in Johannesburg. One hundred and fifty eight patients completed the questionnaire. The age of patients ranged from 23 to 79 years with a mean of 52 years and 19.6% (n=31) 40 years or under. Younger patients were more likely to be fearful about undergoing surgery at the time of diagnosis (p=0.04) and during their treatment (p=0.01). They recorded very strong fear at the loss of a breast (p=0.01), loss of hair during chemotherapy (p=0.03) but not to other chemotherapy side-effects. Younger patients were far more likely to record a substantial fear of dying (p>0.001). There was no significant relationship of age with the beliefs of patients surrounding breast cancer: age did not affect whether patients believed in alternative methods of cancer management, neither whether they believed they would survive nor determine their understanding of who gets breast cancer nor why. This study highlights crucial aspects of psycho-social fears that may impact on a young patient’s unique challenges when faced with a breast cancer diagnosis. This may affect their willingness to undergo treatment and also highlights the need for more intensive counselling and psychosocial support for this vulnerable group.

Key words: Breast cancer survivorship
Energy expenditure comparison between Nintendo Wii Fit®® and physical exercise in adolescents

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The study aimed to compare the energy expenditure of adolescents when playing sedentary and new generation active computer games. A cross sectional comparison of four computer games was used. Participants were six boys and five girls aged 13-15 years. The participants were fitted with a monitoring device validated to predict energy expenditure. They played four computer games for 15 minutes each. One of the games was sedentary (XBOX 360) and the other three were active (Wii Sports). Predicted energy expenditure was compared using repeated measures analysis of variance. Mean (standard deviation) predicted energy expenditure when playing Wii Sports bowling (190.6 (22.2) kJ/kg/min), tennis (202.5 (31.5) kJ/kg/min), and boxing (198.1 (33.9) kJ/kg/min) was significantly greater than when playing sedentary games (125.5 (13.7) kJ/kg/min) (p<0.001). Predicted energy expenditure was at least 65.1 (95% CI 47.3 to 82.9) kJ/kg/min greater when playing active rather than sedentary games. Playing new generation active computer games uses significantly more energy than playing sedentary computer games but not as much energy as playing the sport itself. The energy used when playing active Wii Sports games was not of high enough intensity to contribute towards the recommended daily amount of exercise in children.

Key words: exercise, Nintendo Wii Fit®, adolescent activity, console gaming
Pre-analytical interference in the laboratory measurement of 25-hydroxyvitamin D

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The routine analysis of 25-hydroxyvitamin D (25OHD) at Charlotte Maxeke Johannesburg hospital (CMJAH) is measured using high performance liquid chromatography photodiode array (HPLC-PDA). This method provides a quantitative result for both 25OHD2 and 25OHD3. This is important when studying dietary supplementation of vitamin D where the majority of cheaper supplements contain 25OHD2. Due to the nature of the HPLC method, detection and elimination of interfering substances is straightforward if the correct precautions are taken. The analysis of 25OHD is performed preferably on EDTA plasma samples, which should be separated and removed from cells within 4 hours of being collected. However, it can also be quantitated using serum samples collected in serum separator tubes (SST- yellow top). These tubes contain a gel which on centrifugation forms a layer separating the cellular component of blood from the serum. Samples collected in 2 types of serum SST tubes (vacuette and vacutainer) were analysed using the HPLC-PDA method and compared. The results showed a positive interference encompassing both the 25OHD2 and 25OHD3 peaks in the samples collected in the vacuette tubes. This interference was not seen in the vacutainer tubes. This pre-analytical interference was caused by the gel component of the serum separator tubes suggesting that care should be taken with the use of these collection devices when measuring 25OHD, or any other blood analytes, on HPLC-PDA

Key words: vitamin d
An assessment of use of traditional medicine in pregnancy and associated factors among Black South African women delivering in Bertha Gxowa hospital

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Black South African women use traditional medicines during pregnancy. Data on the extent of women's use is limited, despite the knowledge that some traditional medicines used have negative outcomes. The prevalence of traditional medicine use during pregnancy, the types used and the reason for use, amongst post-partum women in Bertha Gxowa hospital was studied. A cross sectional study was done on 442 patients admitted to the post natal ward of the hospital. Women were interviewed over 2 months using a structured questionnaire that was used in other previous studies and it was piloted. Data collected was analysed using statistical software SPSS 17.0. Descriptive statistics and Chi square tests were used. A total of 357 completed the interview. 41,5% of women used traditional medicine. The mean age of the participants was 27 years. Older women and Zulu speaking women were more likely to use traditional medicine in pregnancy (p < 0.05). The most common traditional medicine used was Isihlambezo (64%) followed by Umchamowemfene (20%). Other traditional medicine used included usigidi (plants mixed with mercury), crushed ostrich egg, a tonic from breaking old record. Traditional medicine was usually ingested in the third trimester. The commonest reason for use was for quick delivery (44%). The study highlighted that use of traditional medicine in pregnancy amongst post-partum women was high, various types are used and some are toxic.

Key words: Traditional medicine, pregnancy, childbirth
Acute changes in upper limb problems post stroke

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The aim of this study was to establish the acute changes that occur in the upper limb post stroke regarding shoulder subluxation, shoulder pain, upper limb function and muscle tone. 51 participants were recruited within two weeks of stroke presenting with upper involvement (hemiplegia). Each participant was assessed at baseline, week 1, week 2 and week 6 post baseline assessment. The participants were assessed for shoulder subluxation, shoulder pain, upper limb motor function and muscle tone. Informed consent and ethical approval was obtained. Descriptive statistics were used to analyse the data, which were presented in tables using frequencies and percentages for the following variables: age, gender, side of stroke, shoulder subluxation, shoulder pain, upper limb motor function and muscle tone. The study participants were generally young with a mean age of 49.2 ± 12.6 years, with majority females (56.9%) and right cerebrovascular accidents (58.8%). The number of patients presenting with shoulder subluxation increased from 35.3% at baseline to 40.0% at the six week follow up time. The same trend was observed for shoulder pain (47.1% at baseline to 56.7% at six weeks) and muscle tone increase which affected 21.6% of the patients at baseline and 30.6% at the two week follow up. Motor function was poor throughout the study with a poor recovery. This study confirmed the presence of commonly known upper limb problems post stroke, reiterating the challenge of rehabilitation for healthcare providers. It is imperative that we find ways of addressing these problems to improve the quality of life post stroke.

Key words: stroke; upper limb function; upper limb complications
HIV-associated occlusive large artery disease, a new AIDS defining condition?

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The extent to which HIV is associated with increases in carotid intima-media thickness (cIMT) independent of conventional cardiovascular risk factors is unclear. We evaluated whether independent of conventional risk factors, an increased cIMT occurs in African HIV-positive patients with chronic critical limb ischemia (CLI) and whether IMT in HIV is due to factors other than atherosclerosis. We further aimed to identify histopathological features that characterize large vessel disease in HIV positive compared to HIV-negative patients with CLI. cIMT was measured in 217 sequentially recruited patients with CLI, 25 of whom were HIV-positive, and 430 randomly selected controls from a community sample. Femoral arteries obtained from 10 HIV-positive and 10 HIV-negative black African male patients admitted to a single vascular unit with CLI requiring above knee amputation were subjected to histopathological assessment. HIV-positive patients were younger (49±10 vs 64±11years, p<0.0001) with lower prevalence of hypertension and diabetes mellitus (p<0.0001). A similar proportion of patients smoked (76% vs 67%). HIV-positive patients had a similar increase in cIMT (HIV-positive=0.75±0.14mm; HIV-negative=0.79±0.14mm; Controls=0.64±0.15mm, p<0.0001 vs Controls) even after age, sex and conventional risk factor adjustment (HIV-positive=0.75±0.14mm; HIV-negative=0.73±0.15mm, Controls=0.66±0.15mm, p<0.005). Histopathologically 90% of HIV-positive patients, had evidence of adventitial leukocytoclastic vasculitis of the vasa vasorum (p<0.0001), and 70% had evidence of adventitial slit-like vessels, compared to 0% in HIV-negative patients. Increased cIMT in HIV is a risk factor for CLI, however histologically HIV-positive patients do not display atheromatous disease. HIV-associated occlusive large artery disease may represent a new AIDS defining condition requiring urgent HAART.

Key words: HIV occlusive arterial disease
Endotoxaemia: An independent risk factor for atherosclerosis in chronic kidney disease patients

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Cardiovascular disease (CVD) is the most common cause of death among chronic kidney disease (CKD) patients worldwide. Systemic inflammation plays a major role in the development of atherosclerosis among CKD patients. The source of inflammatory responses and the mechanisms by which inflammation leads to CVD remain to be elucidated. This study aimed to determine the role of circulating endotoxaemia as a possible risk factor for atherosclerosis in CKD patients. Endotoxin, interleukin-6 and other routine assays were measured in 160 patients comprising haemodialysis (HD), peritoneal dialysis (PD), CKD stage 3 and controls. Carotid intima medial thickness (CIMT) was measured. Endotoxin concentration was significantly higher among patients on PD (0.59±0.25EU/ml), HD (0.54±0.34EU/ml) and CKD (0.50±0.22EU/ml) compared to controls (0.34±0.14EU/ml). CIMT was significantly higher among CKD patients compared to the controls. Endotoxin level had a significant correlation with serum interleukin-6 (r=0.283; p<0.0001) and CIMT(r=0.318; p<0.0001). CIMT positively correlated with mean arterial blood pressure (r=0.257; p=0.001), calcium-phosphate product (r=0.255; p=0.001) and negatively correlated with haemoglobin (r= -0.306; p<0.0001) and albumin (r= -0.278; p<0.0001). Multiple linear regression showed that endotoxin level was the only independent risk factor associated with increased CIMT. The findings suggest that endotoxemia was common in CKD subjects, and the degree of circulating endotoxemia was related to the severity of systemic inflammation and presence of atherosclerosis.

Key words: Chronic kidney disease, Atherosclerosis, Inflammation, Cardiovascular disease
The impact of Human Immunodeficiency Virus in patients with systemic lupus erythematosus

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Little is known about the impact of the human immunodeficiency virus (HIV) on the course of systemic lupus erythematosus (SLE). A case record review of SLE patients with concurrent HIV infection, attending the Chris Hani Baragwanath Hospital was performed. These cases were matched with HIV negative SLE controls based on age, disease duration and nephritis. Forty of 543 patients tested were HIV positive (7.4%) and 7 had false positive HIV serology. The majority of the cases were female (97.5%) with the mean (SD) age at SLE and HIV diagnosis respectively being 32.6 (11.5) and 36.0 (10.6) years. A high number 15/40 (37.5%) had nephritis. The mean (SD) duration of follow up, was 8.9 years (6.3). Four patients had hospital reported death. In total, 81 hospital admissions were recorded. The rate of admission per 100 patient years was 62 (162) with infections and SLE flares being the reasons for admissions in 45.7% and 33.3 % respectively. The mean (SD) duration of stay per year was 6.7 days (30). No significant difference was found between the rate of admissions post HIV infection and the controls (p value=0.838). Post HIV infection, the admission rate for SLE flare was lower (p value=0.002) and for infection, it was higher (p value=0.007) than the controls. HIV in SLE patients is associated with substantial morbidity and mortality. False positive HIV serology occurs in SLE patients. Infections are a commoner reason for admission in SLE patients co-infected with HIV compared to those uninfected.

Key words: SLE, HIV
A study of the correlation of a fall from height fatalities and the injuries sustained from cases from Johannesburg Forensic Pathology Service Medico-Legal Mortuary

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A fall from a height often leads to the death of an individual. The aim of this study is to establish whether a correlation exists between the injuries sustained by a fall from height fatality and the height that the individual fell from. This was a retrospective study with the information being gathered from the SAPS 180 forms, toxicology reports and post-mortem examination reports. This study included 100 cases of falls from a height from the Johannesburg Forensic Pathology Service Medico-Legal Mortuary. Results indicated that most of the deceased who fell from a height were mostly men. It was noted in this research that the victims were of a younger age than in other countries. Alcohol was one of the dominant factors in cases of accidental falls and suicidal falls. Common presented fractures were of the skull, ribs, sternum and vertebrae. At heights from zero to 12 meters, and 32 meters and above, there was a higher frequency of head injuries noted. And at heights of between 13 to 31 meters there was a high frequency of lower extremity injuries. The information obtained from this research can be used as a reference for medico-legal post-mortem examinations in order to assist in determining the height of a fatal fall from the injuries observed or vice-versa.

Key words: Fall from Height
Lactose malabsorption and diarrhoea in children with severe acute malnutrition

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Malnutrition is a major cause of childhood morbidity and mortality in the developing world. When malnutrition is complicated by diarrhoea, the prognosis worsens. Studies have shown that lactose malabsorption is associated with diarrhoea in children with malnutrition, but these children are often managed with lactose containing feeds. This study aimed to identify the prevalence of lactose malabsorption in children with severe acute malnutrition (SAM) and diarrhoea admitted to Rahima Moosa Mother and Child Hospital. No commercially available point-of-care test is currently available globally. Subjects and 81 Children with SAM were included, 63 (78%) of whom had diarrhoea and were tested for reducing substances using the Benedict’s test. Reducing substances of $\geq 0.5\%$ was considered positive for lactose malabsorption. Fifty nine percent of children with SAM and diarrhoea had stool positive for reducing substances. After multivariate analysis, age of less than 12 months was the only factor found to significantly predict positive reducing substances (LR 4, $p=0.046$). Death was four times more likely in children with positive reducing substances ($p=0.035$). Lactose malabsorption is common in children with SAM and diarrhoea, especially in children younger than 12 months and is associated with mortality in these children. The role of lactose-free feeds in children with SAM and diarrhoea has not been adequately explored. A point-of-care test for lactose malabsorption is urgently required.

Key words: 'Lactose Malabsorption', 'Malnutrition', 'diarrhoea'
Frequency and predictors of interstitial lung disease in systemic sclerosis

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Interstitial lung disease (ILD) is a leading cause of death in systemic sclerosis (SSc). The aims were to describe the associations of ILD in SSc patients with baseline demographic, clinical and laboratory features, and to identify features that predict SSc ILD in this population group. A review of case records (1992-2012) of SSc patients attending a tertiary Connective Tissue Diseases Clinic was undertaken. SSc ILD was defined based on features of ILD on high-resolution computed tomography (groundglassopacification, reticulonodular opacities, honeycombing, consolidation, or traction bronchiectasis) with/without restrictive pulmonary function tests. Comparisons between ILD and non-ILD groups at presentation were performed. Of 151 patients evaluated, 60 (40%) had ILD. The majority were female (5:1) and of Black ethnicity (>85%). The mean (SD) age at diagnosis was 42.7 (12.1) years. Baseline associations with ILD were: longer disease duration (p=0.009); gold-mining history (p=0.037); dyspnoea (p=0.014); cough (p=0.007); bibasal crackles (p<0.0001); diffuse subtype (p<0.001); limited subtype (p<0.001); anti centromere antibody (ACA) (0.006). The most significant predictors of SSc ILD were bibasal crackles (OR 9.43; 95% CI 3.25-27.39) and disease duration (OR 1.19; 95% CI 1.09-1.30). ILD in SSc is common, especially in gold-miners. There should be a high index of suspicion for ILD in SSc patients presenting with a gold mining history, dyspnoea, cough and bibasal crackles. ACA has a protective effect. All clinical predictors of SSc ILD can be elicited by the non-specialist, expediting referral to a rheumatologist for further management.

Key words: Scleroderma, Interstitial Lung Disease
Motivators and barriers to regular exercise among elderly people residing in Ekurhuleni Southern Sub-District

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Physical activity has been consistently shown to play an important role in healthy ageing and prevent chronic diseases. While motivators and barriers to regular physical activities among old people (>60 years) residing in old age homes have been studied in other parts of the world, the researcher found no studies on this subject in South Africa. Therefore, the aim of this research was to identify the motivators and barriers to regular exercise in elderly people residing in old age homes in Ekurhuleni Southern sub-district. A descriptive cross-sectional survey conducted among elderly residents in seven old age homes in Ekurhuleni Southern Sub-district. A structured adapted questionnaire was administered in the common languages: English, Afrikaans and Zulu. The data was collected from 139 residents. A Pearson chi square test was used to examine the relationship between participants characteristics with regular exercise. Knowledge of exercise benefits, encouragement to exercise, and opportunity to socialize were all statistically associated with regular exercise (p= 0.00). Poor health, (p=0.00), older age (p= 0.02), lower educational attainment (p= 0.03), being of other than white race (p= 0.04) and being single (p= 0.01) were all statistically associated with regular exercise. Increasing participants’ knowledge of exercise benefits, availability of exercise facilities and trainers and encouragement to exercise are crucial in the uptake and maintenance of regular exercise.

Key words: Barriers, Motivators, Regular Exercise, Elderly
Prevalence, distribution and severity of playing related musculoskeletal disorders among string instrumentalists in South Africa: A pilot study

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String instrumentalists are the most vulnerable to musculoskeletal disorders among musicians. Several factors such as ergonomics, repetition, long practice hours, years of experience and exercises have been associated with this disorder. The health of performing artists is becoming a growing concern in the world and there is still scarcity of literature with regards to the health of performing artists in Africa. A pilot study was done to check the prevalence of musculoskeletal disorders, feasibility and need of the study. The pilot study was conducted using a self-administered modified Musician Health questionnaire, DASH and the NDI which were e-mailed to selected participants to collect information on demographics, musculoskeletal injury and disability. The mean age of the participants was 41.9±10.9 years with 10 (71.4%) being females. The prevalence of musculoskeletal disorders was 84.6%, affecting the upper back (100%), low back (90.1%), neck (70%) and the left (80%) and right shoulder (40%). More than 40% of the sample complained of aching, tingling, tightening and soreness. About 64% of the respondents reported mild neck disability with 61.5% reporting restrictions in day to day activities and playing instruments. The prevalence of musculoskeletal disorders among string instrumentalists is high and it restricts performance. There is a need to develop a musculoskeletal injury prevention programme for string instrumentalists.

Key words: Musculoskeletal disorder, prevalence, string instrumentalists
Anatomy of the human trachea and its relationship to sex and stature within a South African population

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Knowledge of the normal tracheobronchial anatomy and possible variations is important for procedures including tracheal intubation, tracheotomies, bronchoscopic procedures, and in understanding the pathology of respiratory diseases. As population differences exist in tracheobronchial anatomy, this study aimed to establish a range of normal dimensions of the tracheobronchial tree of a South African population. A morphometric study of the human trachea and principal bronchi was performed on 81 cadavers (49 males and 32 females) from South African populations. Measurements included, the tracheal length, tracheal cartilage height, sub-carinal angle and tracheal and bronchial diameters. The height of the thyroid gland isthmus in relation to the underlying trachea was further investigated. Data analysis included Principal component analyses and a Mann-Whitney U test. Correlations were explored using Spearman's correlation co-efficient. P-values less than 0.05 were considered significant. Analysis of the data showed significant differences in tracheobronchial tree dimensions between sexes. Values for isthmus height, tracheal length and all diameters were significantly larger in males. No correlation was found between tracheobronchial tree dimensions and an individual's height. In addition, the study also found that the tracheal length and the sub-carinal angle were greater in the South African population. Thus, suggesting that the observed differences in the current study may be attributed to both genetic and environmental influences. These differences are particularly relevant considering the genetic admixture of the population and altitude variances within South Africa. In addition a surgeon's awareness of the associated anatomical variation is clinically significant in the avoidance of iatrogenic injury.

Key words: Anatomy, Trachea, Bronchi, Dysanapsis
Microalbuminuria as a risk marker for cardiovascular disease

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Microalbuminuria as a risk marker for Cardiovascular Disease AR Immelman; GJ Pilcher; FJ Raal

Microalbuminuria (MA), an early marker of nephropathy in both type 1 and type 2 diabetes mellitus is also considered to be a risk marker for atherosclerosis and cardiovascular disease (CVD). Subjects with homozygous familial hypercholesterolaemia (HoFH) have markedly elevated blood cholesterol levels from birth and suffer from premature atherosclerosis and CVD from a very young age. If MA is a marker in atherosclerosis subjects, then HoFH should have evidence of MA. A cohort of ten HoFH subjects were evaluated for the presence of MA and compared to ten control subjects with cholesterol values within the normal reference range. Fasting glucose, insulin and urinary creatinine were also estimated. Homeostasis Model Assessment (HOMA) was used to calculate insulin resistance and Carotid Intima Medial Thickness (CIMT) was measured by ultrasonography to evaluate the extent of atherosclerosis. Despite severe hypercholesterolaemia and markedly increased CIMT, a marker of atherosclerosis and CVD, HoFH patients did not have evidence of MA. MA is more likely to be a marker of insulin resistance and nephropathy in diabetic subjects and not of CVD.

Key words: Microalbuminuria, Cardiovascular disease
Cricket pace bowlers: The role of spinal and knee kinematics in low back and lower limb injury

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A comparison of spinal and knee kinematics between injured and non-injured bowlers as measured at the start and end of a cricket season was made in a longitudinal observational study. Kinematic and injury related data of thirty-one injury free, premier league (amateur) pace bowlers were obtained. Injuries were monitored monthly. Pre-and post-season as well as injured and non-injured groups were compared using paired and independent Student's t-tests, respectively. Sixteen bowlers (51.6%) sustained one or more lower quarter injuries during the course of the eight month cricket season. A difference was found between lumbar spine lateral flexion positioning (p=0.021) at the start compared to at the end of the season in injured pace bowlers. The range of flexion between front foot placement and ball release at L1 is much greater in the non-injured group than in the injured group as measured at the end of the season (p=0.031). Bowlers who did not sustain an injury during the season displayed more flexed knee angles at the start of the season than those who sustained an injury (0.020). The study found that cricket pace bowlers are prone to lower quarter (low back and lower limb) injuries. The association between kinematics and lower quarter injuries may exist as a result of altered sensory-motor control strategies (protective mechanisms). This may reflect an attempt to increase ball release speeds or may indicate altered trunk load adaptation strategies. This study shows that low back and knee kinematics is associated with and may predict lower quarter injuries in cricket pace bowlers.

Key words: cricket, injury, kinematics
Knowledge and awareness of appropriate blood product use in perioperative patients among clinicians at an academic hospital

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Modern medicine has a continued reliance on allogeneic blood products. This is an expensive, scarce resource with inherent risks to patients. There is no current literature evaluating the level of knowledge and awareness of rational blood product use in South Africa. The purpose of this research was to describe the level of clinicians knowledge and awareness related to the ordering and administration of blood products from the South African National Blood Service for perioperative patients at Chris Hani Baragwanath Academic Hospital. A prospective, descriptive, contextual study design was used. A questionnaire and an information letter were distributed. A total of 172 of 210 (81.9%) distributed questionnaires were returned. Departments included were Anaesthesiology, General Surgery and Trauma, Orthopaedic Surgery and Obstetrics and Gynaecology. Interns, medical officers, registrars and consultants were included. Clinicians knowledge of the risks associated with blood product administration appears to be poor. Awareness of consent, costs, ordering and administration protocols was also disappointing. This is in keeping with previous surveys. In this study respondents from Anaesthesiology performed significantly better than their colleagues and consultants performed significantly better than their junior colleagues.

Key words: perioperative, blood products, transfusion, knowledge
The value of cone-beam computed tomography in dental practice

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The use of panoramic radiographs has for the past five decades served as standard practice for every discipline in the field of dentistry. The recent advent of cone-beam computed tomography (CBCT) has caused dentists to utilize this technology in increasing numbers. Despite the fact that CBCT provides three-dimensional information as opposed to the two-dimensional information provided by a conventional X-ray image, the additional information provided by this modality often adds little or nothing to the essential diagnostic data and would therefore not warrant the additional exposure risk. Furthermore the unfamiliar projections displayed by this modality may cause a degree of confusion to a dentist who has not received adequate education regarding the use of this equipment and the interpretation of its images. The present study however illustrates three specific indications for a cone-beam scan in general dental practice where the information exhibited by a conventional panoramic radiograph is totally inadequate for the purpose of an accurate diagnosis and subsequent treatment plan. A comparison of the two modalities is illustrated and the superiority of the CBCT images clearly demonstrated.

Key words: Cone-Beam Computerised Tomography
Factors influencing patient decision-making for nipple areolar complex reconstruction in breast cancer

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Nipple Areolar Complex reconstruction (NACR) is the final surgical procedure undergone as part of onco-reconstructive surgery for breast cancer. The motivations guiding this decision is poorly understood and this study aimed to explore some of these reasons. A short quantitative questionnaire was designed with multi-disciplinary input. Themes included demographics and relationships; media, surgery, costs, personal perception and sexuality. Of the 50 randomly selected patients invited to participate 22 patients (44%) were included. 50% of included patients had undergone NACR. Median age at surgery was 49 (range 38-67 years) with no significant difference in age or marital status between groups. Findings showed that multiple operations and anaesthesias were significantly more likely to influence the decision against NACR (p<0.05) and most women without NACR considered the cost of the procedure an extremely important factor. Most patients were not influenced by the media in making their decision. Although neither group found influence of a partner’s opinion important, more women choosing no NACR were more likely to consider their partner’s opinion (p<0.05). The NAC was important to sexual intimacy before surgery to 90% of all patients and 60% of patients with NACR and no patients without NACR reported a change to their sexual function after surgery. The decision to complete reconstructive surgery with NACR or not is a multi-factorial expression of each individual. Unreconstructed patients are influenced by the cost and risk of the procedure whilst reconstructed patients are more concerned with their self-image and sexual function, although NACR may not improve this.

Key words: Breast Cancer Reconstruction Nipple
Socio-economic impact of routine government hospital visits for breast cancer patients in Johannesburg

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After breast cancer treatment patients will have routine follow-up six-monthly but government hospital policy requires attendance monthly for chronic medication dispensing. This study aims to determine the impact of monthly attendance on patient’s functioning and question the impact on recovery through a prospective short questionnaire. Patients were recruited whilst waiting for consultation at the Helen Joseph Breast Care Clinic. They were asked a series of questions in their language of choice concerning transport, costs and impact of the appointment on work and daily life. Fifty four patients completed the questionnaire. Five patients were able to walk to the hospital, and 11 further patients had their own transport. The median cost of transport for a round trip was R40 (range R14-R276). Of the patients relying on public transport, 5 (13.2%) patients reported missing appointments, and all these stated transport costs as the reason. Twenty one patients (39.9%) found it “not” or “not always” affordable and 17 (31.5%) of respondents reported having to make sacrifices to afford the trip, most commonly food (70.1%). Seven patients found transport costs had negatively impacted on their decision to seek medical help. Thirty eight reported their daily life was negatively impacted by hospital appointments, most commonly requiring time from work (55.2%) or childcare (39.5%). This shows that chronic management of breast cancer has an economic and work impact on its patients, through monetary costs and time from work diminishing recovery of global functioning after treatment, and risking default from chronic medication and follow-up due to these difficulties.

Key words: Breast cancer economic survivorship
The effect of a nanocrystalline silver dressing on the inflammatory response, epithelial restoration and the rate of healing in acute, full-thickness, excisional wounds in a porcine model

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Nanocrystalline silver (NCS) dressings, which are used to treat burns, have antimicrobial and anti-inflammatory effects which aid healing. However, evidence suggests they are cytotoxic and may delay healing in acute wounds. Therefore, this study aimed to assess the effect of NCS on wound healing in acute, full-thickness excisional wounds. Healing was assessed in a porcine model on day 3, 6, 9 and 15 post-wounding. Five experimental wounds, dressed with NCS, and five control wounds, dressed with polyurethane film, were assessed per day (n=40 wounds). The presence of inflammatory cells, restoration of the epithelium and rate of healing were evaluated. On day 3 post-wounding, the number of inflammatory cells in NCS-treated wounds was significantly greater than in control wounds. In addition, a chronic inflammatory response was noted in NCS-treated wounds on day 9 and 15 post-wounding. However, there was no clinically relevant difference in the rate of healing between wounds treated with NCS and those dressed with polyurethane film. Furthermore, on day 15 post-wounding the epithelium in wounds treated with NCS more closely resembled normal epithelium, which may impact on scar formation. Therefore, further investigation is needed into the mechanisms by which nanocrystalline silver affects healing and its role in the treatment of acute wounds as well as burns and chronic wounds.

Key words: acute wounds, nanocrystalline silver
Patient's assessment of dental services offered at Community Health Centre (CHC) in Pretoria

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This study aimed to assess accessibility of dental services for patients requiring dental services, and overall patient satisfaction with the dental services offered in a Community Health Centre. A quantitative patient satisfaction survey based on a simple random sample selection of 220 participants was conducted. Self-administered questionnaires with open and close-ended questions were utilized in a population entailed patients visiting the CHC for a month. The response rate was 100% although some did not respond to all the questions. There were 102 male respondents (46%) and 118 females (54%). Ninety four percent found it easy to access the CHC and 6% did not find it easy. The patients were satisfied with the dental services offered by the dentist and 97% wanted treatment from the dentist and 3% did not want to be treated by the same dentist. The Likert scale with a rating of 1-5 indicated that 73% were satisfied with dental services and 1% were very dissatisfied. Ninety six percent would recommend the dental services to others and 4% will not make a recommendation. Ninety eight percent were satisfied with the treatment that they had received and 2% were unsatisfied. Ninety four percent patients indicated that they would return for dental services, 5% would not return and 1% did not respond. The patients found it easy to access dental services, 5% would not return and 1% did not respond. The patients recommended the number of dentists be increased so that the dental services access can be improved.

Key words: Patient's satisfaction, Quality of Health Services
Complications of Prolapse and Haemorrhoids (PPH): Bad luck or bad surgery

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The stapled haemorrhoidopexy has been used for 20 years. A rare but serious complication is stenosis, occurring in 1-2% of cases. The mechanism for this stenosis has never been described. The aim of the study was to demonstrate the origin of the stenosis by deliberately misplacing the purse-string suture or anvil prior to firing the stapler. Cadavers of five pigs underwent the procedure for prolapse and haemorrhoids (PPH). Four deliberate mistakes were tested: placing the circular suture and doubling the stitch back on itself at the same depth; placing the circular suture at varying depths; placing one bite of the suture deeper and on the opposite wall of the rectum; firing the stapler with the anvil positioned outside of the circular suture but the suture secured tightly to the device. Placing the circular suture and doubling the stitch back on itself did not cause stenosis. Placing the circular suture at varying depths resulted in a fold in the rectal mucosa. It was found that placing one bite of the suture deeper and opposite resulted in a large flap of rectal mucosa folded into the staple line. Firing of the stapler outside of the suture produced a complete occlusion of the rectal lumen. Thus it is shown that stenosis and occlusion are prevented if care is taken to ensure that the purse-string suture is placed at a uniform sequential depth and that the anvil of the stapler must be positioned through it before it is tightened and the stapler deployed.

Key words: Prolapse and Haemorrhoids PPH haemorrhiodectomy stenosis obstruction
Patterns of Lymph Node Biopsy Pathology at Chris Hani Baragwanath Academic Hospital (CHBAH) over a period of three years 2010-2012

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Lymphadenopathy is a common presentation of disease in South Africa (SA), particularly in the era of Human Immunodeficiency Virus (HIV) and tuberculosis (TB) co-infection. A sample of 560 lymph node biopsy reports of specimens from patients older than 12 years at CHBAH between 1 January 2010 and 31 December 2012 was extracted from the database of the National Health Laboratory Service (NHLS). The majority of patients were female (55%) and over 90% of patients were African, in keeping with the demographics of SA. The median age of patients was 40, with a range between 12 and 94. The commonest indication for biopsy was an uncertain diagnosis, followed by a suspicion of lymphoma, carcinoma and TB. Malignancy was the largest biopsy pathology group (39%), with 36% of this group being carcinoma and 27% Non-Hodgkin lymphoma. In the remaining groups, 22% were nodes displaying necrotizing granulomatous inflammation (including TB and TB suspicious), 15% were HIV reactive nodes and in the remainder, no specific pathology was identified. HIV positive patients constituted 49% of the sample, with the commonest CD4 band being 201-350 (22%). The commonest lymph node pathologies in HIV positive patients were TB (24%), HIV reactive nodes (21%) and Non-Hodgkin lymphoma (14.5%). Sensitivity of fine needle aspiration (FNA) was poor overall. However, specificity was >95% for Non-Hodgkin and Hodgkin lymphomas, carcinoma, TB and HIV reactive nodes. These findings are in keeping with the international literature, but suggests that the distribution of disease differs with HIV status.

Key words: lymphadenopathy, TB, FNA, lymphoma
Effect of the Stetro pencil grip on the pencil grasp and writing of grade 2 children with handwriting difficulties

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The effectiveness of Stetro pencil grips in changing the pencil grasp of 45 Grade 2 learners with handwriting difficulties was investigated. Descriptors of movements required for writing including the position joints when writing, the position of the pencil in the hand, hand and arm movements, arm position and posture when writing as well as pencil grasp, the speed and quality of handwriting and and tripod pinch strength were considered. Participants in the experimental group were assessed monthly while using the Stetro pencil grip for two months and writing without the pencil grip for a further month, while the control participants were assessed after writing without a pencil grip for three months. The study showed that the Stetro pencil grip made a significant difference in the efficiency and functionality of the pencil grasp when the experimental and control groups were compared. The participants in the experimental group showed a significant improvement in writing with their fingers rather than their hands. Within the experimental group there was also a significant change in the position of the distal joint of the index finger from hyperextension to flexion or extension when holding the pencil. The quality and speed of writing and the pinch strength improved in both groups thus the use of the Stetro pencil grip was effective in resolving inefficient pencil grasps in 70% of the experimental group but had no effect of the speed and quality of their handwriting.

Key words: Handwriting difficulties, pencil grasp
Congenital heart defects in children with Down’s Syndrome at Chris Hani Baragwanath Academic Hospital in South Africa

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Cardiac lesions are common in Down’s Syndrome. There are no published reports about the type of cardiac lesions in Down’s Syndrome especially within the South African population. Atrioventricular septal defects (AVSD) have been reported as the most common cardiac lesions in Down’s Syndrome. To identify the number of children with Down syndrome with cardiac defects presented to the Chris Hani Baragwanath Academic hospital (CHBAH) during the last 21 years and their age at presentation. Patients with Down’s Syndrome presented to the CHBAH paediatrics cardiology unit between January 1992 and September 2013 were reviewed from the database. They all had echocardiogram to identify the cardiac lesion. Date of birth and age at presentation were noted. CHBAH is a tertiary hospital in Johannesburg, South Africa, serving the population of Soweto, other hospitals in Gauteng, and neighboring provinces. A total of 1050 children with Down’s Syndrome were analyzed. 771 (73%) had a cardiac lesion with 279(27%) having a normal heart. AVSD was the common cardiac lesion 378(36%), followed by patent ductus arteriosus (PDA) 169 (16%), ventricular septal defect (VSD) 105 (10%), atrioventricular septal defect (ASD) 62 (6%), trachea-esophageal fistula (TOF) 18 (2%), others 39(4%). There were associated complications like cor pulmonale, pericardial effusion. Seventy eight percent were diagnosed within one year of birth. This is the first study of congenital heart lesions in Down’s Syndrome children at CHBAH. The common lesion, AVSD is in keeping with findings from around the world but differs with those from Libya and Asia with ASD and VSD as common lesions respectively.

Key words: Down’s Syndrome
Clinical audit of a unique multidisciplinary Cerebral Palsy (CP) Clinic

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In 2009, a combined clinic was formed by orthopaedic surgeons and developmental paediatricians. The aim was to improve assessment and management of cerebral palsy. Included in the team are physiotherapists and occupational therapists. Our aim was to audit this clinic. We looked at patients from January 2013 to March 2014. We recorded age, gender and caregiver and the reason for referral. We wanted to know the type and distribution of the CP, GMFCS score, attainment of milestones and schooling. We recorded underlying aetiologies and HIV status and access to physiotherapy and occupational therapy. We saw 41 patients (18 males and 23 females). Ages ranged from 5 months to 9 years (mean 4.9). 36 of 41 (88%) had spastic CP, 2 (5%) dystonic, 1 mixed and 2 were not recorded. Diplegic and hemiplegic predominated with 15 (37%) and 14 (34%) respectively. 13 (31%) of patients had birth asphyxia as an aetiology, 13 (31%) had brain anomalies, 9 (22%) were premature babies. 38 (93%) were cared for by at least one parent and 3 (7%) were cared for by a grandparent. 39 (95%) had access to physiotherapy and 30 (73%) to occupational therapy. 21 had no access to appropriate schooling. 9 were known to be HIV positive. The recommended orthopaedic interventions were continued physiotherapy for 17 (41%) and botox in 22 (54%). The combined clinic has highlighted the diverse nature of cerebral palsy and the challenges facing our patients. It is an invaluable tool in the goal directed management of complex cases.

Key words: Cerebral Palsy (CP), multidisciplinary, audit
The nature of involvement of physiotherapists in South Africa in the weaning of mechanically ventilated patients

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An important goal of patient management in intensive care units (ICU) is successful weaning from mechanical ventilation (MV) to avoid complications associated with prolonged MV and premature extubation. Recently research interest has focused on the involvement of allied health professionals in weaning of patients from MV through the use of weaning protocols. The objectives of this study were a) to determine the extent of involvement of physiotherapists in South Africa (SA) in the development and implementation of weaning protocols in critical care, b) to determine if current physiotherapy practice in SA is in keeping with international practice. Physiotherapists who work in adult ICUs in SA were asked to complete a survey questionnaire. The electronic questionnaire was available on SurveyMonkey; alternatively questionnaires were posted at the request of some participants. A total of 425 questionnaires were distributed. Response rate was 43.3% (n=184). Majority of physiotherapists (76%) were not or seldom involved in weaning of mechanically ventilated patients and the development of weaning protocols (74%, n=51). Physiotherapists were somewhat involved in extubation (16%, n=28). Physiotherapy modalities used to facilitate respiratory muscle strengthening were exercises (81%, n=138), early mobilisation out of bed and deep breathing exercises (77%, n=134). Years of experience did not influence physiotherapists’ involvement in weaning (p=0.43). This survey showed that most SA physiotherapists are not involved in weaning of patients. There is a need to reconsider their role in ICU with regards to weaning as current practice is not in keeping with international reports.

Key words: physiotherapy, weaning, mechanical ventilation, ICU
Menopausal symptom experiences vary around the world depending on cultural and socioeconomic background

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Women with lower socioeconomic status tend to report more severe symptoms. Few studies are available about menopause and knowledge of women about hormonal therapy in South Africa, especially in primary health care (PHC) public health sector, where the majority of women go for health care. The objective of the study was to investigate menopausal experiences and knowledge of women about menopause and hormonal therapy (HT) in PHC in order to inform practice. A cross sectional study was conducted in 11 PHC facilities in Ekurhuleni district among 312 women aged 40-49 years in November 2011. The menopausal experiences and knowledge of women about menopause and hormonal therapy was assessed in Primary Care in Ekurhuleni Health district, Gauteng Province. The menopause specific quality of life questionnaire was used to collect data on menopausal symptoms and the Menopause Knowledge Scale questionnaire, to assess knowledge about menopause and HT. Data were analyzed using STATA software. Over 50% of women reported vasomotor symptoms like hot flushes (69.9%) and night sweats. Most women experienced psychological symptoms notably feeling depressed (63.5%) and poor memory (80.4%). Over 70% reported somatic symptoms and about 60% reported sexual symptoms which were bothersome. Eighty percent knew about menopause but less than 40% knew about HT or its benefits and risks. Women with lower education reported more severe symptoms (p<0.05). Seventy percent obtained information from friends, relatives and media and only 23% from doctors or nurses. Most women in the study experienced menopausal symptoms which were bothersome. Though most women knew about menopause, few knew about hormonal therapy.

Key words: Menopause, primary care, symptoms
Mothers understanding of childhood immunization at Johan Heynes Community Health Centre, Sedibeng

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The Under-5 Clinic in Johan Heynes Community Health Centre is always overcrowded and has high immunization rates (104%). Despite this, during clinical consultation, the family physician suspected that mothers were poorly informed about childhood immunization, which immunization the child had received and symptoms of common side effects. This study assessed the mothers understanding of indications, benefits, adverse effects of childhood immunization, how to catch-up on missed vaccinations, and how they obtain information about childhood immunization. A cross-sectional descriptive study was undertaken of all mothers attending immunization services at the clinic. Systematic sampling of 302 mothers using face to face interviews was carried out. The instrument questions were obtained from two similar validated studies, adapted to suit the setting, and piloted. Data was collected from November 1st to 31st, 2012. Data was analysed using Epi-info. Ninety seven percent of mothers brought their children for immunization because they feared their children could develop illnesses. Seven percent of mothers knew which vaccines their children would receive on the day of immunization and which diseases these vaccines would prevent. Almost 100% were given information on when to immunize their children. Less than 14% of mothers were given information on why they need to immunize their children. It was concluded that most mothers knew that immunization prevented certain illnesses, but did not know against which illnesses the child was being immunised. Most mothers also did not know about the common side effects of childhood immunization. However, most mothers were well informed about the timing of immunization.

Key words: childhood immunization, knowledge, mothers, questionnaire
In-treatment increases in ambulatory day imputed aortic-to-brachial blood pressure amplification are associated with left ventricular mass regression independent of changes in ambulatory brachial pressure

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The relative role of aortic versus brachial blood pressure (BP) in cardiovascular disease is uncertain. Previous studies may be confounded by office BP measurements. The impact of in-treatment decreases in ambulatory aortic BP on end-organ changes has not been determined. We applied an imputation equation for central aortic pulse pressure to ambulatory day BP values and assessed the relationship between in-treatment increases in the day aortic-to-brachial amplification ratio (PPamp) and decreases in echocardiographic left ventricular mass index (LVMI) independent of changes in day brachial BP in 173 mild-to-moderate hypertensives treated for 4 months. Ambulatory day brachial systolic/diastolic BP (mm Hg) (154±15/101±8 to 132±15/88±10, p<0.0001), ambulatory day brachial PP (mm Hg) (53±11 to 45±9, p<0.0001), ambulatory day aortic PP (mm Hg) (43±10 to 35±8, p<0.0001) and LVMI (g/m².7)(60.3±18.4 to 51.5±13.6, p<0.0001) decreased and ambulatory day PPamp increased (1.28±0.24 to 1.37±0.63, p<0.0001) over the 4 month treatment period. With adjustments for baseline LVMI, baseline PPamp and either decreases in day brachial PP (partial r=−0.17, 95% CI=−0.32 to −0.01, p<0.05) or decreases in day systolic BP (partial r=−0.18, 95% CI=−0.33 to −0.01, p<0.05), in-treatment increases in day PPamp were independently associated with decreases in LVMI. The brachial BP-independent relationships between changes in PPamp and LVMI were as strong as the relations between treatment-induced decreases in 24-hour brachial PP and decreases in LVMI (partial r=0.15, p<0.05). In conclusion, independent of changes in brachial BP, in-treatment increases in day PPamp are associated with decreases in LVMI in mild-to-moderate hypertension.

Key words: Antihypertensive therapy, aortic blood pressure, ambulatory blood pressure, left ventricular mass.
A comparative study of tumour characteristics in racial groups of breast cancer patients in Johannesburg

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Racial disparity in breast cancer survival persists globally and a belief exists that black women tend have more advanced, more aggressive disease. We aim to determine whether the tumour biology varies significantly with race through a one-year review of consecutive patients diagnosed with an invasive or in-situ breast malignancy in an uninsured population. Tumour characteristics between races were compared, particularly with reference to black patients. Three hundred and thirty four patients had a new diagnosis of breast malignancy. Three hundred and twenty two patients had an adenocarcinoma including 292 invasive ductal carcinomas, 12 lobular carcinomas and 13 patients had DCIS. The median age at diagnosis was 55. Sixty five percent (218) of patients presenting with a breast malignancy were black. The remaining 116 patients were white 17.1%, Asian (6.9%), coloured (5.7%) and unknown (5.1%) Comparing invasive adenocarcinoma patients with known race only (n=314), 86 patients with malignancy were below 45 years: 32.8% of black patients and 18.7% of non-black patients (p=0.0378). 38.9% (84 of 218) black patients and 29.2 % (28 of 96) non-black patients had a grade 3 tumour (p=0.1789). Sixty three (20.1%) of all invasive adenocarcinomas over-expressed HER2; in 19.3% (n=42) of Black patients and 21.9% (n=21) of non-black patients (p=0.7264). 52 (16.6%) patients were diagnosed with triple negative malignancies including 17.0% of Black patients and 15.6% non-black (p=1.000). Our evidence does not support a link between race and biologically aggressive tumours, with none of the three surrogate markers for aggression significantly more common in our Black patients, although young age does appear to be a risk factor.

Key words: Breast cancer Biology Race
Uptake of genital mucosal sampling in HVTN 097, a Phase I HIV vaccine trial in South Africa

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Because sexual transmission of HIV occurs across mucosal membranes, understanding the immune responses of the genital mucosa to vaccines may contribute knowledge to finding an effective candidate HIV vaccine. We describe the uptake of rectal, cervical and seminal mucosal secretion sampling amongst volunteers in a Phase 1b HIV vaccine trial. Age at screening, gender, study site and designation of person conducting consent procedure were collected for volunteers who screened for the HVTN 097 trial. A total of 211 volunteers (54% female) were screened at three sites in South Africa: Soweto (n=70, 33%), Cape Town (n=68, 32%) and Klerksdorp (n=73, 35%). Overall uptake of optional mucosal sampling amongst trial volunteers was 71% (n=149). Compared to Cape Town, volunteers from Soweto and Klerksdorp were less likely to consent to sampling (Soweto OR 0.08 CI: 0.03-0.25 and Klerksdorp OR 0.13 CI: 0.042-0.414). In contrast, volunteers over 25 years of age were 2.39 times more likely to consent than younger volunteers (CI 1.13-5.08, p=0.023). Further studies are required to better understand the cultural, demographic and sociobehavioural factors which influence willingness to participate in mucosal sampling in HIV prevention studies.

Key words: Mucosal Sampling HIV Vaccines
Prevalence and characteristics of pain in people attending an HIV testing centre in Soweto, South Africa

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We investigated the prevalence and characteristics of pain in people of unknown HIV-status attending a voluntary counselling and HIV testing (VCT) centre in Soweto. Before receipt of HIV test results, participants were administered the Wisconsin Brief Pain Questionnaire (presence and characteristics of pain), the Pain Catastrophizing Scale (PCS), the Hopkins Symptoms Checklist-25 (HSC-25; depression and anxiety), and the EQ-5D (quality of life). We enrolled 114 participants (51% female), with a mean age of 33 (SD: 10) years. Five participants were HIV-infected. Ninety (79%) participants had pain in the last month, and 86 (75%) had pain in the last week. Of those with pain in the last week, 86% reported moderate-to-severe pain, with an average pain intensity of 6.1/10 (SD:2.4). The most common sites of pain were: head (74%), lower back (46%), and abdomen (39%). The average HSC-25 score was 1.9 (SD: 0.7) and 47% of participants had an HSC-25 score >1.75: indicating significant psychiatric impairment. Mean PCS score was 1.9 (SD: 0.6). PCS score was positively correlated with pain intensity (r=0.41, p<0.001), and presence of pain in the last week was associated with higher PCS scores (p=0.02). Overall mean quality of life rated on the EQ-25 was 74/100, and having pain was associated with a significantly lower EQ-5D score (p=0.005). The burden of pain and psychosocial dysfunction was high in this cohort of largely HIV-negative individuals attending an urban VCT centre. Further data are needed to evaluate the degree to which HIV infection exacerbates pain in the at-risk population.

Key words: Pain prevalence characteristics VCT
Comparison of second molar development between differing skeletal patterns

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Class II-2 is a difficult malocclusion to treat. Early treatment is recommended. This entails distal movement of the maxillary 1st molars which can result in impaction of the 2nd molars. This could be avoided if the developmental stage of the maxillary 2nd molar were known. In order to compare the ages at which the maxillary 2nd molars reach specific developmental stages for subjects with Class I, Class II-1, Class II-2, and Class III skeletal growth patterns, records from the Michigan growth study, which contains longitudinal data for over 300 white population subjects of Northern European descent, was investigated. Subjects were selected and classified based on their last available plaster casts and cephalometric radiographs, as Class I, Class II-1, Class II-2, or Class III. ANB of $\geq 5^\circ$ was regarded as Class II while that $= 0^\circ$ was considered Class III. The age at which each of the 2nd molars of each patient reached the development stages described by Demirjian (1973) were established using serial lateral oblique radiographs. The GLM procedure in SAS was used to compare among and within the skeletal patterns. No significant differences were found among the skeletal patterns ($P=0.09719$), while the developmental stages were reached at significantly different ages ($p<0.001$). We concluded that there was no statistically significant difference in the stages of development of the 2nd molars among Class I, Class II-1, Class II-2 and Class III subjects.

Key words: Molar-impaction, Class II-2, Molar-development
The role of F-18 FDG PET-CT in invasive cervical cancer

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Cervical Cancer is one of the leading causes of morbidity among the female genital tract cancers. F-18 FDG-PET scanning can identify metabolically active lymph nodes as well as distant metastases including para-aortic lymph nodes. This method aims to show that many patients in our setting have distant metastases; hence the current FIGO staging method may not be a very accurate method of staging in the Pre-treatment setting. This study was a prospective randomised trial carried out at Charlotte Maxeke Johannesburg Academic Hospital, between May 2010 and January 2012. After the routine tests were done and patients staged according to FIGO staging, patients had a pre-radiation PET scan, followed by a post therapy PET scan 3 months after treatment. Patients were stratified from clinical stages IBi to stage IIIB. The results showed that there was no association between FIGO clinical staging and findings in a pre-radiation PET/CT scan as para-aortic lymph nodes were not detected by FIGO staging. It was found that a proportion of patients were not identified prior to F-18 FDG PET/CT scan as having distant metastases. The value of F-18 FDG PET scan may have an impact on the future management of patients with cervical cancer. F-18 FDG PET in the post-therapy setting is also a good surrogate endpoint for determining tumour control as well as residual and metastatic disease.

**Key words:** CERVIX CANCER & PET
Unusual presentation of maxillary keratocysticodontogenic tumour

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In the University of the Witwatersrand’s Department of Oral Pathology registry odontogenic keratocyst, presently designated as keratocystic odontogenic tumour (KCOT), represents the third most common cyst of the jaw. KCOT is of clinical importance because of its pronounced tendency to recur. Among the factors that complicate KCOT management are its protean radiological presentations that may be confused with other jaw lesions. Although computed tomographic study can accurately delineate the site, size, composition of the lesion and extent of osseous involvement, it still remains difficult to definitively diagnose KCOT on clinico-radiologic grounds alone because of its relative lack of specific clinical and radiographic characteristics. KCOT showing involvement of the maxillary antrum in the absence of an associated impacted tooth is exceptionally rare. In these instances an odontogenic source of the lesion is often not suspected and the clinico-radiological features may be misinterpreted as a sinus mucocele, surgical ciliated cyst, sinonasal polyp or tumour. We report such a case and highlight pertinent clinical and radiological features to add to the dearth of knowledge regarding KCOT with sinus involvement.

Key words: keratocysticodontogenic tumour, maxillary sinus, odontogenic cyst
Outcomes of recipients receiving kidneys from donors with sub-optimal glomerular filtration rate and high functional renal reserve: 16 year preliminary data

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Kidney donation is the most successful modality of treatment for end-stage renal failure but there is a world-wide shortage of organs. Measuring glomerular filtration rate (GFR) forms part of donor workup with 80-120ml/min/1.73m² being acceptable for donation. Vegans have GFRs of 60-80ml/min/1.73m² and if protein loaded GFR can increase 20%, i.e. their functional renal reserve is normal. Several such patients have donated kidneys but outcomes have not been determined. GFR (51Cr-EDTA clearane) was determined in potential renal donors (PRD). Those with GFR <80ml/min were requested to consume a diet high in meat protein. GFR was re-measured after 1 week, and after donation. Post-transplant course was followed and compared to recipients receiving kidneys from donors with initially “normal” GFR. Two hundred and twenty eight PRD (36.2±8.8 years; 138 female/89 males) were screened had a mean GFR of 95.2±17.2 ml/min/1.73m² with 121 donating (GFR: 98.8±16.3ml/min/1.73m²) and 93 not donating. PRD with below “normal” GFR were protein loaded and GFR increased in 10/16 from 68.0±9.5 to 95.6±19.2 ml/min/1.73m² (24.4±11.8%). Recipients (n=3/8) receiving kidneys from protein loaded donors have functioning grafts and have survived a median of 6 years [0.1-16 years]. Recipients (50/76; 66%) with kidneys from donors with “normal” GFR, had functioning grafts after 16 years. Kaplan Meier survival curves show no statistical differences between the groups. PRDs with below “normal” GFR can be used as kidney donors when their GFR increases at least 20% following protein loading. Such PRDs could donate and make available previously excluded organs.

Key words: kidney transplant donation outcome
Marginal and internal fit of crowns from two Computer Aided Design and Computer Aided Manufacturing (CAD/CAM) systems

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Ceramic crowns milled using CAD/CAM systems must have an internal gap to provide for preparation or imaging errors, as well as for cementation. This study compared the marginal gap and internal fit of two different milling systems. A standardised preparation was digitised to calculate the surface area and to create 20 replicas. Half the crowns were milled in the CEREC system and half in the E4D system. In each, 5 were milled with a luting space of 100µm and 5 with 200µm. The un-cemented marginal gap was measured at 20 points around the circumference 2- and 3-dimensionally using a reflex microscope. The crown and die combinations were weighed before and after being luted with a light-bodied polyvinyl siloxane and with a luting cement. The internal fit was calculated as: internal fit = weight/(surface area x density). All 3-D measurements were greater than 2-D indicating both horizontal and vertical discrepancies. For CEREC crowns the differences were only statistically significant with the 200µm space but not with the 100µm space. For the E4D, the difference was significant with both the spaces. For the internal fit there was no difference between the systems. There was no relationship between the internal fit and the marginal gap. There were few and inconsistent statistically significant differences. The increased 3-D gap in both systems over the 2-D gap and cemented gap measurements were larger than the clinically acceptable limit of 160µm. This limit may need to be revised for 3D measurements.

Key words: Ceramic crowns; internal fit; marginal gap
Clinical and histological profile of patients with HIV kidney disease

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HIV affects 12% of the South African population. The prevalence of HIV-CKD is 6%. We studied the presentation of CKD in SA focusing on HIV-CKD, which presents great challenges in care with restricted access to renal replacement therapy. A total of 277 patients, 259 (93.5%) black. 235 (84.2%) HIV positive, mean age 36.52 (SD-10.05), mean weight 68.4kg (SD-15.24), mean BMI 25.6 (SD-5.8). 115 (48.1%) had CKD, 97 were biopsied, 66 were HIV positive. Mean CD4 count 326.01 (SD-203.01). Histopathologies were: 23 (34.8%) FSGS, 6 (26.1%) were primary, 14 (60.9%) secondary and 3 (13%) not otherwise specified. Of the secondary GNs, 6 were due to HIVAN (9.9%), 15 HIVICKs (22.7%); 12 MCD (18.2%); 4 Immune complex GNs (6.1%); 3 MPGNs (4.5%). All except one in the FSGS group had proteinuria > 1g/day. 50% of the HIVANs were female, 50% had ESRD, 2 of the 3 had been on HAART for more than two years with one failing treatment. 50% had CD4 counts less than 100 (15-929). 4 were on HAART. All 6 were grossly proteinuric (2.25-29.6g/day). The HIVICK group did not exhibit any specific pattern, CD4 count ranged from 10 to 635; 3 (20%) had ESRD, proteinuria ranged from 0.03 to 6.12g/day). The heterogeneity of HIV kidney diseases suggests a wide spectrum of injury. What drives this variation is yet to be elucidated; certainly the genetics and epigenetics have a big role to play as disease modifiers.

Key words: HIV Kidney Disease
Pre-operative testing at a university hospital in a developing country: Are the requested tests indicated?

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Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) pre-operative tests are not done according to standard guidelines. The tests are often not appropriate for the particular patient and could have various effects including patient discomfort, case cancellation and additional financial expenditures. The aim of this study was to audit and evaluate pre-operative tests requested for adult patients scheduled for elective surgery at CMJAH as this is unknown in this resource limited setting. Data was collected utilising a pre-operative assessment form, completed by different anaesthetists. A total of 1093 preoperative tests were requested for the 277 patients (3.95 tests per patient). The test that was requested most frequently was the chest X-ray (n=240, 21.96%). Ten clinical departments requested a total of 1093 tests. Of these, 346 (31.66%) were not recommended by the NICE Guidelines. General surgery requested the greatest number of unnecessary tests (n=112, 32.37%) and Ophthalmology requested the least number of unnecessary tests (n=7, 2.02%). When the percentage of unnecessary tests per total tests requested by each discipline is considered, Urology (46.67%) requested the greatest and vascular surgery (11.11%) requested the smallest percentage of unnecessary tests. No statistically significant association could be established except, for the urea results (p=0.0027), between the NICE Guidelines’ recommendation and the detection of abnormal results. The abundance of unnecessary pre-operative tests identified with this study illustrates the need for the development and implementation of a multifactorial strategy for the reduction of unnecessary pre-operative tests at CMJAH.

Key words: Preoperative tests anaesthesia
Asthma exacerbations in patients taking long acting beta agonists and inhaled glucocorticosteroids in a private healthcare setting in South Africa

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Long acting beta agonists (LABAs) and inhaled glucocorticosteroids are considered standard treatment to prevent exacerbations of asthma. However some asthmatics may not be fully controlled on this treatment. Mild exacerbations can be treated with oral glucocorticosteroids while more severe exacerbations may require emergency hospital visits or hospitalisation. Poor adherence to medicines can be viewed as a proxy measure for increased risk of exacerbations. The aim of this study was to investigate the relationship between adherence to asthma medications and exacerbations. A retrospective claims database analysis of asthma exacerbations was carried out in 4154 adult patients in a private healthcare funder setting. Member possession ratio (MPR) based on claims experience was used as indicator of medicine adherence. Inclusion criteria included patients aged 20 years or older, claiming both long acting beta agonists and inhaled corticosteroids. 73% of patients did not claim for any exacerbations. Approximately 25% were treated with oral glucocorticosteroids and only 2.5% of patients claimed for a hospital admission or emergency visit. There did not appear to be any difference in overall hospital admissions or emergency visits in patients who had an MPR of >75%, 50-75% or <50%. There was a greater number of readmissions in patients who had an MPR of <50%. The percentage of exacerbations was similar across the member possession ratio member groupings. Medicine Possession Ratio based on claims information may not be a good indicator of asthma control. Additional clinical outcome measures are required.

Keywords: asthma adherence exacerbations medicines
Developmental delay in HIV-exposed infants in Harare, Zimbabwe

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The aim of this cross-sectional study was to determine the difference in development (cognition; receptive and expressive language; and fine and gross motor) of HIV-exposed infected (HEI) infants with the development of HIV-exposed but uninfected (HEU) infants using the Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III). Sixty infants between six weeks and 12 months of age were enrolled in the study; 32 (53.33%) HEU infants and 28 (46.67%) HEI infants. The two groups were well-matched for infant demographics, anthropometry at birth, maternal demographics, as well as socioeconomic status. Statistically significant differences were found in anthropometry and development between the HEI and HEU group. The HEI infants had malnutrition, were stunted, showed signs of wasting, and had smaller head circumferences than HEU infants. The BSID-III showed that the mean developmental delay for the HEI group was approximately two months below their mean chronological age for all three scales of development (cognition, language and motor). The HEI group showed that 64.29% had cognitive delay, 60.71% had language delay and 53.57% had motor delay, all of which was significantly different from the development of the HEU group for all domains (p=0.00). In addition to using the BSID-III, mothers were able to correctly indicate whether their child was developing at the same, or at a slower rate of development than children of the same age. This study confirms that infants who are HIV-exposed and infected are at risk for developmental delay.

Key words: HIV, developmental delay, infant
Acceptability of new female condom designs among women attending an Urban Reproductive Health Clinic in Durban, South Africa

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The availability of new female condom (FC) designs will increase options for couples. The acceptability of three new FCs (Woman’s Condom, Cupid, VA w.o.w.) compared to the currently available FC2 was evaluated. This randomized, comparative cross-over clinical trial of four FCs was conducted among 300 women in an urban clinic in Durban, South Africa. Interviewer-assisted surveys were employed during four follow-up visits to explore comparative acceptability. 272 women (91%) completed the study using all 4 FC types. Mean age was 28. Although there were variations between the four FCs, over 80% of women either liked them ‘very much’ or ‘somewhat’ for most features (excluding ease of insertion). For individual features there were minimal differences between FCs with no significant differences between preferences with respect to length, lubrication, scent, colour and overall fit. Regarding FC appearance, there was a significant difference, (p<0.0019), 66.4% women reporting they liked Woman’s Condom ‘very much’ compared to Cupid (57%), FC2 (55.9%) and VA w.o.w (53.7%). For ease of use, women preferred the Woman’s Condom to VA w.o.w. No differences were found with the other FCs. Women found the Woman’s Condom, FC2 and Cupid easier to insert than VA w.o.w. Overall, women preferred the Woman’s Condom. Although women expressed preferences for different FCs overall, acceptability for a number of features was high. New FCs are as acceptable as the currently available FC2. A greater range of FCs will provide a choice of available methods of protection, and potentially increase demand for FCs.

Key words: Female condom, Reproductive health, HIV prevention, Durban
Characteristics, patient perceptions and emotional stressors of male breast cancer in South Africa

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There is little reported evidence as to how men experience their breast cancer psychologically with respect to body image and female associations, particularly in a culture that places importance on masculinity. We identified all male patients presenting with a diagnosis of breast cancer over 5 years to a government and a private breast clinic. 23 cases of male breast cancer were recorded. 18 patients contacted successfully to complete a short quantitative questionnaire. Overall median age was 64 (range 42-83). The median time of first noticing a breast lump to seeking medical attention was 6 months (range=1-36 months). Uninsured (government) patients were more likely to present with later stage. Tumour biology was found to be favourable with all patients having hormone-receptor positive disease, with 4 (17%) overexpressing HER2. Only 6 patients were aware that men could have breast cancer prior to their diagnosis. 27% of patients agreed that their perception of their masculinity had been negatively affected and 17% patients felt embarrassed to remove their shirts in public places following their surgery. This was unrelated to patient’s race or relationship status. Despite the poor level of awareness and possible stigma of the disease, patients are freely willing to disclose their diagnosis to friends and family. Although three-quarters of men found their self-perceptions and relationships unaffected by the female associations of breast cancer, the possibility of these associations may delay or prevent early presentation and treatment in concerned males.

Key words: male breast cancer psychosocial
Smear layer removal ability and antibacterial activity of endodontic irrigants

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During root canal therapy, endodontic irrigants aim at destroying micro-organisms and removing the smear layer that forms during mechanical preparation, but the most appropriate combination of materials is not known. The aim of this study was to test various alternating sequences of sodium hypochlorite (NaOCl), anolyte solution and EDTA. Forty-eight single canal teeth were collected and randomly divided into six groups, prepared to working length, sterilised and inoculated with Enterococcus faecalis. The irrigation protocols were as follows: Group 1 (four roots) 3ml sterile distilled water, Group 2 (four roots) 3ml 6% sodium hypochlorite, Group 3 (ten roots) 3ml 6% sodium hypochlorite followed by 3ml 18% EDTA, Group 4 (ten roots) 3ml 6% sodium hypochlorite followed by 5ml anolyte solution, Group 5 (ten roots) 0.5ml 6% sodium hypochlorite followed by 5ml anolyte solution followed by 3ml 18% EDTA and Group 6 (ten roots) 5ml anolyte solution followed by 3ml 18% EDTA. Standard culture techniques were used to count the colony forming units of viable bacteria at each phase. The roots were split longitudinally and prepared for Scanning electron microscopy (SEM) evaluation at the coronal, middle and apical thirds of each root and the number of patent dentinal tubules counted. The small sample size limited definitive conclusions but the results indicated that the coronal thirds of the roots showed better smear layer removal than the apical thirds, Sodium hypochlorite followed by EDTA showed the best smear layer removal.

Key words: Endodontics; irrigants; smear layer; antibacterial
Ceramic materials for posterior restorations: An evidence-based decision tree

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Ceramic materials for dental use offer improved aesthetics due to their ability to closely mimic the natural dentition. Anterior ceramics show high success rates but posterior restorations present with more complications. Ceramics have poor tensile strength making them brittle. The literature on ceramic restorations is vast but lacks long-term randomised controlled clinical trials (RCTs), which makes the clinical choice of ceramic a constant challenge. We therefore set out to see if it would be possible to provide clinicians with a graphic decision tree based on the best available evidence and highlight where the needs are for long-term RCTs. A PubMed search was completed using the MESH terms “Ceramics” [MAJR] AND “Dental Restoration” [MAJR]. Studies were limited to “English” and “humans”. Studies reporting exclusively on anterior restorations were excluded. Systematic reviews, meta-analyses, RCTs and controlled clinical trials were used. Manual searches of further references were carried out from the reference list of included studies. The abstracts of the studies were read to determine if they met the inclusion criteria, and the results were recorded. The results of the literature analysis are presented in the form of a graphical decision tree, based on the variables presented in the literature. Levels of evidence are identified, and where evidence for specific materials/clinical situations is lacking in included articles, the highest level of evidence in the original search is indicated.

Key words: Ceramics; posterior restorations; choice
The impact of adolescence initiated alcohol and cannabis abuse/dependence on the level of activity participation in adult males suffering from a psychotic disorder

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Substance abuse has been documented in the literature to have adverse effects on an individual’s occupational functioning. Limited evidence based research has been documented within the South African population to demonstrate these affects and to establish which skills are more or less affected. The target population of this study was patients with psychotic disorders who either abuse alcohol, cannabis or no substances. This study aimed at determining the exact consequences of substance abuse in order to tailor more specific treatment interventions. A non-experimental design and observational study was used. This involved a once off occupational therapy assessment using the Activity Participation Outcome Measure (APOM) as the recording tool. The results showed a statistically significant difference between the alcohol and cannabis groups. The alcohol group achieved a higher level of activity participation in all eight APOM domains (Role performance, life skills, communication, motivation, process skills, self-esteem, balanced lifestyle, and affect). The no substance abuse group (individuals diagnosed with schizophrenia) showed the lowest level of activity participation. When the cannabis abuse was further compounded with a psychiatric diagnosis of a more chronic course such as schizophrenia, this further reduced the level of activity participation. However, the level of activity participation was still higher compared to those individuals who were only diagnosed with schizophrenia and no substance abuse. This shows that cannabis abuse appears to have a more negative impact on activity participation when compared to alcohol abuse. However, schizophrenia appears to have the most detrimental impact on functioning.

Key words: Occupational Therapy, Psychosis, Cannabis, Alcohol
Carbon monoxide related deaths at the Johannesburg Forensic Pathology Service Medico-Legal Mortuary: A Retrospective Study 2008-2012

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Carbon monoxide (CO) is a colourless and odourless noxious gas that is a known “silent killer” due to its undetectable characteristics. CO will bind to haemoglobin of red blood cells in the same manner as oxygen; however with a greater affinity to haemoglobin. When bound to haemoglobin it forms carboxyhemoglobin (COHb) and results in CO poisoning. A suspected CO-related death is one where the forensic pathologist has requested a CO test during the autopsy process. The aim of this research was to characterize and describe the prevalence of suspected CO related deaths at the Johannesburg Forensic Pathology Service (FPS), Medico-legal laboratory for the period 2008-2012. This retrospective descriptive study involved the review of mortuary records of suspected CO deaths that had occurred in the greater Johannesburg Metropolitan area, Gauteng, South Africa for the period 2008 to 2012. A total of 12 321 deaths were reported to the Johannesburg FPS medico-legal mortuary between the years 2008 and 2012. A total of 3% of all these reported deaths were identified as requiring carbon monoxide testing. A total of 205 cases were evaluated in this study. Findings highlighted a majority of victims to be males (79%) and the most affected age group being those in the 20 to 39 group (52%). Of all cases recorded, 47% were related to accidents and exhibited the lowest incidence of low (<19%) COHb saturation levels whereas 24% of cases were suicide related and had the highest incidence of lethal (>60%) COHb saturation levels.

Key words: Carbon monoxide
Surgical portosystemic shunts versus transjugular intrahepatic portosystemic shunt (TIPS) for variceal haemorrhage – a meta-analysis

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Oesophageal variceal bleeding occurs in 15% to 20% of all cirrhotics with portal hypertension. The secondary prevention of variceal haemorrhage is controversial. There is limited evidence comparing TIPS to surgical shunts. A recent meta-analysis concluded that surgical shunts were associated with lower failure rates and improved overall survival. The objective of the study was to compare the benefits and harms of surgical portosystemic shunts versus TIPS in the treatment of chronic variceal haemorrhage. Eligible trials were identified in the Cochrane Hepato-Biliary Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials in The Cochrane Library, MEDLINE, EMBASE, and Science Citation Index Expanded. Randomised clinical trials where a surgical portosystemic shunt has been compared to TIPS were identified. We performed meta-analyses according to the recommendations of the Cochrane Handbook for Systematic Reviews of Interventions and the Cochrane Hepato-Biliary Group Module. Three trials were identified comprising 426 patients. The 30 day mortality was worse for shunts (OR 1.38 [0.79, 2.39]) but the 5-10 year mortality was better (OR 0.36 [0.21, 0.60]). The odds ratios also favour surgical shunts with a 30 day rebleed rate of OR 0.09 [0.02, 0.39], and overall rate of OR 0.05 [0.02, 0.11]. The major disadvantages of TIPS are the poor patency rate and increased encephalopathy. The odds ratio for stent occlusion or thrombosis is OR 0.04 [0.02, 0.07] and for encephalopathy is OR 0.44 [0.28, 0.70]. This meta-analysis demonstrates that survival, rebleed rate, complication and reintervention rate favour surgical shunts over TIPS.

Key words: Portal Hypertension, Tips, Shunts
Canine guidance vs group function: A comparison in root length

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There is a tendency to extrude the maxillary canines during orthodontic treatment without consideration of the original occlusion which could be either group function (GF) or canine guided occlusion (CG). There is a general assumption that canine roots are longer than those of the premolars thus allowing them to withstand the occlusal forces during CG. The purpose of this research was to assess the difference in root lengths between premolars and canines in subjects with either group function (GF) or canine guided (CG) occlusion. Periapical radiographs of 136 patients with either GF or CG were collected from private practices that document the functional occlusion. Root lengths of canines, 1st and 2nd premolars from the same quadrant were measured from the root tip perpendicular to a line that connects the most distal and mesial points of the cemento-enamel junction. The root lengths of the 1st and 2nd of each subject were summed and their average was compared to the canine root length. ANOVA was used to compare the root lengths within and between subjects with GF and CG of the canines and premolars. There were statistically significant differences in root lengths between the canines and premolars in GF and CG (p<.0001). The root lengths of the canines were much longer than those of the premolars in CG compared to those in GF. The canines root length is much longer than the premolars in canine guided occlusion compared to group function.

Key words: canine guidance, group function, canine root length
Evaluation of adherence to a glucose control protocol by the healthcare workers in a cardiothoracic ICU at Charlotte Maxeke Johannesburg Academic Hospital: A retrospective analysis

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Glucose control in ICU has important morbidity and mortality implications. Achieving normoglycaemia in critically ill patients is challenging for all healthcare workers involved. Evidence-based protocols are in place to guide this task however, adherence to protocols may not always occur. The objectives were to determine the proportion of protocol violations from the glucose control protocol in a Cardiothoracic (CT) ICU, the number of abnormal glucose readings, the differences in glucose protocol violations between day and night staff and the level of training of nursing staff involved with protocol violations. A retrospective study reviewing the ICU charts of adult patients post cardiac surgery admitted to a CT ICU during March 2011. Twenty two patients ICU charts were entered in the study and a total of 741 glucose readings evaluated. The median glucose reading was 7.8mmol/l (6.7-9.3mmol/l). Of the readings 629 (84.9%) were abnormal. Of these readings 464 (62.6%) were done by ICU trained nurses and 246 (33.2%) by non-ICU trained nurses. There were fewer protocol violations recorded by ICU trained as opposed to non-ICU trained nurses, 53.3% and 63.7% respectively (p<0.05). Protocol violations were similar between day and night staff 188 (54.7%) and 223 (58.5%) respectively (p =0.256) from the study were: that adherence to the protocol was poor, ICU trained nurses committed fewer violations, the number of violations committed by day and night staff was similar. These results further suggest that in-service training regarding glucose control should be on going.

Key words: Glucose control in ICU
The anthropometric and physical performance characteristics of elite South African female footballers

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Research concerning anthropometric and physical performance characteristics of African female footballers is limited. Therefore the aim of this study was to describe the physical performance and anthropometric characteristics of elite South African female footballers. Twenty-three elite female football players (age range = 18-27) (goalkeepers = 4, defenders = 7, midfielders = 8, strikers = 4) were measured for power (countermovement jump height), acceleration and speed (10m, 20m, 40m sprint testing), upper body muscle endurance (60 second pushup test) and cardiorespiratory endurance (Yo-Yo IR1). The results show that there were no significant differences between anthropometric and physical performance measurements according to playing position among the participants. However, goalkeepers possessed greater body mass and sum of skinfolds measurements and were taller in stature than the other playing positions. Strikers sprinted faster and had more explosive leg power; and defenders and midfielders had greater levels of muscle and cardiorespiratory endurance. The cardiorespiratory endurance and explosive power levels of our participants are comparable with those of developed female football playing nations. However, the participants had lower total body mass, were smaller in stature and had slower sprint times than what has being reported in international literature.

Key words: Female football, South Africa, performance
The relationships between eccentric strength and power with dynamic balance in male football players

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There has been little analysis of the relationship between lower extremity strength and power with dynamic balance in footballers. Dynamic balance is an important component in football and research into these relationships could inform injury prevention programmes. Consequently, the aim was to determine the relationships between eccentric strength and power of the lower extremity with dynamic balance in male footballers. Fifty adult male football players (university; n = 27) and (professional; n = 23) volunteered and performed the Y-Balance test, eccentric isokinetic knee extensor and flexor testing and the countermovement jump. The university group demonstrated a significant positive correlation between eccentric peak torque to body weight of the knee extensors of the non-dominant leg with normalised reach distance on the non-dominant limb (r = 0.50, p = 0.008). Countermovement jump height was positively correlated to normalised reach distance on the non-dominant leg in the university (r = 0.4, p < 0.05) and professional (r = 0.56, p = 0.006) groups, respectively. No significant relationships were found between eccentric strength and power with normalised reach distance on the dominant leg in either group. Participant’s with greater power performed better in dynamic balance testing on their non-dominant legs, possibly due to better coordinated recruitment of the lower extremity muscles. Furthermore, participant’s in the university group with greater eccentric strength of the leg extensors demonstrated greater dynamic balance on their non-dominant leg. Significant findings observed on the non-dominant leg only may indicate different neural control strategies between the lower limbs in footballers.

Key words: Balance, power, eccentric strength
The impact of guide planes and guiding surfaces on removable partial denture retention

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The aim of this study was to compare the retentive forces in a denture fabricated with no guide planes on the abutment teeth, with guide planes, and with guiding surfaces on the denture adapted to those guide planes. Master models simulated bilateral upper edentulous areas bounded by a premolar and molar. Extracted teeth were set in a layer of polyether to simulate the periodontal ligament. Three casts were made and sent to a commercial dental laboratory with the instruction to make acrylic resin removable partial dentures (RPDs). A hook was positioned mid-way between the saddles, and placed on a custom-made jig on an Instron testing machine. The force to remove the denture was measured at antero-posterior angulations of 0°, 2° and 5°. Guide planes were then prepared on the teeth and three RPDs were made and tested in the same way. Then the guiding surfaces of the dentures were modified to obtain the best fit against the guide planes of the teeth. There was a large improvement in retention when just guide planes were prepared on the teeth, and an even greater improvement when the denture’s guiding surfaces were closely adapted to the guide planes. This study confirmed our clinical experience that guiding surfaces adapted intra-orally to prepared guide planes on abutment teeth greatly improve retention and can reduce or eliminate the need for clasps in removable partial dentures.

Key words: Removable partial dentures; guiding surfaces, retention
The need for versatility in prosthodontic treatment of maxillofacial defects

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Patients presenting for rehabilitation of maxillofacial defects in a developing country such as South Africa present with an often bewildering array of needs from the comparatively less invasive to enormous and locally destructive ameloblastomas and ossifying fibromas. This means that a variety of treatment modalities must be available for the rehabilitation of these patients. These can vary not only amongst patients but within the same patient at different times. The most cost effective treatment options are always the first line of treatment where appropriate. Unfortunately when rehabilitating maxillo-facial defects not all would be treated satisfactorily by these methods, and then it is necessary to revert to the more invasive and expensive but yet effective methods. These include the use of 3D imaging, rapid prototyping, and implant rehabilitation. To deliver the most appropriate treatment to the patient a number of factors must be considered, which include the patient’s biological, psychosocial, and economic status. The state’s ability to offer such services also plays a large role in the public sector where both human and financial resources are limited. It is therefore always important to be versatile when treating maxillofacial defects, and the approach always needs to be patient specific. This paper illustrated these points by providing a brief review of a variety of treatments provided for patients in our maxillo-facial prosthodontics unit.

Key words: maxillofacial defects, versatility, prosthodontic treatment
The needs of family members accompanying patients into a trauma casualty

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Trauma is unpredictable, and families are unprepared for the sudden injury a loved one. An emergency nurse has the important role of caring for patients and their families in this time of crisis. The needs of families of patients in the critical care setting have been explored using the Critical Care Family Needs Inventory (CCFNI). However little has been researched in the trauma casualty setting, and more specifically, in South Africa. This study sought to determine the needs of family members accompanying patients into trauma casualty, in order of importance, and to determine if these needs were met. Identification of needs will inform the role of the nurse with regard to holistic nursing care which includes the families of patients. The study used a quantitative descriptive contextual design. The population included family members of patients in trauma casualty, with a sample of n=97. A validated instrument based on the CCFNI, using a Likert Scale to score needs statements, was used. Five themes were explored, including “Meaning”, “Proximity”, “Communication”, “Comfort”, and “Support”. The study setting was a Level 1 Trauma Casualty in a Public Tertiary Academic Hospital. Data were analysed in three steps, namely analysis of demographic data, thematic organisation of analysed data and content analysis of open ended questions; descriptive statistics were used. The main findings highlighted the importance of needs relating to the themes “Meaning” and “Communication”, while satisfaction was highest in the theme “Meaning”. A concerning finding was the low level of satisfaction of needs met related to communication.

Key words: Family's needs in casualty
The dimensional distortion of acrylic resin denture bases subjected to different dual cure materials and methods

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There have been methods proposed to reduce the number of visits necessary for complete denture therapy under the philosophy of Appropriatech, thereby reducing costs. The use of acrylic bases after the first visit means that a dual cure is necessary. We sought to establish the amount of distortion that occurred to the denture base when different curing methods were used for a second cure, to see if shorter curing cycles could be used without compromising the quality of the prostheses. A standardized method of fabricating a maxillary denture base with suitable markers for measurement was established, as well as a standardized mold for setting the teeth. The markers were set at different heights, to enable three-dimensional recordings. Measurements were made in a reflex microscope, which can record to an accuracy of 4 µm. First, the teeth were set in wax on the clear acrylic resin heat-cured base, and the positions of the markers recorded. These bases were then subjected to a second processing, and measurements again taken. Four dual cure methods of varying temperature and time were used to process the heat cured acrylic. All methods produced similar 3-dimensional distortion of the denture base. The distortion produced was small and would not affect the fit or retention of the base. The most rapid method, which would save time and therefore money, can be used for a second cure on to an existing denture base.

Key words: Denture base; distortion; dual-cure
**In vivo analysis of a concurrent delivery system for antibiotics and probiotics in a large white pig model**

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A concurrent delivery system designed and developed to overcome the therapeutic issue of the concomitant administration of probiotic products with antibiotic formulations has been evaluated in this study. In such concomitant administration, there is often the destruction of the probiotic bacteria making the patient vulnerable to unwanted side-effects such as antibiotic-associated diarrhoea. The developed concurrent delivery system comprises of antibiotic and probiotic loaded multiparticulates equipped with individual component release at different time intervals. The probiotic component is tailored to exhibit a delayed release which allows for the absorption of the antibiotic prior to the release of the probiotic bacteria. The key component of the delayed release system is optimized ovalbumin granules encapsulated in an erodible polymer matrix of glycerylmonostereate at a ratio of 1:1.94. The concurrent delivery system was evaluated in a Large White pig model surgically implanted with a specially designed intestinal cannula into the ileum for intestinal fluid aspiration and an intra-jugular catheter for plasma sampling. In vivo analysis determined the effectiveness of the concurrent delivery system in protecting Lactobacillus acidophilus probiotic against the bactericidal effects of amoxicillin. Evaluation of aspirated samples revealed maximum amoxicillin plasma levels at 3 hours post administration and maximum probiotic cell counts occurring after 6 hours. A Level A in vitro-in vivo correlation was also established with a 99.6% predictability of amoxicillin release.

**Key words: Antibiotic; Probiotic; Concurrent Delivery**
A 3D finite element analysis of the stress distribution in different restorative materials used in long span implant-supported maxillary prostheses in response to loading

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Recently finite element analysis using patient specific data has been made possible with software manipulation of computerized tomography (CT). The purpose of this study was to analyse stresses within cantilevered implant supported prostheses of different restorative materials on an all-on four distribution of angulated implants. Pure Digital Imaging and Communications in Medicine (DICOM) data from a high resolution CT of the edentulous maxillae of a patient were imported into Mimics™ software (Materialise; Belgium). Co-axis implants (Southern Implants; Irene) were then digitally placed with an appropriate anatomical distribution. The super-structure from the patient’s original prosthesis was scanned separately. Material properties were assigned to the meshed study elements. Prosthetic screws were simulated and a preload of 300N applied to each screw. A vertical load of 600N on the distal cantilever enabled an analysis of the von Mises stresses. Results: The von Mises stress values were consistent in all material permutations when a screw preload was applied. In the monolithic prostheses, ZrO2 had higher stress values which were more distributed within the prosthesis compared with polymethyl methacrylate (PMMA). In the veneered sub-structure prostheses, Cr-Co PMMA had the highest stresses in the connector area. The stress values were less on both the titanium and chrome-cobalt substructures when veneered with porcelain. Superior stress distribution occurred within more rigid prostheses with higher concentrations at the connectors. This highlights the need for adequate surface area at the connector sites. These results also provide important information about the clinical failures seen at the porcelain-substructure interface.

Key words: Finite Element Analysis; loading; implant supported framework
A cross-sectional survey investigating the prevalence of preoperative anxiety in children, and if this is associated with cultural and socio-economic background at Rahima Moosa Mother and Child Hospital, South Africa

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Anxiety and distress have been shown to be a significant problem in the preoperative period in children, which may lead to maladaptive behaviours following surgery, and negative responses to future medical care. This study investigated the prevalence of preoperative anxiety in children, and associations with cultural-socio-economic factors. A cross-sectional survey was conducted on 113 participants, aged 2-12 years, undergoing minor elective surgery at Rahima Moosa Mother and Child Hospital in Johannesburg. Anxiety levels were measured in the waiting room, on entering the operating theatre, and at induction of anaesthesia, using an observational tool, the modified Yale Preoperative Anxiety Scale (m-YPAS). Socio-economic details were obtained by questionnaire completed by the parent/caregiver. All eligible children were included, and were not separated from their parents in the waiting area or operating theatre. m-YPAS scores of >30 demonstrate high anxiety. m-YPAS scores were >30 in 30% of children in the waiting area, 52% of children on entering theatre, and 56% of children at induction of anaesthesia. Participants were significantly (p<0.01) more anxious on entering theatre (m-YPAS median score of 41 [23-55]), and on induction of anaesthesia (46 [23-61]), compared to the waiting area (23 [23-41]). The study found that children experienced significant anxiety in the preoperative period particularly during induction of anaesthesia despite maintaining parental presence. Socio-economic and cultural factors do not appear to predict anxiety. Reduction of preoperative anxiety therefore requires further consideration in our setting for selected children, which may involve the use of additional psychological or pharmacological techniques.

Key words: preoperative anxiety; children; induction of anaesthesia; parental presence
Review of patients with deep vein thrombosis presenting to Helen Joseph Hospital emergency department

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Deep vein thrombosis (DVT) accounts for a significant proportion of patients presenting to the Emergency Department (ED). South Africa is currently in the grips of an HIV pandemic. This is an up-and-coming risk factor for DVT and results in increasing the number of patient admissions. Anticoagulation is the mainstay of therapy for DVT. The current guidelines recommended by the Southern African Society of Thrombosis and Haemostasis involves the use of heparin for initial anticoagulation and warfarin for continuation of treatment. Due to the narrow therapeutic range of warfarin, most patients are admitted while waiting to reach the therapeutic INR level. The accumulated costs of admission have not been estimated in our setting. The aim of the study was to determine the total number of patients presenting to Helen Joseph ED with DVT, to analyse the patient demographic and clinical characteristics and to determine the length of time spent during hospital admission and the cost implications thereof. A retrospective analysis of patients with DVT presenting to Helen Joseph Hospital ED in one year was undertaken. Ethics Clearance was granted by the University of the Witwatersrand Human Research Ethics Committee. Although the majority of patients that presented with DVT are older than 30 years, the highest incidence of DVT was in the 30-39 age group. This is in contrast to the world data as the incidence of first-time DVT rises exponentially with age. The average Wells score in this study was 2.35. Patients spent an average of 14.9 days in the hospital.

Key words: Deep Vein Thrombosis
Intersecting narratives of Prevention of Mother to Child Transmission (PMTCT): The lived experiences of HIV positive women, grandmothers and healthcare providers in a rural South African context

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Although there is extensive coverage of prevention of mother-to-child transmission of HIV (PMTCT) and a decline in new HIV infections of children nationally, challenges still exist with regard to the utilisation and retention of PMTCT services in Mpumalanga Province. This study aims to explore the intersecting narratives of PMTCT lived experiences among HIV positive women, grandmothers and HCPs in a rural South African context. The sample for this study consisted of 66 participants who were divided into three groups: 29 HIV-positive women, 32 grandmothers and 5 HCPs. A narrative qualitative research design was used to conduct the study. Data were collected using semi-structured interviews and focus group discussions. Additionally, data were analysed using thematic analysis and small story analysis framework. The findings revealed intersecting narratives of the lived experiences among the three groups of participants on factors that facilitate and hinder participation on the PMTCT programme. Factors inhibiting PMTCT utilisation in a rural context included multilevel stigma at the individual, community, and healthcare facility level. Other factors included: structural violence, cultural, traditional, psychosocial, health system and knowledge factors. Facilitators of PMTCT services utilisation were community mobilisation on social and cultural factors, health systems-improvement, ongoing PMTCT education, HIV disclosure, peer counsellor involvement, family involvement (grandmothers and male partners), individual factors improvement (self-love, self-reliance) and improved language use in PMTCT. Negative societal construction of HIV and PMTCT leads to poor utilisation of PMTCT services.

Key words: HIV, Prevention of Mother to Child Transmission (PMCT), women, rural
Longitudinal Changes in the Z-angle

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Several analytical reference lines have been derived to aid in Orthodontic treatment planning. One of these is the Z-angle (Merrifield), which is a measure of the most protrusive lip to Frankfort horizontal. This study assessed the longitudinal changes in the Z-angle from six to 18 years of age. Records of 26 subjects (12 male and 14 female) were selected from the Denver Growth Data based on Class I occlusion and good radiographs. Five time points were evaluated: six, nine, 12, 15 and 18 years of age. The primary variables used were the upper lip Z-angle (ULZ) and the lower lip Z-angle (LLZ). A third variable was created from the first two, diffZ as the difference between ULZ and LLZ. Other measurements included total chin thickness (TOTChin) and upper (ULE) and lower (LLE) lip positions with respect to the E-line. General Linear Models (GLM) in SAS were used to assess interaction between time and gender and to determine differences over time (a=0.05). GLM revealed no interaction between gender and time (p>0.05) for all variables except for TOTChin. No significant change was noted in diffZ from six to 18 years of age. However, both Z-angles increased over time and so did TOTChin. ULE and LLE became more negative. The Z-angle became more positive from childhood to adolescence. This was partly due to an increase in TOTChin and a decrease in lip protrusion (ULE, LLE). There was an increase in diffZ but non-significantly, meaning the upper lip became more retrusive compared to the lower lip.

Key words: Z-angle
Paediatric prescribing error: Assessment in a Johannesburg teaching hospital

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Prescribing error is the commonest cause of preventable harm in patients in the United Kingdom paediatric prescribing error is more common than adult prescribing error (13.2% vs 1.5%). This research, concerning paediatric prescribing, forms part of a larger study investigating prescribing error throughout the hospital. Patient records for the months of April and May 2012 were analysed from a randomly selected paediatric ward. Patients’ prescriptions and relevant data from the time period were transcribed onto case report forms. Errors were determined by classification according to an internationally determined checklist and by consensus of a committee. A total of 513 prescriptions were collected over the two month period. The total number of errors for this two month period was 140 errors (27.29%). In April 2012, an error rate of 72/273 (26.37%) was determined. In this sample, common errors included: writing of an ambiguous medication order (12.50%), and prescribing a dose that is not within the ± 25% of the recommended dose (29.33%). In May 2012, an error rate of 68/240 (28.33%) occurred. Common errors in May included: omission of a prescribers signature (7.35%), writing of an ambiguous medication order (19.11%), prescribing a dose that is not within the ± 25% of the recommended dose (44.11%). This paediatric prescribing error rate for a Johannesburg teaching hospital is almost double that of published international reports. Further studies are urgently required to determine if a review of hospital prescribing policies could reduce the error rate.

Key words: Paediatric prescribing error
Retrospective review of right-sided hearts and associated cardiac malformations in children at the Chris Hani Baragwanath Academic Hospital

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A right-sided heart (RSH) is uncommon. It is important to recognize as it can be associated with important additional significant cardiac malformations (ASCM). It is imperative to ascertain the cause of a right-sided heart, as this will influence patient management and outcome. Dextrocardia is the most common cause, followed by dextroposition (RSH secondary to extracardiac causes) and dextroversion (RSH without inversion of the cardiac chambers). A retrospective, time series audit was performed, and included every paediatric cardiology patient seen between 1 January 1991 and 2 November 2012. Any patient found to have a RSH was included. It was found that 18870 paediatric patients were referred during the study period. Of these, 6015 had congenital heart defects (CHD). RSH made up 1% of CHD. Dextrocardia comprised 58% of RSH. The dominant abdominal situs arrangement in dextrocardia was situs inversus (48%). Situs ambiguous, the least common arrangement (17%) had the highest incidence of ASCM (94%), followed by situssolitus dextrocardia (68%). Although situs inversus dextrocardia had the least ASCM (67%), it was much higher than expected. Dextroposition made up 41% of RSH. The majority were secondary to collapsed right lung, space occupying lesions and Scimitar syndrome. Only two patients had dextroversion. Dextrocardia as a cause of RSH shows no socio-economic or ethnic preference. ASCM are commonly seen in dextrocardia with situs ambiguous, situssolitus and situs inversus. These results are similar to other centers around the world.

Key words: dextrocardia, dextroversion, dextroposition
A study of the efficacy of porcine dermal collagen (Permacol) injection for passive fecal incontinence in the Colorectal Unit (CRU) at the Wits Donald Gordon Medical Centre (WDGMC)

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The aim of this study is to determine if our patients have an improvement in their symptoms post-Permacol injection and if so, for how long does the effect last. As this is the only surgical option other than a permanent stoma available to these patients if conservative treatment fails. In the phase 1 arm, patients were assessed retrospectively between the 1st of January 2012 to 31st of December 2013. They were asked to complete a self-administered Wexner and FI QoL score based on their symptoms pre-operatively and a second self-administered Wexner and FI QoL score post operatively. In the phase 2 arm, patients will be enrolled prospectively and recruitment will commence on 1 April 2014. Recruitment will be closed on the 31st of December 2015. Patients will be asked to complete self-administered Wexner and FI QoL scores pre operatively and at the time, 1, 3, 6, 12, and 18 months to assess duration of response. As soon as approval has been granted, data collection will commence for phase 1 and these preliminary results will be presented at the Faculty Research Day. This will be based upon the preliminary results from phase 1.

Key words: Permacol Fecal Incontinence
An approach to a pancreatic mass in a child: The Red Herring!

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Pancreatic tumors are a rare and unusual entity in children accounting for less than 0.2% of cancer-related pediatric deaths. This case report provides a practical approach to childhood pancreatic masses, which encompasses both common and rare causes. The prognosis and histological spectrum of these tumors differs from those of adults. Pancreatoblastoma is the most common primary pancreatic tumor of childhood. These tumors are often large, typically compress and displace adjacent structures rather than invade them, and may cause distant metastases. Dilatation of the biliary tree is uncommon. Non-epithelial primary pancreatic tumors include lymphoma, sarcoma, primitive neuroectodermal tumors, lymphangioma and hemangioendothelioma. Hemangioendothelioamas are rare benign tumors of vascular origin. The pancreas is a rare primary site of occurrence with only nine children with a pancreatic hemangioma/hemangioendothelioma reported in the English literature. Kaposiform hemangioendothelioma is a tumor that contains common features to both Kaposi Sarcoma and hemangioma, and has been characterized as a vascular tumor of intermediate malignancy by the WHO because of its local infiltrative growth pattern and low grade histomorphological features. We present a rare case of primary pancreatic Kaposiform hemangioendothelioma in an 8 month old boy who presented with obstructive jaundice and Kasabach Merritt syndrome.

Key words: primary pancreatic Kaposiform hemangioendothelioma
A cross-sectional study investigating concentric and eccentric knee muscle strength in professional football athletes in South Africa

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Due to muscle imbalances, football players are at risk of lower limb injuries such as ACL injuries and hamstring muscle strains. The aim of the study was to examine the isokinetic strength and endurance of the hamstrings and quadriceps muscles in professional, male, South African football players. A cross-sectional study assessing 28 professional, male, South African football players’ quadriceps and hamstring strength and endurance. Muscle endurance was tested at 180°/s over 15 repetitions. Muscle strength was tested at 60°/s over 5 repetitions concentrically and eccentrically. H/Q ratio; PT/BW ratio; DCR, relative fatigue and bilateral ratio were calculated. The bilateral ratio showed no significant difference between the D and ND sides concentrically and eccentrically (CON 60°/s: Quadriceps: -1.1 ± 18.7% and hamstrings: 6.2 ± 11.2) (ECC 60°/s: Quadriceps: 0.1 ± 18.6% and hamstrings : 4.3 ± 11.7). The players presented bilaterally with normal CON and ECC H/Q ratios at 60°/s (D: 64.7 ± 9.3% and ND: 60.9 ± 11.1%) and (D: 69.0 ± 12.2% and ND: 67.0 ± 12.8%) respectively. The D hamstring muscles had a significantly higher PT/BW compared to the ND side at both speeds (D: 60°/s: 204.6 ± 24.3% and 180°/s: 158.8 ± 21.1% vs. ND: 60°/s: 198.4 ± 49.6% and 180°/s: 146.4 ± 18.7%). SA football players may have a predisposition to hamstring muscle strains as they exhibit less fatigue resistance and eccentric weakness in the hamstring muscles. The players do however have normal mean reciprocal ratios indicating fairly good strength balance between the hamstring and quadriceps muscle groups.

Key words: Football, Isokinetics, Strength profiles
A descriptive study investigating posture and injury profiles in male high school water polo players from Johannesburg

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The aim of this study was to assess male high school water polo players posture and injury profiles in Johannesburg. Injury and posture profiles of 36 1st team male high school water polo players (age range 16-20) were investigated. The injury profiles which were determined included level of play, arm/leg dominance, total amount of training hours amount of training sessions per week, injury location, injury severity, mechanism of injury and management. Posture profiles were determined using a posture assessment chart where posture was scored using a scoring system for individual sites on the body and categorized as poor (score=0), fair (score=5) and good (score=10). Most players were dominant on the right side and were found to have fair posture for the shoulder (81%), upper back (61%) and ankle (50%). Good posture was noted in 92% of players for their spine, and 86% had good posture in the head and abdominal regions. Recent water polo injuries were predominantly in the shoulder area (8%), whereas the elbow and shoulder were sites where most participants had previous injuries. The injuries were mainly managed by physiotherapy (14%), biokinetics (6%), and acute inflammatory medication (6%). Fairly good posture was observed in the participants; however postural abnormalities were common in the shoulder, upper back and ankle regions, possibly predisposing them to injury.

Key words: Posture, Injury, Water polo
Burnout among doctors working in Anaesthesiology

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Studies have been done to determine the level of burnout in anaesthetists internationally, but none could be identified in South Africa. The primary objectives were to estimate the level of burnout among doctors working in the Department of Anaesthesiology at Wits and to estimate the level of burnout among doctors attending the Anaesthetic Foundation (AF). The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) was used to assess the level of burnout. High level of burnout was identified in 21.0% of Wits doctors. Significant higher burnout scores were noted in doctors of younger age (p=0.03) and less years of anaesthetics experience (p<0.05). The female gender (p=0.49), registrars (p = 0.22) and writing examinations within three months of completing the survey (p = 0.16) were found not to be significant. High levels of burnout were identified in 8.1% of the AF doctors. AF doctors showed statistically significant lower burnout levels compared to Wits doctors (p=0.01). Burnout scores were statistically significantly higher in Wits doctors <41 years of age and with ≤ 8 years of anaesthetics experience. No statistically significant differences were found between gender, position held or writing examinations. Burnout levels of AF doctors were also high and similar to studies done internationally.

Key words: Burnout, anaesthesiology
The response of maxillary bone to loading of long span implant-supported prostheses of different restorative materials using a 3D Finite Element Analysis

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This study analysed the stresses within the bone of the maxilla from loading implant supported prostheses (ISPs) of different restorative materials on an all-on four distribution of angulated implants. Pure DICOM data from a high resolution CT of the edentulous maxillae of a patient were imported into Mimics™ software (Materialise; Belgium). Co-axis implants (Southern Implants; Irene) were then digitally placed with an appropriate anatomical distribution. The super-structure from the patient’s original prosthesis was scanned separately. The study elements were meshed separately and the meshed assembly re-imported and superimposed on the CT scan. Material properties were assigned to the meshed study elements. Prosthetic screws were simulated and a preload of 300N applied to each screw. A vertical load of 600N on the distal cantilever enabled an analysis of the von Mises stresses in the bone around the implants. The maximum von Mises stress values were observed in the crestal bone immediately posterior to the distal implant on the loaded side. The more rigid prostheses displayed more favourable distributions of stresses in the bone. There was a greater localisation of stress in the bone on the same side as the load with the less rigid PMMA prosthesis. The different restorative materials did not elicit obvious differences in the range of von Mises stress values in the maxilla. However, the distribution of these stresses was related to the rigidity of the prostheses. This suggests that compromised maxillary bone may require a more rigid ISP.

Key words: Finite Element Analysis; loading; bone
Prevention of progression and remission strategies for chronic renal failure: A single centre South African perspective

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Chronic kidney disease (CKD) is emerging as a global threat to health. In sub-Saharan Africa, most patients do not receive renal replacement therapy due to lack of funds. Measures to retard the progression of CKD are important. A retrospective review of 122 patients attending a renal clinic, over a two year period was performed. Patients with CKD from hypertension, diabetes mellitus, tubulo-interstitial disease were included. Patients with CKD due to viruses, malignancies and autoimmune diseases were excluded. Diabetes mellitus and hypertension were the leading causes of CKD. Blood pressure (BP) control improved, with 91.8% of patients attaining target levels of BP control at the end of the observation period compared to 74.6% at baseline. However, 76% of patients required =3 anti-hypertensives to achieve target BP levels. Agents that block the renin angiotensin system (RAS) were used in 72% of patients. There was no difference in the amount of proteinuria from baseline compared to the end of the observation period: 1.5±1.98 g/24h and 1.37±1.94 g/24h respectively. Renal function progressed in few patients, with serum creatinine doubling in 8.2% of patients. This low rate of progression could be related to low levels of proteinuria, good BP control and use RAS blockers. BP, acidosis and anaemia were independent risk factors for progression of CKD. The two year renal survival rate was 82%; this was similar regardless of level of proteinuria, BP level or the presence of diabetes mellitus. This is probably due to the low numbers of patients for whom serum creatinine levels doubled.

Key words: proteinuria, CKD progression, blood pressure, RAS blockers
Factors that influence patients’ satisfaction with peri-partum care in Bertha Gxowa Maternity Unit

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Patient satisfaction is an important outcome of health care services. This study aims to explore factors that influence women’s satisfaction with peri-partum care at Bertha Gxowa hospital maternal unit, the only district hospital in Ekurhuleni. A cross-sectional descriptive study was done over two months among 260 women during their postpartum third day review. A structured questionnaire was used to gather information on: pain relief, cleanliness, privacy, health education, and information from doctors versus nurses and participation in decision making about their care. Frequency tables were used to describe data and the Chi-square test was used to assess association between patient satisfaction and the various factors. Sixty eight percent of women were not satisfied with pain relief given during labor. Fifty five percent of women were dissatisfied with the information given to them by the doctors, in contrast to 63 % of women who were satisfied with the information from the nurses. There was 73% dissatisfaction with their involvement in their care. In contrast, most women (84%) were satisfied with privacy and 90% with cleanliness of the ward. In conclusion there was no association between the level of satisfaction and the various factors. There were varying levels of satisfaction of women with services during the peri partum period. Cleanliness, privacy and information sharing by nurses were viewed by women as adequate. In contrast, pain relief, time spent explaining procedures and information sharing by doctors was rated as unsatisfactory. These three factors should be taken into account when designing quality improvement programmes.

Key words: Patients, satisfaction, peri-partum, district hospital
Asbestos-related disease trends in the South African mining industry, 1975-2012

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Asbestos is no longer mined in South Africa but asbestos-related diseases (ARDS) continue to be seen in former miners because of their long disease latency. The law allows for the examination of the lungs of deceased miners for compensation purposes. The findings have been stored on the PATHAUT database since 1975. Records from this administrative database were used to determine trends of mesothelioma, lung cancer and asbestosis. Of the 107,913 autopsies there were 831 (0.77%) cases of mesothelioma, 2,816 (2.6%) of asbestosis and 3,191 (3.0%) of lung cancer. Of these, 473 (56.9%), 2,084 (74.0%) and 485 (15.2%), respectively, had a documented history of asbestos mining. Most lung cancer cases (n=1,945; 61.8%) were former gold miners. The rates of mesothelioma in asbestos exposed individuals increased 8-fold from 26/1000 in 1975 to 209/1000 in 2012. Asbestosis decreased from 368/1000 to 223/1000 in 2003 and then increased to 410/1000 in 2012. The rates of lung cancer fluctuated throughout the period, with a mean of 86/1000. Mesothelioma and asbestosis are attributable to asbestos exposure and these findings indicate that there are gaps in many work histories. The attribution of asbestos to lung cancer is confounded by smoking, which accounts for approximately 90% of cases, and other occupational carcinogens, including silica dust found in gold mines. Active case finding contributed to marked increases in mesothelioma and asbestosis rates from 2003 onwards. Therefore, improvements in case finding and recording of comprehensive work histories are needed to more accurately estimate the burden of ARDs.

Key words: mesothelioma, asbestosis, lung cancer
Preparation and characterization of a dual responsive polymeric gel for intranasal drug delivery

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A biodegradable and biocompatible electro-magneto responsive polymeric gel composite was prepared and characterized. The gel was synthesized by blending a Chitosan based polymer, with Polyaniline (PANI) a conductive polymer with high dielectric properties in the presence of metal oxide nanoparticles thus formed a crosslinked Interpenetrating Polymer Networks (IPN). This composite which is referred to as a ‘Metalogel’ with the ability to respond to an external electric stimulus was characterized for both its magnetic properties as well as its electrical conductivity. The magnetic property of the gel was based on the super paramagnetic nature of the said nanoparticles embedded in the matrix of the composite which provided the ability to respond to an externally applied magnetic field. The electric property of the gel was attributed to the electroactive capability of polymer combination which showed a response aptitude to an externally applied electric field. This composite was characterized using scanning electron microscopy to examine the morphology of the gel composite, a homogenous blended composite with well dispersed nanoparticles embedded in the matrix was observed. The magnetic property was characterized by Vibrating Sample Magnetometer, which demonstrated a hysteresis loop of the composite. An increase in the concentration of nanoparticles showed a corresponding increase in the magnetization of the gel. Measurement of the electrical conductivity of the Metalogel showed an increase in conductivity with increase in the concentration of polymer combination in the composite. This dual responsive polymeric gel may be a good candidate for biomedical applications in the area of intranasal drug delivery.

Key words: Metalogel, biodegradable, biocompatible, nanoparticle
Determining the role and effectiveness of surgery in the management of T4 breast tumours

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Historically almost all patients with T4 breast cancer were categorized as inoperable but a multimodal approach to management can include surgery although the success of this is still poorly described. This study aims to determine the role of surgery in the management of patients presenting with T4 breast cancer through a retrospective records review over a three-year period. Patient medical records were reviewed in all T4NxMx patients and follow-up including recurrence and survival was also assessed. Eighty seven patients were included with T4NxMx diagnosis. 65 (74.7%) were black, 13 (14.9%) were white and the remaining were either Indian or coloured (10.2%). Median age at presentation was 62 (range: 31-103 years). Young patients (<40 years) comprised 10% of the study population. Treatment plans were recorded for 70 (80.5%) of patients. Ninety one percent received neoadjuvant chemotherapy, 4.3% had surgery first and 2.8% had radiation first. One patient refused all treatment. Surgery was carried out in 36 (51.4%) patients, and local recurrence occurred in 9 (25%). Patients with N2/3 nodal disease at presentation were significantly more likely to recur (p= 0.022) however this became less significant when alterations in treatment regimen were controlled for, as more patients with early nodal disease recurred. There was no significant difference in adjuvant radiation rates or biological sub-type between those who recurred and did not. AS a non-homogenous group, come patient will benefit from surgery but a high level of recurrence should be expected especially in the presence of nodal disease and non-adherence to conventional multi-modal therapy.

Key words: Breast cancer advanced surgery
Stavudine: A viable drug option for children in resource limited settings?

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Abacavir (ABC)-containing antiretroviral treatment (ART) regimens as first-line treatment for children have replaced routine use of stavudine (d4T) to avoid d4T-related toxicities. However, d4T is still utilised in resource limited settings. A randomised trial investigating the virological efficacy of an efavirenz-containing ART regimen in 300 nevirapine-exposed children was conducted at Rahima Moosa Hospital. Virally-suppressed (<50 copies/mL) children between 3-5 years on lamivudine (3TC)/d4T/ritonavir-boosted lopinavir (LPV/r), who showed no clinical evidence of lipodystrophy, were randomised to switch to ABC or remain on d4T. Follow-up included monitoring of viral load, CD4 count, fasting lipids, anthropometric measurements and development of lipodystrophy. Of 300 enrolled children (average age 4.2 years), 237 had been initiated on 3TC/d4T/LPV/r, at a mean age of 9 months, and 213 were eligible for randomisation. One hundred and seven children were switched to ABC, and 106 remained on d4T. At 48 weeks post-randomisation, the d4T vs. ABC group did not show significant differences in mean weight-for-age-z-score (-0.72±1.0, -0.72±1.0); mean CD4% (36.4±6.9, 36.5±6.7); mean total cholesterol (4.4±0.9, 4.4±0.9 mmol/l); mean triglycerides (1.1±0.5, 1.1±0.6 mmol/l), or number of children with a non-suppressive viral load >50 copies/mL (6 (5.9%), 10 (9.7%)). Un-blinded clinician assessment of the presence of possible/definite lipodystrophy changes identified consistently more children in the d4T arm, although this was only significant at 12 (11 (10.4%); 3 (2.9%) p=0.030), and 40 weeks (16 (15.7%); 5 (4.9%) p=0.011) post-randomisation. Although lipodystrophy was more commonly identified in young children maintained on a d4T-containing regimen when compared to children switched to ABC, short-term follow-up did not reveal the development of metabolic toxicities.

Key words: Children, lipodystrophy, stavudine, abacavir
Occupational performance factors perceived to influence the readmission of schizophrenics

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Schizophrenia is a complex disorder due to the range of deficits that mental health care users (MHCUs) present with. In addition, the high rate of relapse and readmission in clients diagnosed with schizophrenia complicates the effective management of the condition. Medical factors have been evidenced to affect relapse and readmission rates however limited data exists regarding the influence of occupational performance factors. Hence the aim of this study was to determine which occupational performance factors are perceived to affect the readmission of MHCUs diagnosed with schizophrenia. A descriptive, cross-sectional quantitative design with qualitative elements was conducted. Card sorting was implemented in two phases to a conveniently sampled population of occupational therapists and MHCUs diagnosed with schizophrenia. Data were analysed by means of descriptive statistics. It was found that social participation was perceived to be the most influential factor in the readmission of MHCUs diagnosed with schizophrenia. In conclusion, both medical and occupational performance factors affect readmission rates of MHCUs diagnosed with schizophrenia. Therefore to implement a client centred approach in occupational therapy, therapists may need to reconsider the priorities they address in treatment.

Key words: occupational performance, schizophrenia, readmission
Knowledge, attitudes, and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns Community Health Centre, Sedibeng District

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Dehydration from diarrhea and vomiting has remained a threat to the lives of children under 5 years old, especially in especially developing countries. Oral rehydration therapy (ORT) administered by caregivers is lifesaving but evidence shows unsatisfactory uptake. The study assessed the knowledge, attitudes and practices of mothers/caregivers regarding oral rehydration therapy at Johan Heyns Community Health Center, Sedibeng. A descriptive cross sectional study involving 377 systematically recruited caregivers to attend the study site was undertaken. A face to face questionnaire was used to measure the level of ORT knowledge, attitudes, practices, and responses to diarrhea and vomiting. The data collected was analyzed by the use of descriptive statistics, chi-square test and Fisher's exact test. The main outcome measures were the level of ORT knowledge of mothers/caregivers, attitudes, practices and response to diarrhea. Eighty eighty percent of caregivers were biological mothers. Only 53.3% were able to initiate ORT at home with the onset of diarrhea, 4% administered traditional remedies. 66% of the caregivers had used ORT, 18.3% knew that it prevents dehydration. 33.7% were able to prepare a correct recipe. Knowledge and attitudes correlated with ability to initiate ORT at home (p = 0.0000). Unsatisfactory uptake of ORT appears to be due to caregivers lack of knowledge about perfect mixture, function and appropriate quantity of ORT administration. Mothers have heard of ORT, but some still believe that traditional remedies are better in treating diarrhea.

Key words: ORT, Caregivers, Knowledge, Practices
Intra-oral meningiomas are rare with only four previous reports. Although benign, they have the potential to be aggressive and to metastasize to extracranial sites (liver, lung and long bones). Previous intra-oral cases have shown meningiomas either arising primarily within the mandible or metastasizing to the hard palate. This is the first report describing contiguous spread of aggressive intracranial meningioma throughout craniofacial tissues and ultimately to the buccal mucosa. A twenty-nine-year-old male presented with a progressively enlarging right facial mass. The diffuse swelling involved the temporal, zygomatic, malar and paranasal area with obliteration of the nasolabial folds. Radiographs and cross-sectional CT and MR imaging showed a diffuse radio-opacity of the right maxilla, maxillary antrum, orbital floor, base of skull and temporal bone. Histologic diagnosis with immunohistochemistry (AE1/AE3, S-100, vimentin, EMA, PR) confirmed a benign meningothelial meningioma (WHO Grade 1). This case highlights the marked propensity for aggressive behavior in benign meningioma.

Key words: intra-oral meningioma
Intensified TB case finding in a cohort of HIV-infected children in Johannesburg, South Africa

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The WHO's Intensified TB Case-Finding (ICF) guidelines recommend that HIV-infected children presenting with current cough, fever, weight loss or contact with a TB case should be evaluated for TB. We assessed these recommendations in a cohort of South African children initiating ART. Children (0-8 years), enrolled in the THINK observational cohort study at Harriet Shezi Children's Clinic in Soweto not diagnosed with TB and not receiving TB treatment were screened for TB using a standard questionnaire on the day of starting ART, 2, 6, & 12 weeks and every 3 months thereafter for 2 years. Among 247 participating children, 220 (89%) underwent 1344 screenings while not on TB treatment. Half (52%) were male, median age at enrolment was 2.1 years (IQR: 0.8-4.9) and median baseline CD4% was 18.1% (IQR:12.6-24.8). Of the 1344 screenings, 45 (3.3%) were positive for any symptoms. These 45 positive screenings occurred in 39 individual children. A decision to start TB treatment was made in 4 (7.6%) children. Screening visits were more likely to be positive at ART initiation (OR=4.9; CI: 2.6-9.3) and in children with a baseline CD4%<15% (OR=2.1; CI:1.1-4.2). In this cohort, we found a low prevalence of TB symptoms despite using a highly sensitive TB symptom screen. Given the low rate of TB among children with a positive TB screen, systematically screening all children at all visits and evaluating all with a positive TB screen, may not be the most effective use of scarce resources, especially in HIV-infected children already on ART.

Key words: ICF TB HIV children
Ameloblastoma of the maxillary sinus

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Ameloblastoma (AM) is a slow growing, locally aggressive, benign tumour of the jaws with a high tendency to recur. Primary ameloblastomas of the sinonasal tract, without connection to the jaws are extremely rare, with only a few cases reported in the literature. Two male patients aged 32 and 20 years presented with progressively enlarging swelling of the face and complained of chronic sinusitis and nasal obstruction. Radiological examination revealed multilocular lesions in the right and left maxillary sinus respectively. Microscopic examination of both lesions confirmed a diagnosis of ameloblastoma. Although ameloblastomas have been demonstrated arising directly from the lining mucosa of the maxillary sinus, the majority of cases reported are secondary, following extension into the nasal and paranasal cavities from the maxilla. The unusual presentation of these two cases highlights the importance of ameloblastoma as a differential diagnosis for mass lesions involving the maxillary sinus.

Key Word: Ameloblastoma, Maxillary sinus
The effect of compounds based on novel 7-azaindoles and 6-substituted imidazoles on MCF-7 breast cancer cells

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Breast cancer is characterised by the unregulated growth of cells and globally it is a leading cause of mortality in women. Current treatment of metastatic breast cancer is prone to treatment failure and severe adverse effects. Therefore the need for effective, safer and cost-effective therapies is of great importance. In this context this study has investigated novel compounds based on either a 7-azaindole or a 6-substituted imidazole scaffold for activity against breast cancer cells. The MCF-7 cells were exposed to 200 µM of test compound for 48 hrs and the methylthiazolyldiphenyl-tetrazolium bromide (MTT) assay was performed to measure cell viability. Compounds were further investigated to determine their half maximal inhibitory concentration (IC50) values. Active compounds were further assessed by phase contrast and fluorescence microscopy to determine if the cells display features of apoptosis or necrosis. Compound TLC-III-76 had the lowest IC50 in the azaindole group. In the imidazole group, three compounds; JD-88, JD-122 and JD-137, were the most active with the lowest IC50 values. Phase contrast microscopy images of cells treated with JD-88 and JD-122 showed characteristics consistent with apoptotic cell death. Fluorescence microscopy images suggest apoptotic induction in cells treated with JD-88 and JD-122 while those exposed to JD-137 showed early loss of membrane integrity which could be a sign of necrotic cell death. Two compounds JD-88 and JD-122 show great promise in being developed into possible leads in breast cancer therapy. Further testing will however be required to confirm induction of apoptosis by these compounds.

Key words: chemotherapy, apoptosis, cancer, breast
Validation of low level testosterone using Ultra performance liquid chromatography mass spectrometry

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Traditional measurement of testosterone in routine laboratories is via immunoassays, in which the limit of detection is approximately 0.70nmol/L. This is problematic when measuring testosterone levels in women during menopause or patients with hypogonadism. We therefore endeavoured to establish a method for the analysis of testosterone at low levels in human serum using liquid chromatography mass spectrometry. Validation was carried out using pure standards purchased from Sigma and verified using human based serum controls (3 levels) purchased from BIORAD. Standards, controls and samples were extracted using 200ul of sample containing 10ul deuterated testosterone mixed with tert- butyl methyl ether (TBME) and vortexed twice. The sample was dried down at 60oC and reconstituted in 50ul of 50% methanol:water. Ten microliters were injected onto a C18 Phenyl column and run in electrospray positive mode on a mass spectrometer. Linearity was determined as r2=0.999. Carryover was found to be negligible based on a blank standard run. Recovery was assessed using a deuterated internal standard as well as spiked samples at each control level. The recovery was 82-114% and 86-118% respectively. Accuracy and precision were calculated using the coefficient of variation (CV) which were 9.8% 8.6% and 7.6% at low, mid and high control levels. The limit of detection was 0.06nmol/L and the limit of quantitation was 0.15nmol/L. This method has a limit of detection that is 10-fold lower than that observed in immunoassays.

Key words: Testosterone, Liquid chromatography mass spectrometry
Microbial contamination and decontamination of toothbrushes

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We evaluated toothbrush microbial contamination in a patient population attending the Oral Hygiene clinic at Wits Oral Health Centre and the efficacy of various chemical solutions used for decontaminating toothbrushes. Ninety six toothbrushes were collected and their handles cut off. Each bristle head was soaked in 15 ml sterile tryptone soya broth for 5 hours. One hundred microlitres of the resulting suspension was plated onto Blood, MacConkey, Mitis salivarius bacitracin and Sabourauds Dextrose agars, to select for Staphylococci, Enterobacteria, Mutans Streptococci, and yeasts respectively. Plates were incubated aerobically at 37ºC for 48 hours. Identification of organisms was done using standard microbiological methods. Toothbrush heads were randomly divided into four groups and immersed overnight in 15ml of Andolex-C (Chlorhexidinedigluconate 0.12%), Listerine® antiseptic mouthrinse (Alcohol), Brushtox (Chlorhexidinegluconate 0.2%) and water (control). These were placed in broth medium for 5 hours and cultured on media as mentioned above. Of the 96 toothbrush bristle heads cultured, 23 (31.5%) showed no growth and 73 (68.5%) showed growth. Microorganisms identified were coagulase-negative Staphylococci (49.3%), Staphylococcus aureus (34.2%), Streptococcus mutans (14%), Pseudomonas (33%), Coliforms (4.1%) and Candida spp. (yeasts) (7%). Twenty-two (30.1%) toothbrush bristle heads carried more than one organism. Decontamination of toothbrushes with Chlorhexidinedigluconate 0.12% reduced micro-organisms by 66.7%, alcohol by 61.1%, Chlorhexidinegluconate 0.2% by 94.4% and water by 0.0%. This study shows that toothbrush bristle heads harboured potentially infectious micro-organisms. Coagulase negative Staphylococci was the predominant micro-organism. Previous studies reported Chlorhexidinegluconate 0.2% as the “gold standard” disinfectant for toothbrushes and these results concur.

Key words: Oral Decontamination Contamination Toothbrush
Family witnessed resuscitation (FWR) is a practice that is starting to be internationally recognised and practised with various countries conducting research on this rare phenomenon. In South Africa, there is little known about FWR, as evidenced by minimal literature on FWR. The purpose of the study was to describe the experiences and attitudes of nurses in accident and emergency units of two academic hospitals in Gauteng towards family witnessed resuscitation, in order to make recommendations towards the development of a family witnessed resuscitation protocol. A descriptive quantitative research design with a qualitative aspect was utilised in this study and a self-administered questionnaire was utilised as the data collection tool. The total sampling method was used as all (N=145) accident and emergency nursing staff in the two hospitals were approached. A total number of 76 accident and emergency nurses participated in the study. Results were captured on Ms-exel. Stata version 11 was utilised for data analysis and a biomedical statistician was consulted. The qualitative responses were analysed thematically. Most of the participants, 86.8% (n=66) were female, 48.0% (n=36) were professional nurses and only 12.0% (n=9) were trauma trained. The majority of the participants, 67.1% (n=49) have experienced relatives being present during CPR, however only 16.0% (n=12) stated that the experience was positive. Also, 86.4% (n=64) of the participants indicated that there were no FWR protocols/policies in their units. This might have contributed to their negative attitude towards FWR. Recommendations towards the development of a FWR protocol and its implementation were made

Key words: Trauma and Emergency Nursing
MCM-2 expression in benign and malignant salivary gland neoplasms

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This study evaluated the expression of MCM-2, a novel cell cycle biomarker, in a series of salivary gland neoplasms and correlated this expression with tumour type. Tissue from 19 pleomorphic adenomas (PA), 15 polymorphous low grade adenocarcinoma (PLGA), 11 mucoepidermoid carcinoma (MEC), 11 acinic cell carcinoma (AcCC) and 13 adenoid cystic carcinoma (AdCC) were analysed for immunohistochemical expression of MCM-2. The labelling index (LI) for each tumour was determined by counting the percentage of positive cells per 1000 tumour cells. The Kruskal-Wallis test was used to assess differences in LIs. AdCC showed a significantly higher LI compared to AcCC (p=0.0024), PLGA (p=0.0002), MEC (p=0.0028) and PA (p=0.0001). There were no significant differences in MCM-2 expression between the other neoplasms. MCM-2 was most frequently expressed in AdCC and may in small biopsies be useful to differentiate AdCC from histomorphologic mimics such as PA and PLGA.

Key words: Salivary gland neoplasms MCM-2
Pseudohypoparathyroidism Type 1a - The Chris Hani Baragwanath Hospital Series

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Pseudohypoparathyroidism (PHP) is a rare disorder (1:100,000), first described in 1942 by Albright et al. It is characterised by hypocalcaemia and hyperphosphataemia due to resistance to parathyroid hormone (PTH). Various types of PHP have been described. It may be due to an abnormality involving the alpha-subunit of the stimulatory G-protein (Gsa), i.e. type I, or a defect involving adenylate cyclase, i.e. type II. Type Ia is commonest and is associated with a typical phenotype, known as Albright’s Hereditary Osteodystrophy (AHO).

To report the first cohort of PHP-Ia patients in the South African population. Eight black patients, five females and three males, aged 6 months to 28 years at the time of initial presentation, attending the Endocrine Clinic at Chris Hani Baragwanath Academic Hospital were studied. Their presenting symptoms, family history, phenotypic characteristics, biochemical and hormonal profiles, and radiological findings were documented. All patients were initially hypocalcaemic with elevated PTH levels. Regarding other markers of hormone resistance, TSH levels were raised in five of the patients in the presence of normal thyroid hormone levels (62.5%). LH levels were elevated in three patients. All patients had one or more features of AHO, but only three (37.5%) had brachymetacarpalia. Intracranial calcifications were documented in six patients (75%) by CT scanning. This is the first documented cohort of patients with PHP in South Africa.

Key words: Pseudohypoparathyroidism
Pattern of Practice for Palliative Radiotherapy in Oesophageal Cancer: A retrospective analysis at Charlotte Maxeke Johannesburg Academic Hospital (2007-2012)

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To assess the improvement in swallowing status, overall survival and treatment related complications in patients with carcinoma of the oesophagus treated with palliative radiotherapy. A retrospective analysis of patients with advanced squamous cell carcinoma of the oesophagus who were treated for palliation from May 2007 to June 2012 at the Charlotte Maxeke Johannesburg Hospital. Ninety-nine patients received palliative radiation therapy during this period, 63% were male and 37% female with a mean age of 60.6 years. The predominant site of lesion was middle 3rd (56%) and 86.9% patients more than 5cm in length. There was an overall significant improvement in swallowing status (p<0.001). Eighty-four patients (85%) had an improvement in swallowing score after treatment. Overall median time to progression was 3.7 months. Interpretation of the Post-hoc tests using the Tukey-Kramer adjustment for unusual group sizes depicted that the effect of treatment was not significant in the relationship between the change in swallowing status and treatment group. The median overall survival was 7.7 months. The effect of treatment on univariate analysis was not significant for survival (p=0.31). The results of the multivariate model showed that there were no significant differences in the survival curve between treatment groups. Treatment related complications included ulcerations in 24%, 5% tracheo-oesophageal fistula and 3% strictures. In patients with advanced squamous cell oesophageal carcinoma, palliative radiotherapy is an effective modality in improving a patient’s dysphagia and thus quality of life.

Key words: carcinoma oesophagus, brachytherapy, overall survival, swallowing score
Evaluation of Retinopathy of Prematurity (ROP) in Very Low Birth Weight (VLBW) infants at Charlotte Maxeke Johannesburg Academic Hospital

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Retinopathy of Prematurity (ROP) is a leading cause of blindness for VLBW infants. ROP screening identifies infants that require treatment to prevent major visual impairment. The aim of the study was to evaluate the screening program for ROP at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH). A retrospective record review of VLBW infants born between 1 January and 31 December 2013. The study was set at CMJAH, South Africa - a tertiary public hospital. Five hundred and seventy two infants, consisting of 309 females with a mean birth weight of 1127g, mean gestational age (GA) of 29 weeks and mean duration of stay of 29 days. The number of infants screened in 2013 according to the CMJAH guidelines, the grades of ROP and the treatment modality received. Of the 572 babies, 258 qualified for inpatient ROP screening and 145 early discharges qualified for outpatient screening. 113 out of the 258 were screened (43.4%). 11 had Grade I ROP, 6 had grade II, 2 had Grade III, 1 had Grade IV and 12 were unknown. One required anti-VEGF and 3 required surgery. Outpatient ROP screening records for the 145 babies that were discharged early is not available. 53% of infants were not screened during their stay - efforts need to be intensified to identify and screen them prior to discharge. Outpatient ROP screening is not well documented, therefore prevalence cannot be established. Another group of bigger babies >1500g were identified that should be screened according to CMJAH guidelines – however no ROP information is available for this group and it is debatable whether they all require screening.

Key words: Retinopathy of Prematurity, Very Low Birth Weight
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