Western Cape Government
Health

BETTER TOGETHER.

Provincial Health Research Newsletter November 2011

Welcome to the first edition of the Western Cape Health Research Newsletter. In order to keep you up-to-date with new research findings, the Western Cape Provincial Health Research Committee (PHRC), supported by the Health Impact Assessment Directorate of the Provincial Health Department, has developed this newsletter.

The PHRC is the provincial counterpart of the National Health Research Committee established in terms of the National Health Act in 2003. The Committee recognises that research can improve health outcomes and has the mandate to promote the contribution of research to societal health and welfare. In the Western Cape, the PHRC is carrying out this aim of using research to improve health outcomes through partnering academics, health service managers and civil society representatives (for more information, see www.capegateway.gov.za/eng/pubs/public_info/H/213781).

As the PHRC develops its work in other areas, such as expanding the website as a resource detailing past and ongoing research projects, you can expect to read about recent activities and work in progress in the Western Cape Health Research Newsletter.

Enabling researchers to give feedback to service managers about their research findings is another central activity of the PHRC. So, we are excited to be launching the newsletter at the hosting of an inaugural Research Day in November 2011.

The main aim of the Research Day is to create a forum for health providers and managers to engage with the research community about research findings, their implications for services and future research needs. We believe that this activity will help to build positive relationships and enhance the mutual benefit of health research in the province. We intend this to be an annual event!

The newsletter ties in well with the theme of the Research Day. You can expect to find out about research undertaken in health facilities of the Western Cape that have policy and service delivery implications. It will also contain information on research priorities and will showcase research that has been translated into policy or practice. The Talking Forum column will report on one or more current controversies in the recent research literature. The PHRC looks forward to producing this newsletter twice yearly from now on and perhaps more frequently in the years to come.

We hope you will join us in our efforts to provide better access to academic research so that it might improve health for all.

We value your feedback and welcome any comments you may have (which you can send to Healthres@pgwc.gov.za). Look out in our next issue for a very interesting competition ...

Happy reading!

The Editorial Team

Dr. Vivien Appiah-Baden, Editor
Dr. Tracey Naledi, Consulting Editor
Prof. Leslie London, Consulting Editor

CONTENTS

MEET THE PHRC TEAM

Professor Debbie Bradshaw

Medical Research Council

Dr Stephen Fourie

Western Cape Government Health

Professor Mark Tomlinson

Seated from left: Dr. Danie Schoeman Western Cape Government Health); Dr. Tracy Naledi Western Cape Government Health); Professor Rodney Ehrlich (Chair); Professor Nulda Beyers (Stellenbosch University). Standing from left: Professor Thomas Rehle (Human Sciences Research Council); Professor Debra Jackson (University of the Western Cape); Dr. Vivien Appiah-Baiden (Secretariat); Mrs Carmen Sisam (Secretariat); Mr. Enrico Goodman (Secretariat).

Mr Jimmy Ledwaba

Western Cape Government Health

Dr. Helene Visser

Cape Town City Health

Ms. Damaris Frtiz South African NGO Coalition. Her pictures was not available at time of going to press

NEW: HEALTH IMPACT ASSESSMENT (HIA) UNIT

The Western Cape Provincial Department of Health's HIA unit is a new directorate which falls under Strategy and Health Support. With Dr. Tracy Naledi as the director, the unit has a comprehensive staff establishment which includes public health specialists and registrars. HIA is a means of assessing the health impacts of policies, plans and projects in diverse sectors using quantitative, qualitative and participatory techniques. It helps decision-makers make choices about alternatives and improvements to prevent disease/injury and to actively promote health.

The basis for HIA follows the Health Care 2020 strategy, which are:

- Patient-centered quality care
- Health Outcomes Approach
- Primary Health Care (PHC) Philosophy
- Strengthening District Health Services (DHS) Model
- Equity
- Affordable Health Service
- Strategic Partnerships

The functions of the HIA unit are to assist the Department in meeting the Millenium Development Goals (MDG) targets by ensuring the development and implementation of disease surveillance programmes, ensuring health research, determining the effectiveness of all health programmes and co-ordinating and monitoring the quality of health care.

The goal is to impact on Child Health, HIV/TB, Injuries and Non Communicable Diseases such as hypertension, diabetes and cancer. Improving health outcomes and increasing wellness is an integral part of improving patient care which is firmly entrenched within the role and functions of the HIA Directorate and strategy for the Department.

An inter-sectoral and collaborative approach is essential as together we can make an impact in the delivery of quality health services and shift from a reactive to a proactive approach.

INFANT FEEDING PRACTICES, IMMUNE ACTIVATION, MICROBIAL TRANSLOCATION, AND SUSCEPTIBILITY TO HIV VIA

Researchers: Jaspan H, Sandler N, Durudas A, Hanekom W, Lim HC, Brodie E, Douek D, Passmore J-A and Sodora D (University of Cape Town, South Africa).

The problem: In developed countries, HIV-infected mothers formula feed their infants to avoid transmitting HIV in breast milk. However, in less developed settings, formula feeding is associated with high morbidity and mortality; therefore breastfeeding continues despite the risk of HIV transmission. Previous studies have demonstrated that exclusive breastfeeding decreases the risk of postpartum HIV transmission compared to 'mixed feeding'.

Microbial translocation and immune activation plays an important role in HIV transmission in mixed-fed infants. HIV causes damage to the systemic immune system, and is also associated with loss of integrity and CD4 cells in gut mucosal tissue. The loss of structural integrity leads to microbial translocation, measured by sCD14 levels in the blood, which in turn is thought to lead to increased immune activation.

A similar loss of integrity and subsequent immune activation could occur with mixed breastfeeding and this is supported by evidence from studies of infection mechanisms involving genital mucosa. Buccal inflammation also increases HIV susceptibility. Therefore, it is hypothesised that inflammation in the upper gastrointestinal tract enhances susceptibility to HIV acquisition through breast milk.

The objective of the study was to identify differences in exclusively breastfed infants compared to mixed-fed infants with regard to immune activation and microbial translocation.
Exclusively breastfed and mixed-fed healthy infants in a periurban community in Cape Town, South Africa were compared for peripheral blood mononuclear cells (PBMC), CD4 and CD8+ T cells; mRNA levels of immune modulators and Plasma sCD14 levels.

Of the 45 infants enrolled, 27 (60%) were HIV-exposed; however none of these infants tested HIV+. Comparison of the 9 (20%) exclusively breastfed to the 36 (80%) mixed-fed infants identified similar levels of T cell activation in both CD4 and CD8 T cells and smilar PBMC mRNA levels for 11 immune modulators. However, inflammatory cytokine (TNF-a) mRNA was significantly upregulated in the mixed-fed infant PBMC who also exhibited higher levels of sCD14 in plasma. A significant direct association was observed between the levels of sCD14 and the

proportion of activated HIV-target CD4+ T cells. HIV exposure was associated with higher mRNA

levels of RANTES in PBMC, but did not correlate with higher T cell activation or sCD14 in plasma. The study concluded that the mixed-feeding is associated with an increase of the inflammatory cytokine (TNF-a) and sCD14 in peripheral blood. These data support the hypothesis that changes within the gut environment result in increased microbial translocation, increased activation of CD4+ target cells, and increased HIV transmission rates in mixedfed infants.

The findings emphasise the importance of exclusive breast feeding in HIV exposed infants in a low resource setting, especially in communities where the availability of formula feeding is not guaranteed or unavailable.

KEY MESSAGES:

- Mixed feeding appears to alter the inflam matory processes in the gut for children with the result that they are more susceptible to HIV infection.

WHAT POLICY OR PROGRAMMATIC IMPLICATIONS ARISE FROM THIS STUDY?

- The study provides additional support for a policy of exclusive breast feeding for new borns of HIV+ve mothers.

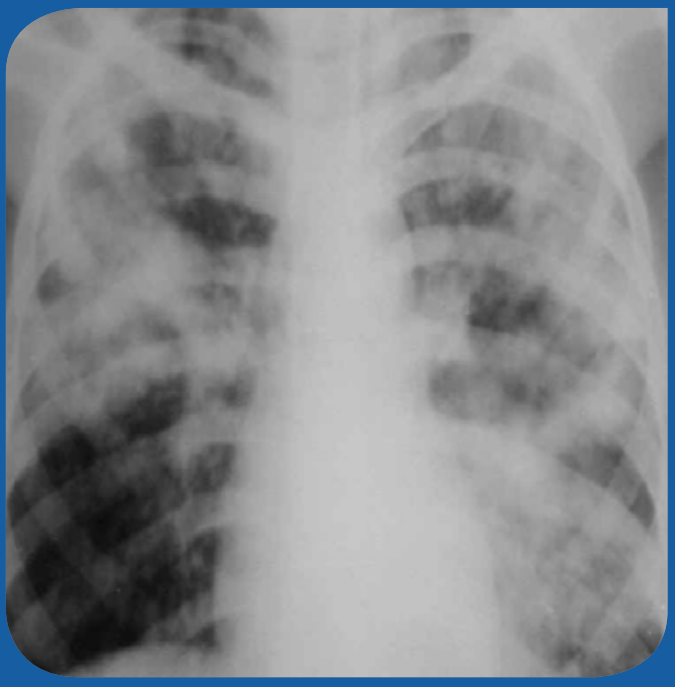
XDR AND MDR TB: A STUDY OF TREATMENT-RELATED OUTCOMES, COST ANALYSIS, EVALUATION OF RAPID DIAGNOSTICS AND IMMUNE PROFILING

Researcher: Dheda K (Lung infection and Immunity Unit, Division of Pulmonology, Dept. of Med, UCT)

XDR-TB threatens to destabilize TB control in South Africa. There are hardly any data on the cost of managing patients with drug-resistant TB and about outcomes on XDR TB (and MDR TB) in high HIV prevalence environments. Similarly, nothing is known about adverse effects with second line drugs in patients with XDR TB. Current tools to diagnose tuberculosis have poor sensitivity and results are not available for several weeks, whilst tools used for the diagnosis of drug-resistant TB are cumbersome and not widely available.

The aims of the study were to evaluate treatment-related outcomes in drug-resistant and sensitive TB, the cost effectiveness of different management strategies, to develop new technologies for rapid diagnosis and drug-susceptibility testing, and to investigate the immunological profile of subjects with drug resistant TB.

A prospective study (with a retrospective component) involving 3 cohorts of patients was performed. 300 patients with drug-sensitive TB, MDR TB and XDR TB were followed over 6 years. The MDR-TB and XDR-TB cohorts were recruited at BCH and Gordonia hospital, and the drug-sensitive cohort were recruited at Langa clinic, Western cape province. Additional cohorts were recruited



in the Eastern Cape and Gauteng provinces. Demographic data, adverse events and data pertaining to outcome analysis were collected. A parallel study was also undertaken at King George V Hospital in Durban, KwaZulu-Natal to evaluate the incidence of drug-resistant TB amongst health care workers in the province.

The results showed that of 195 XDR-TB patients from 4 provinces (diagnosed between 2002 and 2008), 21 died before initiation of any treatment and 174 patients (82 with HIV-infection) were commenced on treatment. 36% of patients died during follow-up. 33 out of 174 (19%) showed culture conversion and 70% of these 33 patients converted within 6 months of treatment initiation. Independent predictors of death included lack of treatment with moxifloxacin, previous culture proven MDR-TB, and the number of drugs used in the regimen. HAART significantly reduced mortality in HIV-infected patients with XDR-TB despite concerns about IRIS and drug interactions.

Treatment of XDR-TB is approximately 400 times more expensive than drug-sensitive TB. Taking into account drug, staff and hospitalisation costs, the 2011 cost of treating a drug-sensitive case was R802 versus R90 411 for community MDR-treated cases (R143 850 for a hospitalised MDR patient), and R290 385 for a patient with XDR-TB.

Immunological studies on 30 patients with XDR-TB revealed that the peripheral blood immunophenotype in patients with XDR-TB is considerably different from drug-sensitive TB and latent TB infection. In particular, a special type of T-cell capable of suppressing effector responses of other T-cells (known as T-Reg), are markedly raised in patients with XDR-TB. We have shown that these cells have the capability of suppressing mycobacterial killing stasis in vitro.

In KwaZulu-Natal 231 health care workers were identified with MDR or XDR-TB. The incidence rate ratio in HCWs was 6-fold higher than the general population suggesting that the drug-resistant TB was nosocomially acquired. In the Western Cape 10 health care workers with XDR-TB were identified. Most of the health care workers were HIV-infected and had a high mortality.

In conclusion, XDR-TB has a high mortality and disproportionately affects young adults. Almost 25% of XDR-TB–related deaths occurred prior

Continued on page 5

to treatment initiation. Thus, early recognition and rapid diagnosis is important. Treatment with moxifloxacin significantly improves outcomes.

Already drug-resistant TB consumes more than half the national TB drug budget. Treatment of drug-resistant TB with the current costly regimens is therefore not sustainable. Studying the immunology of XDR-TB may reveal therapeutic targets and inform on the selection of immunotherapeutic interventions for patients who are therapeutically destitute.

KEY POINTS

- Rapid diagnosis of XDR and MDR TB will decrease the mortality especially in those waiting to be initiated on treatment.
- XDR-TB is hundreds of times more expensive to treat than drug-sensitive TB.
- Health care workers in South Africa are nosocomially contracting MDR and XDR-TB.
- Use of immuno-therapeutic interventions may in the future aid in treating patients who are failing treatment.

WHAT DOES THE STUDY ADD?

This study contributes to the knowledge gaps about outcomes on XDR TB (and MDR TB) in high HIV prevalence environments and transmission dynamics, virulence and the immunology of XDR TB. It has also contributed to defining treatment failure for XDR TB in high burden settings.

WHAT POLICY AND SERVICE IMPLICATIONS ARISE FROM THE FINDINGS?

- Regular screening of health care workers should be performed and they should have access to rapid diagnostic tests. Infection control needs to be taken very seriously in light of these findings.
- Not only is prevention better than cure, but it is almost certainly cheaper!
- Moxifloxacin should form part of the XDR treatment regimen.
- HAART should be provided to all HIV-infected persons with XDR-TB.
- All patients should have access to rapid diagnostic tests for MDR and XDR-TB.

- HIV XDR-TB co-infection is not a hopeless situation and such patients should be encouraged to seek treatment.

INVESTIGATION OF THE DIET AND FREQUENCY OF THE ALANINE IN SOUTH AFRICA'S BLACK AND WHITE SUBJECTS WITH RESPECT TO CALCIUM OXALATE KIDNEY STONE

Researchers: Theka T, Rodgers AL, Webber D (Department of Chemistry, University of Cape Town, South Africa) O'Ryan C (Department of Molecular Cell Biology, University of Cape Town, South Africa)

In South Africa, the incidence of kidney stone disease is rare in indigenous black populations (<1%) and more prevalent in populations of European descent (~15%). According to a previous study involving multivariate analysis, genetic background accounts for 56% of the risk of stone formation. It has also been speculated that the presence or absence of the AGT Pro11Leu polymorphism might be a contributory factor in an individual's susceptibility to idiopathic calcium oxalate kidney stone formation.

The aim of this study was to investigate whether differences in the frequency of the AGT Pro11Leu polymorphism in South Africa's black and white groups may contribute to the difference in kidney stone incidence. Healthy South African males (60 blacks and 60 whites) aged 18-30 years were recruited for the study. Each subject completed a questionnaire assessing their diet, medical history, lifestyle practices and their family and individual history of kidney stone disease. Each subject provided an early morning spot urine and a buccal cell cheek swab / blood sample.

Urinary composition was determined and total genomic DNA was isolated for genotyping of the AGT Pro11Leu polymorphism using the Polymerase Chain Reaction - Restriction Fragment Length method. Data was analysed using GENEPOP (version 4), the Pearson Chi-Squared Risk correlation and the Student's t-test in which $p \leq 0.05$, was regarded as significant. The

frequency distribution of the AGXT gene was approximately 82% for the major allele (C) and 18% for the minor allele (T) in both groups. Homozygosity for the major allele (C) Pro11 was the most common genotype in both black and white groups (65% and ~68%, respectively). Heterozygosity for the genotype (CT) was also similar between the two groups (33.3% in blacks and 28.3% in whites). In contrast, homozygosity for the minor allele (T) was rare in both groups (2% in blacks and 3% in whites). Both groups are in Hardy Weinberg Equilibrium (GENEPOP) and genetic differentiation between black and white groups was negligible.

Although statistical analysis identified some differences between the groups with respect to mean dietary intake and urine composition, these differences could not be correlated with the distributions of genotypes of the AGXT gene encoding the Pro11Leu polymorphism. In summary, data revealed that there are no significant differences in the frequency of the AGT Pro11Leu polymorphism in black and white South African male subjects who participated in the study. Given that the frequency of this genetic polymorphism is identical in both population groups, it is feasible to assume that other factors (physiological, environmental and physicochemical) may explain the large variation in stone incidence between the two groups.

Continued on page 8

TUBERCULOUS MENINGITIS AT GF JOOSTE HOSPITAL: PREVALENCE, PRESENTATION AND OUTCOME.

Researchers: Marais S, Schutz C, Meintjes G, Pepper DJ, Wilkinson RJ

The leading cause of morbidity and mortality in those with human immunodeficiency virus (HIV) in developing countries is tuberculosis (TB). Tuberculous meningitis (TBM) accounts for a substantial proportion of cases, particularly in high TB prevalence areas. Few studies have reported the influence of ART on the outcome of patients with HIV-associated TBM.

The objective of the study was to describe causes of meningitis in a high HIV/TB co-infection setting and, to determine predictors of mortality in patients with TBM. The study was a retrospective review of cerebrospinal fluid (CSF) findings and clinical records in all adult patients from GF Jooste Hospital, who had a lumbar puncture performed between March and August 2009. Definite, probable and possible TBM were diagnosed according to published case definitions. Of the 812 lumbar punctures performed in 698 patients, TBM was diagnosed in 120/211 (57%) patients with meningitis. Cryptococcal meningitis was diagnosed in 48 patients (23%). At six-month follow-up, 48% of all TBM patients had died and 10% were lost to follow-up. Factors associated with in-hospital mortality in patients with HIV-associated TBM were 1) low CD4+ count at presentation; every 50 cells/μL drop in CD4+ count was associated with a 40% increased chance of dying, and 2) British Medical Research Council TBM disease grade 2 or 3 versus 1. Those with grade 2 or 3 disease were 4.8 times more likely to die in hospital than those with grade 1 disease. Six-month mortality was reduced in patients who received antiretroviral therapy (ART) during TB treatment; hazard ratio=0.30 (95% CI=0.08-0.82).

The study concluded that advanced HIV and TBM disease are poor prognostic factors in patients presenting with HIV-associated TBM. Starting ART prior to or during TB treatment is associated with a survival benefit in severely immunosuppressed TBM patients.

KEY MESSAGE:
ART needs to be initiated early in patients with advanced HIV presenting with HIV-associated TBM in order to have better outcomes and to decrease mortality.

Retrospective observational study of hepatitis/cholestasis at GF Jooste Hospital: determining the contribution and outcomes of drug-induced liver injury related to TB medication and ART

The treatment of patients with tuberculosis (TB) and HIV has been scaled up in recent years. With this scale up, potential drug interactions in the medications used to treat TB and HIV arise. Drug induced liver injury (DILI) as a result of TB medication and antiretroviral therapy (ART) is increasingly becoming a common presentation at health care facilities. GF Jooste Hospital, a secondary hospital in the Cape Town Metro region, is a referral hospital that serves a population with a high burden of HIV and TB infections. Most patients in the GF Jooste referral area who develop drug induced liver injury while on treatment for TB and/or on ART in primary care clinics are referred to GF Jooste Hospital for assessment. The aim of the study was to assess the prevalence of DILI associated with TB medication, ART or both among patients diagnosed with hepatitis/cholestasis at the hospital and to determine their clinical outcome. A retrospective observational study was performed. Laboratory records were reviewed to find all patients who presented with hepatitis/cholestasis over a 6 month period (1 January - 30 June 2009). Hepatitis/cholestasis was defined as grade 3 or 4 elevations (Division of AIDS Adverse Events Grading Table) in alanine transferase (ALT) and/ bilirubin (BR) levels (ALT >200 U/L or a BR >44 micromol/L). The clinical records of all these patients were reviewed with a standard data extraction form. 355 patients presented with hepatitis/cholestasis over the 6 month period. 37(10%) were excluded from analysis due to incomplete clinical records or folders not found. In 72 cases (20%) the hepatitis/ cholestasis could be attributed to TB medication or ART. Amongst these 72 cases, 39 (54%) were on TB treatment alone, 12 (17%) were on ART alone and 21 (29%) were on TB treatment and ART concurrently. 31 (40%) were also known to receive co-trimoxazole. 60/72 (83%) were HIV infected, 9/72 (12.5%) were HIV negative and 2 (2%) had no documented HIV test. 19/72 (26%) died during admission. 47 (65%) were discharged after a median of 13 (Interquartile range 7-20) days in hospital and 6 (8%) absconded or were transferred to another facility. Of patients presenting with DILI to GF Jooste Hospital, a large proportion was as a result of TB medication and/or ART complications. These patients have high mortality and their duration of hospital admission is relatively long. Prospective studies are needed to define optimal management strategies that aim to reduce mortality and decrease duration of hospital admission.

South Africa's black and white subjects with respect to calcium oxalate kidney stone formation

However, it is possible that genetic factors other than this particular polymorphism might be responsible for the reported anomaly in stone incidences. Further studies involving larger cohorts of participants exploring other genetic markers are needed before the role of genetics in urolithiasis in the South African context can be resolved fully.

KEY POINTS

- The frequency of AGT Pro11Leu polymorphism was found to be the same between the two groups of black and white male volunteers.
- No correlation was found between Pro11Leu polymorphism and either daily nutrientintakesormeanspoturineparameters.
- This polymorphism does not seem to play a key role in explaining differences previously reported in stone formation incidences in the two groups.

WHAT DOES THE STUDY ADD?

- To the best of our knowledge, this is the first study that documents the AGT Pro11Leu polymorphism in South African populations. It shows that there is no difference among this sample of black and white participants and suggests that other genetic or non-genetic factors are responsible for the low incidence of kidney stone formation in the black population.

- The explanation for calcium oxalate stone rarity amongst blacks is likely to be extremely complex. Synergies of physiochemical, physiological, gastrointestinal, renal and other mechanisms are likely to be involved, which need to be explored further.

WHAT IS THE SCOPE FOR FURTHER RESEARCH?

Further studies are required for a greater understanding of stone rarity in the black group as opposed to its prevalence in the white group. For example, microarray analyses may provide further insights into the role of genetics in the paradox of stone incidences in the two ethnic groups.

WHAT POLICY AND SERVICE IMPLICATIONS ARISE FROM THE FINDINGS?

Continued from page 6

Identification of a genetic difference that may be contributing to lower incidence of stones in the black population or higher incidence of stones in the white population may help to generate new and improved treatment modalities for calcium oxalate kidney stone disease – for example, by directing gene therapy to replace defective genes in stone-formers and thereby reduce calcium oxalate stone formation. Although the study did not identify a genetic defect, it has provided a narrower focus for futuregeneticstudiesinvestigatingthisphenomenon.

Presentation to Scientific Community

A sub-set of this data (20 blacks, 20 whites) was presented at the 4th Medical Research Council (MRC) Research Day, Parow, Cape Town, 14-15 October 2010. After the addition of 40 subjects to each group, the final data set (120 subjects) was presented at the 1st Meeting of the European Association of Urology (EAU) Section of Urolithiasis (EULIS), London, 7-10 September 2011.

ACKNOWLEDGEMENTS

Prof C Danpure (University College London) and Prof A Trinchieri (Ospedale A. Manzoni, Lecco, Italy) for helpful discussions. South African Medical Research Council, National Research Foundation and University of Cape Town for financial assistance.

DIFFERENT MODELS OF PHARMACEUTICAL CARE IN SOUTH AFRICA: WHAT IS THE COST AND IMPACT ON PATIENTS' ACCESS TO ANTIRETROVIRAL THERAPY?

Researcher: Foster, N (Health Economics Unit, School of Public Health & Family Medicine, University of Cape Town, South Africa)
e-mail: Nicola.Foster@uct.ac.za

Given the large number of patients who need antiretroviral treatment (ART) in South Africa, it is necessary to decentralize ART services and integrate them into the primary health care system. This will require pharmacy services to be scaled-up, including pharmaceutical supply systems, infrastructure and staff to dispense ART. At the same time, it is important to ensure that the pharmaceutical service is safe and efficient. All of this must be achieved within the context of a scarcity of health care professionals.

Task-shifting has been shown to be an effective and safe way of addressing the problem of insufficient professional staff. Task-shifting refers to the delegation of tasks from highly skilled workers to those with either less training or narrowly tailored training. In South Africa, the shortage of pharmacists in the public sector has led to the use of Pharmacists Assistants (PA) and nurses to support the expansion of the ART programme. The objective of the research was to evaluate two different task-shifting models of providing pharmaceutical care, namely, Indirectly Supervised Pharmacist Assistant (ISPA) model and the nurses' model compared to the pharmacist model (the current standard of care). The costs and impact on access to ART services for patients of each model were compared. The infrastructure costs of introducing the ISPA model were also calculated, to assist in planning for accessible ART services.The study was conducted in a peri-urban district in the Western Cape Province of South Africa, where all three models of pharmaceutical care exist. Six health facilities were sampled; two facilities were selected for each of the three models of pharmaceutical care. A total of 224 patient exit interviews were conducted to explore patients' access to ART services. Staff time spent on pharmacy-related tasks was observed. Information on staff salaries was obtained to calculate the cost of staff time for each model. The main difference in cost between the pharmaceutical care models relates to staff costs; the cost of diagnostic and monitoring tests and medication are the same across models. For this reason, the focus was on comparing staff costs across the three models. The results showed that the annual staff cost per patient treated was lowest for the pharmacist model (R395.07) compared to the ISPA model (R480.72) and the nurses model (R775.16). This is mainly because there were fewer visits by each patient per year in this model. The average number of visits per patient per year was 7.78 for the pharmacist model, 10.74 for the ISPA model and 9.78 for the nurses model. The pharmacist services have been running for longer, patents were more stable on treatment and were therefore receiving their medication every two months rather than monthly. Given the scarcity of pharmacists in the public health sector, the many demands on nurses and the lower cost of the ISPA model, although not the cheapest, appears to be the most feasible option for scaling-up ART services. However, implementing the ISPA model requires the development of a dispensary registered with the South African Pharmacy Council. Smaller primary health care clinics often only have a medicine room, designed for the bulk storage of patient-ready packs. The medicine room is often not big enough to support the dispensing of products directly to patients. To upgrade an existing infrastructure would cost approximately R89,543.05. The different aspects of access to health care, namely Availability, Affordability and Acceptability were also evaluated. More patients lived within walking distance of the facilities where ART was dispensed by ISPAs (95%) and nurses (87%) than those attending pharmacist model facilities (28%). In spite of the greater geographic accessibility of the facilities where dispensing is undertaken by ISPAs and nurses, patients attending these facilities did not always receive their ARTs. This was because of difficulties in drug supply management from more central facilities, or a lack of doctors to renew prescriptions. Patients who were employed forfeited an average of approximately R100 per day in missed wages. These costs were multiplied when patients had to return to collect ARTs due to the unavailability of medicines on the first visit.

In spite of the challenges regarding medicine availability in the ISPA model and the nurse-based model, the majority of patients indicated that they would prefer to receive medication from the nurse as opposed to at the pharmacy. While this was partly due to patients feeling that waiting times would be shorter if they received medication from the nurse, the most common reason for preferring nurse-based dispensing was that their HIV-positive status would remain confidential. Respondents at one of the ISPA facilities explained that different coloured folders were used for patients in the ART program than those used for the patients accessing other services at that facility. Furthermore, respondents were concerned that their status would become known when people saw which medication was being dispensed to them at the pharmacy window. There are insufficient pharmacists working in public sector facilities to dispense ART to all patients needing treatment. Pharmacists assistants dispensing under indirect supervision is a less expensive option than nurses dispensing pre-packaged medication, however issues of patient confidentiality should be addressed before scaling up this intervention.

FETAL ALCOHOL SYNDROME PREVENTION IN SOUTH AFRICA: A TRIAL OF THE IOM MODEL

Researchers: Marais AS, Parry C, (Medical Research Council, South Africa)

Foetal Alcohol Syndrome (FAS) and its related disorders, Partial FAS (PFAS) and Alcohol-Related Neurodevelopmental deficits (ARND) are the most common preventable causes of intellectual disability worldwide. This is especially true in the Western Cape Province of South Africa where prevalence rates of FAS in school entrants have been reported as amongst the highest in the world. Foetal Alcohol Spectrum Disorders (FASD) are characterised by unique facial features, growth retardation, behavioural difficulties, and developmental delays caused by pre-natal exposure to alcohol.

The research described here was conducted as part of a comprehensive 5-year prevention project funded by the US National Institute on Alcohol Abuse & Alcoholism involving researchers from the Universities of New Mexico, Stellenbosch and Cape Town and the Medical Research Council. It is intended to point the way to further prevention programmes and studies that can be instituted locally and elsewhere.

THE STUDY INCLUDED SEVERAL COMPONENTS:

1. In-school screening of grade one learners for the diagnosis of FAS/FASD and to characterize the specific neurocognitive and emotional behaviours of the affected children;
2. A community survey of public health knowledge and practices related to FASD from drinking to child bearing experience;
3. Antenatal screening and interventions;
4. Newborn screening and assessment of child health and wellness; and
5. Various community prevention activities. The study is being done in two areas: Wellington, and the Bonnievale, Robertson, Ashton and Montagu (BRAM) area of the Langeberg region.

Research activities are still ongoing in the study communities. To date, three of the five years of research have been conducted. Preliminary findings are reported here.

IN SCHOOL SCREENING STUDIES AND NEURO PSYCHOLOGICAL TESTING

Screening was initiated amongst Grade 1 learners in all urban and rural schools in Wellington (in 2008 and again in 2010), and also in BRAM (in 2009 and 2011). In Wellington, 1663 children were included in the study. In BRAM, a total of 3319 children were included in the study. Preliminary prevalence figures suggest a prevalence of FAS in Wellington of between 61 and 94 per 1000 (6% to 9%) and in the BRAM area of between 94 and 130 per 1000 (9% to 13%). All mothers of children in the study were interviewed for maternal risk factors for FASD and other developmental disabilities, such as prenatal drinking, smoking and drug use, nutrition, HIV/AIDS and knowledge of FASD. All children in the study also received cognitive and behavioural testing. Results for the first two waves confirm that children with FASD performed significantly worse than non-alcohol-exposed peers on tests of verbal and non-verbal cognition and demonstrated more classroom behavioural difficulties, particularly those related to attention and concentration.

COMMUNITY SURVEYS

Community surveys were conducted in the two study areas, Wellington and BRAM, between 2008 and 2010 to assess drinking behaviour, to guide interventions and to serve as a baseline for assessing the impact of various interventions at population level. Forty-six percent of the females in BRAM and 75% of the males in BRAM reported drinking in the past year, with over a third of female drinkers (38% in BRAM and 34% in Wellington) and between a half and three-quarters of male drinkers

(52% in Wellington and 75% in BRAM) drinking at hazardous or harmful levels. Three-quarters or more of respondents did not think that alcohol should be made more easily available in the province, and over two-thirds indicated that it was equally harmful for a woman to drink during any of the trimesters of pregnancy. In other words, they understood correctly that damage from drinking can occur at any time during gestation.

INTERVENTIONS AMONG HIGH-RISK PREGNANT WOMEN

Drawing on the US Institute of Medicine model for FAS prevention, case management, motivational interviewing, and community reinforcement approach techniques were used by the team to make the prospect of a sober lifestyle more rewarding than the use of substances. Women at high-risk for having a child with FASD were recruited from antenatal clinics in Wellington and seen once a month for support by a study project officer. If warranted, individuals were provided with nutritional supplements until delivery or three months after delivery. Formal interviews were held at baseline, 6, 12, and 18 months. The results indicated that the case management method had merits in helping women abstain from or reduce their alcohol intake during pregnancy. The intervention resulted in a reduction in the total number of drinks consumed by most women during the different trimesters of their pregnancy. While it is not possible to attribute causality solely to our intervention, after 6 and 12 months, 30% the women had stopped drinking, increasing to 40% at 18 months.

NEWBORN SCREENING

The purpose of the screening is to improve on the ability to identify children with FASD at earlier ages. Thus far, 1036 children have been involved in this diagnostic programme. Each of these children received a full physical examination and specialised developmental testing at 6 weeks, 9 months and 18 months. Newborn screening may eventually lead to targeted developmental education and special programmes for enhancing development and maximizing each child's abilities to the fullest potential. The rate of FASD in the Western Cape is very high. Although the problem is immense and widespread, it can be remedied by social change and health campaigns that aims to educate the public, especially women at high risk, about alcohol and pregnancy.

KEY POINTS

- Prevalence of FAS was high in the communities studied
- Interventions helped reduce the number of women using alcohol
- More specific findings, indicating what strategies to use for different groups will follow from later analysis.

WHAT DOES THE STUDY ADD?

This study has showed that the case management approach for women at high risk for prenatal drinking and intervention in the antenatal clinics may help reduce the incidence of FAS by reducing the percentage of women consuming alcohol. Substantial progress has been made in diagnosing children with FASD in the first 18 months of life.

WHAT POLICY AND SERVICE IMPLICATIONS ARISE FROM THE FINDINGS?

- The burden of FAS in the population remains consistently high.
- Case management and motivational interviewing may be promising interventions for integrating in service to prevent FAS.
- Identifying screening tools valid amongst younger children may help to improve routine case detection of children with FASD attending baby clinics in future.

A QUALITATIVE EXPLORATION OF HIV-POSITIVE WOMEN'S DECISIONS AND EXPERIENCES REGARDING ABORTION IN CAPE TOWN,

Researchers: Orner P, Harries J and Cooper D (University of Cape Town, South Africa), de Bruyn, M (Ipas, USA)

The problem: There has been little attention to the problem of unwanted pregnancy and abortion in the context of HIV, especially in countries in sub-Saharan Africa, where the majority of women living with HIV reside. At the same time, unwanted pregnancies, which are already a serious problem in the general population in South Africa (about 53% of pregnancies reported as either unplanned (36%) or unwanted (17%)) is exacerbated by very high rates of HIV infection in South Africa. While some women living with HIV may want to become pregnant, earlier research suggests that women and men living with HIV in South Africa do not have enough information about abortion options as a way of dealing with unwanted pregnancies.

This study was conducted by researchers from the Women's Health Research Unit at the University of Cape Town (UCT) and Ipas (USA) and explored HIV-positive women's decisions concerning abortion. It was a qualitative study that investigated factors influencing their decision-making; their knowledge of abortion policy and public health abortion services; and their abortion experiences. In-depth interviews were held with 24 women living with HIV (15 had an abortion; 9 did not), recruited at public health facilities in Cape Town, South Africa.

The study found that the reasons most of the women wanted abortions were due to socio-economic hardships, in conjunction with HIV-positive status. Participants in the study were generally aware that women in South Africa had a right to free abortions in public health facilities. Both positive and negative abortion experiences were described.

No discrimination by abortion providers due to participants' HIV-positive status was reported by participants. Most participants reported not using contraceptives, while often describing their pregnancies as 'unexpected'. The majority of women who had abortions wanted to avoid another one, and would encourage other women living with HIV to try to avoid abortion. Nevertheless, most felt abortions were acceptable for women living with HIV in some circumstances.

In conclusion, interrelated factors such as stigma and discrimination affect women living with

HIV's decisions around pregnancy and abortion. Moreover, abortion may be more stigmatised than HIV/AIDS.

Study results highlight a need to develop a clear policy statement explaining that women are by law allowed to have more than one abortion in the public health sector. As many of the abortion experiences of women living with HIV are similar to that of the general population, it is important to address their negative experiences and obstacles in accessing abortion services for the betterment of all women's sexual and reproductive health care.

There is also an urgent need to integrate information and counselling on the dangers of "back-street" abortions and the option of safe legal abortion within the broader integration of sexual

EVIDENCE-BASED PRACTICE IN THE OCCUPATIONAL THERAPY PROFESSION IN SOUTH AFRICA AND THE WESTERN CAPE

Researcher: Buchanan H, (Dept. of Health & Rehabilitation Sciences, University of Cape Town, South Africa).

There has been an increasing drive for health professionals to use research as a basis for their decision-making since the emergence of evidence-based practice (EBP) in the early nineties. South African occupational therapists have been slow in following the international practice of drawing on research in decision making.

The country has largely relied on studies done in developed countries. However, as a middle-income country, South Africa (SA) faces complex health challenges, and it cannot be assumed that knowledge generated in developed countries is applicable to this context. This study was undertaken to improve on the services offered by occupational therapists and to ensure that their work has a strong research foundation and backing.

The aim of the study was to determine occupational therapists' knowledge, attitudes and behavior related to EBP, to develop interventions to train occupational therapists in EBP, and to determine the most effective educational strategy for changing the knowledge, attitudes and behavior of occupational therapists with regard to EBP. A cross-sectional study was used. A sample of 436 occupational therapists were randomly selected from all those registered with the Health Professions Council of SA (HPCSA) in January 2004 (N=2723). A questionnaire to measure demographics, concepts and perceptions of EBP, use of EBP in clinical decision-making and EBP training, was mailed to all those included in the study sample.

A 30% response rate (129/436) was obtained. Most (99%) had positive perceptions about EBP but poor confidence in EBP skills. Of the 84 respondents (68% of the sample) who gave reasons for their lack of confidence, 31% indicated limited knowledge and skills. Respondents reported limited success finding (46%) and applying evidence (36%) and relied on their clinical experience (87%) rather than research (40%). Over 70% had heard about EBP but few (25%) had received training. Despite the high proportion with computer (98%) and internet (92%) access, few (22%) had used the internet to access research information. The most popular choices for future EBP training were workshops (82%), short in-service training sessions (80%) and brief summaries of evidence (76%). Few (44%) wanted to learn the skills

to search for and appraise research for themselves. The study showed that South African occupational therapists appeared to have similar constraints in implementing EBP as found in other countries. The urgent need for additional EBP training was highlighted and particular aspects to be included in training sessions were identified. In conclusion, the study showed that most occupational therapists had heard about EBP and revealed positive attitudes towards it. However, there were low levels of use of EBP and few training opportunities. There is thus an urgent need for additional EBP training.

KEY MESSAGE

This study shows low levels of EBP use and of confidence in using EBP amongst occupational therapists and indicates that the time is opportune for introducing initiatives to promote EBP among occupational therapists in SA.

WHAT DOES THE STUDY ADD?

This is the first study of occupational therapy awareness and practice regarding EBP in SA. The findings confirm those from studies done in Australia, Canada, the United Kingdom and the United States, showing that while contextual differences may exist across upper-income and middle-income countries, the problems encountered in implementing EBP are essentially the same.

MONITORING THE EXTENT AND IMPACT OF METHAMPHETAMINE-RELATED PRESENTATIONS AT PSYCHIATRIC HOSPITALS IN CAPE TOWN

Researchers: Plüddemann A, Dada S, Parry C, Kader R, Parker J, De Clercq C, (Alcohol & Drug Abuse Research Unit, Medical Research Council, Tygerberg, South Africa).

Routine surveillance has shown a sharp increase in treatment and admissions related to methamphetamine ('Tik') use in substance abuse treatment centres in Cape Town. There have, however, not been studies to look at the extent and impact of this increase on local psychiatric services. This study was undertaken to investigate the extent of the burden of tik-related admissions on psychiatric services in Cape Town and its impact on existing health (and social) services.

The study was conducted at Stikland, Lentegeur, Valkenberg, GF Jooste and Karl Bremner hospitals and in selected wards at Tygerberg and Groote Schuur Hospital. Files of all patients seen in these facilities between 01 July 2008 and 31 December 2008 with a tik-related diagnosis were reviewed and coded using a standardized data collection form. Of the 235 patients, 69% were males, 82% Coloured, 66% unemployed and 9% single parents. The ages of patients ranged from 15 to 54 years and most (42%) were in the 20-24 age group. In terms of symptoms that patients presented with at psychiatric services, the majority presented with aggressive behaviour (74%) followed by delusions (59%) and then hallucinations (57%).

Forty percent of the patients reported that they had sleeping problems, 52% had paranoid thoughts and 39% had disordered thoughts. The majority of patients presented with multiple symptoms. Up to 64% of patients reported that they had received treatment before, usually for substance-induced psychotic disorder (26%) or schizoaffective disorder (6%).

Alcohol, dagga, crack, tik, mandrax were the primary substances of abuse reported by the patients. Tik was the most common primary substance of abuse in 59% of admissions, followed by dagga (32%). Patients whose primary substance of abuse was tik or heroin (average age 24 years) were, on average, younger than the other patients (e.g. cannabis: 26 years). About a third (34%) used substances 2-6 days per week. Of the tik users, dagga (72%), mandrax (26%) and alcohol (22%) were other substances of use.

The most common diagnosis was a substance-induced psychotic disorder (41%), followed by Schizophrenic disorders (31%) and bipolar mood disorder (12%). Few patients (7%) reported that they only used one substance of abuse compared to 12% who abused two or more substances (poly-substance abuse). Amphetamine (or amphetamine-like) induced psychotic disorders were diagnosed in 5% of the patients. In terms of Axis II (Personality Disorders), the largest group of patients were 'deferred' (49%); Less common diagnoses were antisocial personal traits (5%), cluster B personality traits (3%), borderline to moderate intellectual disability (2%) and histrionic and schizoid traits (<1%).

Patients also reported having conflicts at home with parents, relatives and family in general (9%). Family problems included having family members who also abused substances or who had a history of mental illness and multiple disabilities, a lack of social support, living on the streets or poor conditions, living in communities with gangs and neighbourhoods that sell drugs.

CONCLUSION

This study has highlighted that the majority of patients presenting at the psychiatric hospitals with tik-related diagnoses tend to be aggressive and violent, and may need particular care and supervision. The demand for psychiatric intervention related to tik use is thus likely to be far greater than can be measured by admissions to existing psychiatric (and even generalist substance abuse) services. There are major challenges to provide the necessary training and support to deal with the challenges these patients pose, further training and treatment protocol development and distribution is indicated.

KEY MESSAGE:

The increase in patients presenting with tik related diagnosis presents many challenges to the health services for which novel approaches are needed to address this problem.

WHAT DOES THIS STUDY ADD?

It is the first study to attempt to assess the extent and nature of tik related presentation in Cape Town. The findings highlight the burden that tik-related psychiatric problems, particularly tik induced psychosis, place on psychiatric services in Cape Town.

WHAT POLICY OR PROGRAMMATIC IMPLICATIONS ARISE FROM THIS STUDY?

The study shows that we need to: Strengthen psychiatric treatment services dealing with patients presenting with tik-induced psychosis through appropriate training. Develop and roll out treatment protocols for dealing with tik-induced psychosis. Ensure treatment protocols address the issue of co-morbidity (the simultaneous presence of substance abuse and other psychiatric conditions).

QUESTIONS FROM THE FIELD

This column is a new innovation proposed as a way of bringing to the attention of the research community key operational or health systems challenges facing the health services for which contributions by the research community may be critical to helping identify solutions. Each newsletter will highlight one or two such issues with the purpose of seeding ideas which researchers may want to take up further or to which they may want to respond - through sharing their research findings, or developing proposals for research. While there is no funding necessarily attached to these calls, the support of the services on topics identified as important by the services may be as important to levering funding for research needed. The Research sub-directorate of the Health Impact Assessment Directorate in the Western Cape Government Health will help to facilitate this communication (see contact details in this newsletter). We hope these forms of communication will help to build a stronger relationship between the research community and the health services, as well as ensuring a more rapid uptake of relevant research findings into health system interventions.

RESEARCH FOR IMPLEMENTATION: FINDING A BETTER WAY TO IMPROVE TB TREATMENT ADHERENCE

TB continues to be a major contributor to the Burden of Disease in the Western Cape, fuelled by the high rates of HIV infection in parts of the province. Efforts to control the spread of TB rely heavily on reducing the infectious pool of TB patients through identification, case-holding and treatment to cure. Use of DOTS and increasing efforts to integrate TB and HIV services are seen as key to the success of our TB control methods.

However, despite high reported rates of treatment completion, drug resistance continues to increase in the province with rising rates of MDR and XDR TB posing huge challenges to the services. Discussion within the Provincial TB Task Team confirmed concerns of managers, researchers and providers that one of the major drivers of drug resistance is treatment interruption or non-adherence. Yet, despite a number of studies investigating the reasons for poor adherence, we know little about the relative contribution to poor adherence by health systems factors versus patient factors; moreover, there is little understanding of what factors are more important in different patient settings, nor what specific interventions should be undertaken by the services to improve adherence and outcomes.

The Western Cape Government Health Impact Assessment invites the research community to help the services take up this challenge using research to tackle this problem in a comprehensive way. The services need evidence upon which to base interventions. We need to go beyond bemoaning the problems, which we know too well, and identify what can be done about them.

Researchers wanting to contribute can contact the HIA directorate (details elsewhere in the newsletter) or Mrs Marlene Poolman, Deputy Director: TB Control at phone 021- 483 5431; fax:021- 483 6033; Mobile: 082 959 2999 or e-mail: mpoolman@pgwc.gov.za

UPCOMING EVENTS

- **THE 2011 PHASA CONFERENCE**

The theme of the 2011 PHASA conference is: "Closing the health equity gap: Public health leadership, education and practice". Web link: www.phasaconference.org.za

- **UNITED NATIONS CLIMATE CHANGE CONFERENCE**

November 2011 Web link: http://unfccc.int/meetings/durban_nov_2011/meeting/6245.php

• *For all research related documents please visit our website at: www.westerncape.gov.za/eng/pubs/public_info/H/213781.*

The editors would like to thank all the researchers for use of their abstracts in the newsletter. Email healthres@pgwc.gov.za with questions, comments or suggestions.

TALKING POINT

The New York Times ran a story based on research presented earlier this year and published in the Lancet in October which raised questions about the safety of injectable contraceptives such as Depo Provera, and, by implication, whether we should be changing our contraceptive policy in South Africa.

The article reported on a cohort study which followed up 3790 heterosexual HIV-1-serodiscordant couples participating in two longitudinal studies of HIV-1 incidence in seven African countries. The researchers, led from the University of Washington but including a team involving Botswana, Kenya, Rwanda, South Africa, Tanzania, Uganda and Zambia, found that the risk for HIV infection was approximately doubled, both for male-to-female and female-to-male transmission.

Given that injectables are the mainstay of contraceptives for women in South Africa, the findings posed (as the New York Times article suggested) "an alarming quandary for women in Africa." Given high rates of maternal mortality and morbidity, access to safe contraception is key to meeting the Millenium Development Goals and protecting women's health. However, if injectable contraceptives increase risks for HIV infection, we are in a double bind. As the article put it, this finding 'is particularly troubling' and may be the basis for "a major health crisis on our hands."

But before rushing to change our policies, how do we, in South Africa, make sense of this kind of finding?

Those arguing for increased concern point to the fact that at least two other rigorous studies have found that injectable contraceptives appear to increase the risk of women acquiring HIV, and that this recent Lancet study was able to track transmission to both men and women because it included sero-discordant couples.

However, it is important to recognise that the scientific evidence is actually very mixed - the studies that show positive associations get a great deal of media attention, whereas those where no associations were found (and there are as many of these studies) and generally overlooked. This is a very common problem in the translation of research findings into policy – a kind of 'publication bias.'

Secondly, the studies that have been conducted have all been limited by their observational research design – meaning, they have inherent limitations in how they are designed which should make one very cautious about taking their findings as 'the truth.'

In particular, the major confounder in the study was condom use - people using hormonal contraception would be less likely to use condoms for contraceptive use, so their rates of condom use would inevitably be lower than women not using hormonal contraception. The researchers measured condom use on history in order to control for confounding, but getting accurate information on condom use is very difficult. This leads to a problem called a 'residual confounding' effect - where condom use (as measured) is adjusted for in statistical analysis (a multivariate model), but the true confounding effect is not fully removed. The fact that similar positive findings have been reported regarding the use of progestin-only and combined oestrogen-progestin methods, when they have different physiologic effects, suggest that it may be bias rather than biological plausibility explaining this finding.

It is only really with Randomised Controlled Trials that one can begin to address these design problems.

And, of course, if policy is changed as a result of this trial, the removal of injectable contraceptives will have enormous impacts on contraceptive coverage and pose challenges to finding a replacement agent, all with sizeable risk/benefit consequences to be weighed up.

Nonetheless, there is sufficient concern that the World Health Organization is to convene a meeting in January to consider the evidence and to decide whether there are sufficient grounds to advise women that injectable contraceptive methods may increase their risk of HIV infection.

As framed by Mary Gaffield, an epidemiologist in the WHO's department of reproductive health and research, any action needs to be based on 'a real need to warn' but which, at the same time, does not rush to 'a hasty judgment that would have far-reaching severe consequences for the sexual and reproductive health of women.'

So, one study does not make a summer - Watch this space...

[The original article was published as Heffron et al, Use of hormonal contraceptives and risk of HIV-1 transmission: a prospective cohort study. Lancet online October 4, 2011 DOI:10.1016/S1473-

Please forward your comments and suggestions to Vivien Appiah-Baiden at vappiahb@pgwc.gov.za