



Research Briefs

Health

HIV – not the only chronic virus plaguing South Africans

It is often forgotten that hepatitis B viral (HBV) infection is pandemic in sub-Saharan Africa, making co-infection with the similarly pandemic HIV infection common and serious, as the double burden makes special treatment and management necessary. Simnikiwe Mayaphi, of the University of Pretoria and the National Health Laboratory Service, and colleagues conducted a detailed and controlled study of the serological characteristics of HBV in HIV-infected subjects. They found that HBV infection is much more common in HIV-infected persons than in HIV-negative controls (with a prevalence of 10% versus 3%); is correlated with the degree of immune deficiency, so is more common when CD4 counts are low; and is itself aggravated by low CD4 counts, leading to decreased virus-directed antibody levels. HBV infection thus joins tuberculosis as a highly prevalent and clinically significant complication of HIV infection, with serious public health implications.

South African Medical Journal 2012;102(3):157–162.

Limnology

South African aquatic ecosystems need pesticide risk assessment programme

Public concern has recently escalated over pesticide contamination of South African aquatic ecosystems. A review of this phenomenon by TM Ansara-Ross, from the University of Johannesburg, and colleagues has revealed that fewer than 50 South African studies of selected common pesticides have been undertaken to date. The most studied pesticides are the organochlorines, several of which display widespread persistence on account of extensive historical usage. Few studies have established linkages between pesticides, pathways, environmental concentrations and the monitoring of toxicological effects on non-target organisms. Emphasis is now being placed on developing more field-relevant assessments, including microcosm and mesocosm studies, *in situ* bioassays and field studies. Because data on the extent of exposure and effects of pesticides in South African aquatic environments are scarce, future research should focus on multidisciplinary approaches that increase effective decision-making. A South African aquatic ecosystem pesticide risk assessment programme needs to be implemented.

African Journal of Aquatic Science 2012;37(1):1–16.

Labour Law

Does affirmative action have a limited lifespan?

Muriel Mushariwa of the University of the Witwatersrand has entered into the debate on whether affirmative action has a lifespan in South African employment law, with reference to a judgement in which it was held that once an employer reaches specific employment equity targets, further affirmative action is not required. The questions Mushariwa raises are whether it is possible to realise a workplace within which affirmative action is no longer required; and if so, how will we know we have created such a workplace? She acknowledges that the goal of substantive equality within the setting of affirmative action is to remove both the visible and invisible barriers to employment equity. So the question that arises is how to determine when these barriers have been recognised and addressed appropriately? The answer is that as the effectiveness and fairness of employment equity is seen in its application, in practice its 'reality' is usually seen in whether or not designated employers meet their targets. The judgement under discussion relates to Professor Reynhardt, a White male, who unsuccessfully sought re-appointment for a second term as Dean of the Faculty of Science at the University of South Africa (UNISA). A Coloured male was appointed as his successor. The Labour Court ruled that Reynhardt's termination constituted unfair discrimination because the UNISA employment equity plan provided that once equitable representation had been achieved (UNISA required a goal of 70% Black representation), then the principle of 'the most suitable candidate' should have applied in the filling of vacancies.

Mushariwa argues that as affirmative action is a means to an end, it is justified by its consequences – in this case the achievement of equality. The need for affirmative action will end when past imbalances are rectified, but how will it be possible to identify the point in time when equity has been achieved? In cases where specific targets have been set, the end points are clear-cut, although the question then arises as to whether the targets should remain, and if so, for how long? She concludes that ultimately the goal of

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affirmative action must be seen as to break down both the visible and invisible barriers to achieving equality within the workforce and, in so doing, to create an environment where the constitutional values of equality, human dignity and freedom are truly recognised and protected.

Potchefstroom Electronic Law Journal 2012;15:411–428.

HIV

News from the front in South Africa's 'war' on HIV infection

South Africa adopted an ambitious but necessary national strategic plan to address its huge burden of HIV infection during 2007–2011, which aimed to achieve new antiretroviral treatment (ART) enrolment numbers equal to 80% of the number of newly eligible individuals in each year by 2011. Leigh Johnson from the University of Cape Town analysed the performance of the plan using data on ART collected from public and private providers and estimates of HIV incidence rates obtained from independent demographic projection models. These data were entered into a model that estimates rates of progression through stages of lowered CD4 counts in untreated people, and a number of best-possible assumptions for the system were made. The number of persons receiving ART in South Africa has increased from the appallingly low 2004 level of 47 500 to nearly 1.8 million, of whom over 60% are women over 15 years old and less than 10% are children. A majority (85%) were treated in the public sector, of whom nearly 60% reside in Gauteng and Kwazulu-Natal. Overall adult ART coverage at the ART eligibility criterion of CD4 <200/ μ L was 80% – but only 50% at the newly set eligibility criterion of CD4 <350/ μ L. The number of adults starting ART in 2010–2011 turned out to be well over the original target, with higher targets reached for women than for men or children. The scale and success of the plan is impressive by any standard, but much remains to be done.

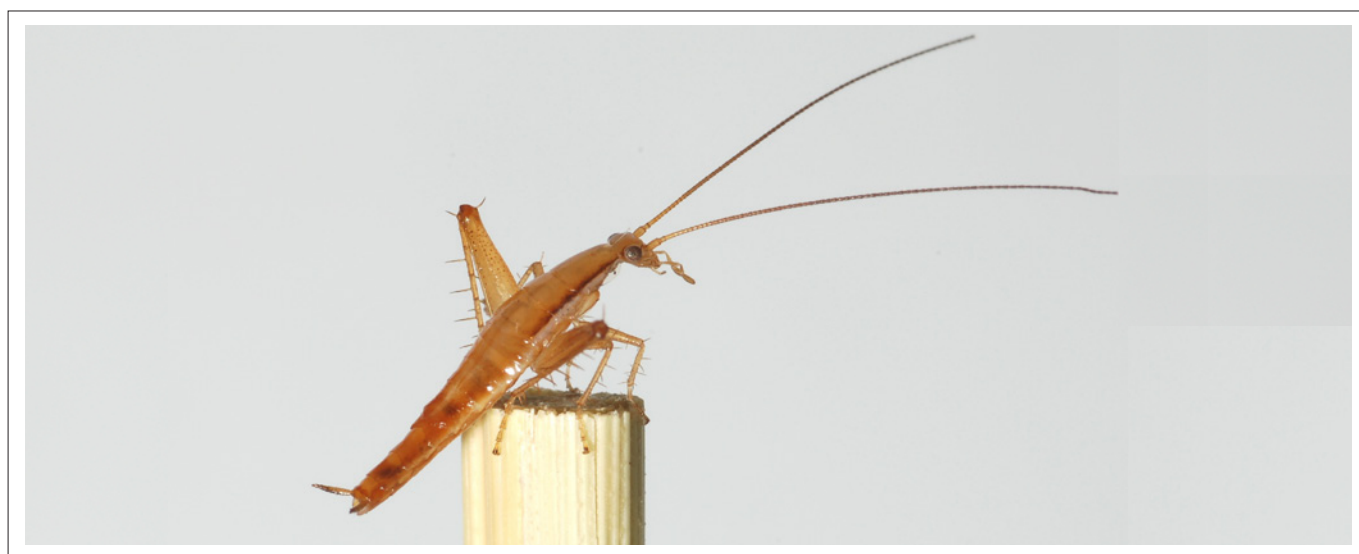
Southern African Journal of HIV Medicine 2012;13:22–26.

Evolution

Newly discovered cockroach displays record-breaking jumping

The world's only known jumping cockroach (*Saltoblattella montistabularis*) was recently discovered in Table Mountain National Park by Mike Picker from the University of Cape Town and colleagues. Dubbed 'leaproach', the new species demonstrates remarkable convergent evolution in body design with grasshoppers, for jumping locomotion. Both employ elongated, muscle-packed hindlegs for jumping, although the leaproach easily outperforms the locust, managing forward jumps of nearly 50x its body length (35 cm). Its unique bulging hemispherical eyes most likely assist it in making accurate landings. Muscle contraction occurs in advance of take-off, generating more energy than can be produced by the contraction of striated muscle. This adaptation indicates that the energy might be stored in a 'deformed' cuticle, which is thickened in the femorotibial joint area. The presence of resilin in this area might be related to restoring the shape of the deformed joint cuticle after jumping. The primary function of this shift from scuttling to jumping locomotion is likely to have been an adaptation for efficient movement within a vertically stratified grassland habitat.

Biology Letters 2012; in press. doi:10.1098/rsbl.2011.1022.



Male *Saltoblattella montistabularis*, the first known jumping cockroach, flexing tibia in preparation for takeoff (photo: Mike Picker).