



Foreword:

The concept behind this newsletter is that anyone with 15 minutes to spare can learn about the work of SATuRN.

In this second issue of our newsletter we have included interesting news, blogs, reports, tweets, publications and training information produced by our network.

We hope you enjoy it and find it informative. We welcome any feedback about content or format.

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bioafrica.net/saturn

Highlights:

17th Rural Health Conference, Saint Lucia, 8-10 August 2013

Practical Course on Quality Assurance of HIV-1 Drug Resistance Interpretation in Sequence Editing and Data Management Processes, Johannesburg, 22- 26 April 2013

The Mississippi baby – questions on a ‘functional’ cure

Extensively drug-resistant tuberculosis in South Africa: are we now dealing with untreatable strains?

Transferring knowledge and skills to frontline medical personnel fighting the HIV & TB epidemics in rural South Africa

HIV & TB Drug Resistance & Clinical Management Case Book

Brief: Blogs and news on our work



Blog: The search for a new TB vaccine - a step forward or backward?

Author: Richard Lessells – 2013-02-22

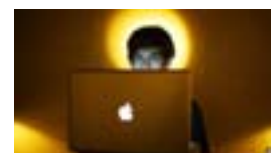
“A phase IIb trial using the MVA85A vaccine as a boost to BCG vaccination demonstrates acceptable safety but fails to show any protective effect against TB infection or disease in HIV-uninfected children.”

Link: <http://www.bioafrica.net/blogs.php?id=21>

Blog: Internet Freedom Activist Commit Suicide due to Criminal Charges for Distributing Academic Publications. We Increase the Open Distribution of our Publications

Author: Tulio de Oliveira – 2013-01-15

“This is a very sad blog, which cover the recent suicide of Aaron Swartz. Aaron was a very bright 24-year-old Internet freedom activist that has developed some of the most popular collaborative websites (i.e. RSS and REDDIT).”



Link: <http://www.bioafrica.net/blogs.php?id=20>



News: Two Science papers showing that antiretroviral therapy increases life expectancy and reduces transmission

Science – 2013-03-22

“South Africa, 22 February 2013 - Today, colleagues from the Wellcome Trust Africa Centre for Health and Population Studies have published two breakthrough scientific manuscripts at Science.”

Link: <http://www.bioafrica.net/news.php?id=60>

News: Practical Course on Quality Assurance of HIV-1 Drug Resistance Interpretation in Sequence Editing and Data Management Processes

ACILT– 2013-01-16

“The African Centre for Integrated Laboratory Training (ACILT) present the HIV-1 drug resistance practical course, 22-26 April, Johannesburg, South Africa.”



Links: <http://www.bioafrica.net/news.php?id=55>



News: University of Pretoria and partners launch a book

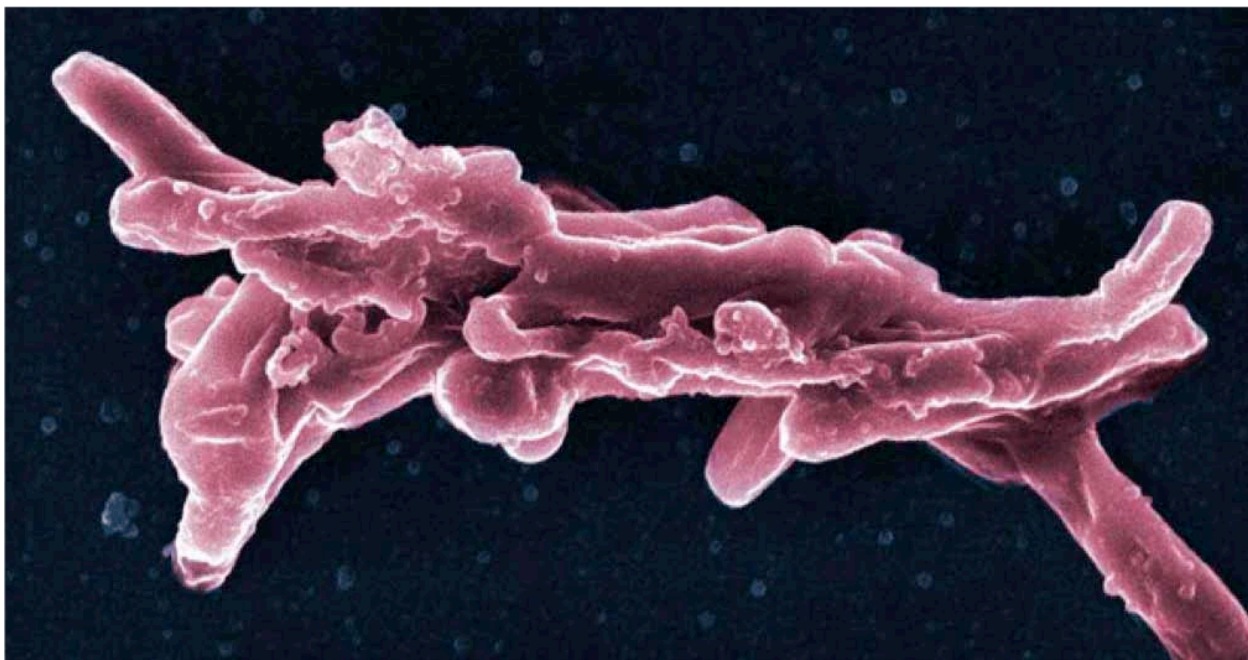
University of Pretoria – 2013-03-19

“By Sanku Tsunke, Pretoria, 19 March 2013. Drug resistance is one of the main challenges confronting HIV and TB programmes in Africa. Facing these challenges requires an understanding of how drug resistance develops, as well as up-to-date knowledge of how to diagnose and manage drug resistance in HIV and TB patients.”

Link: <http://www.bioafrica.net/news.php?id=66>

Blog: Extensively drug-resistant tuberculosis in South Africa: are we now dealing with untreatable strains?

Researchers find evidence that virtually untreatable strains of tuberculosis have become established and are circulating in the Eastern Cape Province of South Africa.



When reports of 'totally drug-resistant' tuberculosis from India hit the news about a year ago (see another blog on bioafrica.net), there was acknowledgement that similarly-resistant *Mycobacterium tuberculosis* strains had probably become established elsewhere.

This was particularly so in South Africa, where efforts to control multidrug-resistant TB (MDR) and extensively drug-resistant TB (XDR-TB) have been characterized by poor treatment outcomes. Now researchers from Stellenbosch University have used molecular techniques to provide strong evidence not only that such strains can be detected in the Eastern Cape Province but also that transmission of these strains has been occurring.

The study by Marisa Klopper and colleagues, published in *Emerging Infectious Diseases*, reports analysis of 651 *M. tuberculosis* strains isolated from sputum cultures between July 2008 and July 2009 at the main provincial TB laboratory.

Of the 342 strains that were resistant to rifampicin and isoniazid (MDR-TB) on routine testing, molecular analysis showed that 60% had pre-XDR-TB or XDR-TB (i.e. mutations conferring resistance to either or both a second-line injectable and fluoroquinolone). Increasing drug resistance was associated with one particular genotype of *M. tuberculosis* (atypical Beijing strain).

Of the 103 atypical Beijing XDR-TB strains, the vast majority (95%) had evidence on genotypic testing of resistance to all the drugs tested: isoniazid (*katG* and *inhA* gene), rifampicin (*rpoB*), ethambutol (*embB*), pyrazinamide (*pncA*), streptomycin (*rrs500*), amikacin (*rrs1400*), kanamycin (*rrs1400*), capreomycin (*rrs1400*), ethionamide (*inhA*) and ofloxacin (*gyrA*).

This is an edited version of the blog
Blog's Author: **Richard Lessells**

Link: <http://www.bioafrica.net/blogs.php?id=22>

Blog: The Mississippi baby – questions on a ‘functional’ cure



Blog's Authors: Dr Gillian Hunt, Dr Nono Mkhize and Prof Mark Cotton

Link: <http://www.bioafrica.net/blogs.php?id=24>

Further reading: <http://www.iavireport.org/Pages/default.aspx>

A late breaker at CROI 2013 by Persaud *et al.* (<http://www.retroconference.org/2013b/Abstracts/47897.htm>) documented a case where early ART may have prevented the establishment of a latent reservoir in an HIV-infected child and achieved a functional cure. A functional cure is different from a complete cure in that while the virus is not eliminated, it is kept under control in the absence of therapy and does not impact on patient well-being.

In this case, the mother was diagnosed with HIV in labour. At the time, her viral load was very low (2423 copies/ml) and CD4 count was high (644 cells/ml), suggesting a low viral inoculum to the baby. The child was initiated on an AZT/3TC/NVP (NVP at full dose, without the 2 week ‘lead-in’) regimen on second day of life following 2 separate positive HIV DNA and RNA tests (VL 19,812copies/ml). Three additional viral loads at day 7, 12 and 20 were positive. LPV/r was substituted for NVP from day 7 until discontinuation of therapy by the caregiver at 18 months. When the infant returned to care 8 months later, the HIV RNA was undetectable and remained so (<20 copies/ml) on 16 different measurements between 1 - 26 months despite discontinuation of treatment, and CD4% levels remained normal throughout. Using standard clinical assays, plasma viral load, PBMC DNA, and HIV-specific antibodies remained undetected following return to care. Using ultrasensitive methods, a single copy of HIV RNA was detected in plasma and 37 copies HIV DNA/million peripheral blood mononuclear cells (PBMC) were detected at age 24 months.

At age 26 months HIV DNA was detected at 4 copies/million PBMC but with no 2-LTR circles. Follow-up of the child will continue to see if virus is once again detected in the child's blood.

Similar reports of functional cures have been reported following cessation of therapy in adults identified shortly after infection (<http://www.nhs.uk/news/2013/03March/Pages/Early-treatment-may-hold-key-to-HIV-functional-cure.aspx>). Whilst these cases provide exciting insights into mechanisms of viral control, they remain isolated incidents and should not be regarded as the norm. At this stage, early initiation of ART should not be a reason to discontinue ART without expert consultation and outside of a structured trial. It is essential that pregnant women receive appropriate ART for pMTCT.

Further investigations and studies are critical to establish if aggressive and early treatment with ART may hold the key to functional cure (Sáez-Cirión *et al*, *PLoS Pathog* 9(3): e1003211) and whether this can be translated into a treatment strategy. The case of the Mississippi baby, however, makes a compelling case for undertaking a diagnostic PCR in babies on day one of life or as soon as possible where pMTCT has been sub-optimal or non-existent, as in utero transmission (which is linked to rapid disease progression and death in young infants) is possible (Lillian *et al*, *J Clin Microbiol* 2012; 50: 2373-7). Here, early ART may be crucial.

Report: Transferring knowledge and skills to frontline medical personnel fighting the HIV & TB epidemics in rural South Africa



A very successful workshop and book launch was hosted at the Ghost Mountain Inn, Mkuze, on the 7th and 8th of March 2013. In total, 52 clinicians, senior nurses and pharmacists attended from the five district hospitals within the uMkhanyakude District of northern KwaZulu-Natal. Also present were HIV and TB specialists from Africa Centre, CAPRISA, King Edward Hospital at UKZN, and Botswana. The event was organized in order to facilitate the discussion of common clinical management challenges related to the management of HIV and TB drug resistance and treatment failure within a rural district with a huge dual burden of HIV and TB.

Amongst the top challenges of the HIV & TB epidemics are issues related to patient adherence to their antiretroviral and anti-TB drug regimens and the absence of reliable tools to measure adherence.

Dr Hervey Vaughan-Williams, District Family Physician at the uMkhanyakude Health District Office, said *'I think it was a great success on a number of levels, not least the number of District staff attracted to attend... Gatherings such as these are valuable both for District staff education and bonding between institutions, which is invaluable in times of stress or crisis, as well as enriching the working environment.'*

One of the main aims of the workshop and the book was to create awareness and understanding of the issues related to the management of HIV and TB drug resistance, given the increasingly complex case mix facing frontline health care workers in South Africa with the rapid scale-up of antiretroviral therapy and the ongoing epidemic of drug-resistant TB.

Link: <http://www.bioafrica.net/report.php?id=19>

Book: HIV & TB Drug Resistance & Clinical Management Case Book



Publication date: March 2013

Publisher: SA MRC

Authors: T Rossouw, R Lessells, T de Oliveira

ISBN: 978-1-920014-91-9

PREFACE: *“At a time of multiple calamities in the world, we cannot allow the loss of essential medicines, essential cures for many millions of people, to become the next global crisis”* (Margaret Chan, Director-General of the World Health Organization, Address to the 64th World Health Assembly, April 2011)

The twin epidemics of HIV and TB continue to cause untold damage to individuals, families and communities in sub-Saharan Africa. The massive scale up of antiretroviral therapy (ART) in this region has begun to reverse some of the trends in morbidity and mortality caused by these twin epidemics. Drug resistance appears as an inevitable consequence of the widespread use of antimicrobial agents. The past two decades has seen the emergence of drug-resistant strains of *Mycobacterium tuberculosis* which threaten basic TB control. Resistance to antiretroviral drugs is now also an escalating threat in this region as we end the first decade of ART roll-out in Africa with over five million people receiving ART.

In order to confront this challenge we need to learn how to prevent and manage drug resistance, both at an individual and at a programmatic level. The aim of this book is to equip health care workers with the knowledge and skills to diagnose and manage cases of drug-resistant HIV and TB but also to learn how drug resistance might be prevented.

The book is equally suited to learning on your own or learning within a group – the cases could, for example, be used as teaching material for Nurse Initiation and Management of ART (NIM- ART) nurses at your clinic or hospital. The cases are also available online (www.bioafrica.net/saturn) – new cases will be added regularly to the online site and updated information about existing cases will also be added. We aim to compile a second edition of this book in the future as more cases are added to the website.

It has been a great pleasure putting together this book and we hope that you also enjoy the experience of reading and learning from the material. We ask that readers send us any feedback and comments so that we can improve the book in future editions. You can send your comments to us using our email addresses. The complete book is freely accessible online at Google Books and on the SATuRN website.

Link: <http://www.bioafrica.net/cases.php>

Event: SATuRN will have a session at the 17th Rural Health Conference



CALL FOR ABSTRACTS

The 17th Annual Rural Health Conference will be held in St. Lucia, KwaZulu-Natal from 8 – 10 August 2013.

We invite the submission of Abstracts for oral papers, poster presentation and workshops for the conference.

ABSTRACT SUBMISSION DEADLINE 30 April 2013

Abstracts submitted should not exceed 300 words in Word format, in either Time New Roman or Arial font size 12.

Abstracts should be submitted to abstracts@rudasa.org.za



SATuRN's partners featured publications!



HIV & TB Drug Resistance & Clinical Management Case Book

Rossouw T, Lessells RJ, de Oliveira T, South African Medical Research Council Press, ISBN 978-1-920014-91-9 (2013)



RegaDB: Community-driven data management and analysis for infectious diseases

Libin P, Beheydt G, Deforche K, Imbrechts S, Ferreira F, Van Laethem K, Theys K, Carvalho AP, Cavaco Silva J, Lapadula G, Torti P, Assel M, Wesner S, Snoeck J, Ruelle J, De Bel A, Lacor P, De Munter P, Van Wijngaerden E, Zazzi M, Kaiser R, Ayoub A, Peeters M, de Oliveira T, Alcantara L, Grossman Z, Sloot P, Otelea D, Paraschiv S, Boucher C, Camacho R, and Vandamme AM. Bioinformatics in press (2013)



Development and evaluation of an affordable real-time qualitative assay for determining HIV-1 virological failure in plasma and dried blood spots

C Aitken S, Kliphuis A, Bronze M, Wallis CL, Kityo C, Balinda S, Stevens WS, Spieker N, de Oliveira T, Rinke de Wit TF and Schuurman R on behalf of the ART-A consortium. JID in press (2013)

Training course title, location and date

- | | |
|----------|--|
| Apr 2013 | Practical Course on Quality Assurance of HIV-1 Drug Resistance Interpretation in Sequence Editing and Data Management Processes. Johannesburg South Africa, 22 to 26 April 2013 |
| Jun 2013 | 6th SA AIDS Conference, ICC, Durban, South Africa, 18 to 21 June 2013 |
| Aug 2013 | 17th Annual Rural Health Conference, St Lucia, KZN, South Africa, 8 to 10 August 2013. |

For more information on how to participate in SATuRN activities please contact:

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