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HIV, TB and malaria: Is the end in sight?

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The history of sub-Saharan Africa has been defined and determined to a large extent by the struggle against tropical diseases, many of them vector borne, including malaria, leishmaniasis, trypanosomiasis and many others. The way in which these diseases have shaped our history has been covered by many including Jared Diamond in his seminal work Guns, Germs and Steel. To add to this burden our continent has now to deal with the ravages of HIV and the consequent rise in tuberculosis. In this issue of the SACEMA Quarterly we discuss some of the key problems and ways in which we might be able to address and mitigate some of the challenges that we face in this regard.

UNAIDS has announced an ambitious plan to end AIDS by 2030. The precise definition of the 'End of AIDS' varies but reducing the number of new cases, that is to say the incidence of HIV, to less than 1 case per 1,000 adults per year provides a good working definition. To achieve this end will not be easy but if we are to succeed we need to know how well we are doing and if we have reached the target when we get to the year 2030. The problem is that the measurement of incidence is never easy. The most direct way is to recruit several thousand HIV-negative people, representative of the overall population, find them and test them again for HIV after about one year and see how many have been infected. What would be much better would be a test that tells us if a person has been infected in the last one year or so. This would give us an immediate estimate of the incidence of HIV and avoid the lengthy, difficult and expensive task of keeping track of many thousands of people. The good news is that there has been substantial progress in this regard through the development of recent infection assays. The bad news is that even the best assays suffer from a low specificity; that is to say a significant proportion of people appear to be recent infections even though they have been infected for a long time. These are the so-called 'false recent infections'. Here Goneze discusses the issue of false recent infections in relation to three candidate assays; if this problem can be overcome we should have a much better way of estimating HIV incidence and monitoring progress in the control of the epidemic.

HIV/AIDS is not just a biomedical problem; it is also a major social problem involving stigma and discrimination. It is in part a result of, and contributes to, the breakdown of family life resulting in turn from the pervasive system of 'oscillating migration' itself legacy of Apartheid in South Africa. So dealing with HIV will depend in part on developing a cadre of community health workers to provide help, support and advice to those affected by HIV, ensuring that they receive ART drugs and the best available care. This too is not straightforward and Thompson discusses the role that community health workers can play in helping to manage HIV but reminds us that they too face enormous challenges and have often experienced both personal and sexual trauma in their own lives and they too need a great deal of care and support if they are to function effectively. It would be as well to note that one of the greatest challenges that we face in South Africa is youth unemployment; by training, supporting and paying community health workers we could help to address the problem of unemployment while stimulating the economies of poor and marginalized communities.

The incidence of HIV is particularly high among young women who are especially vulnerable to infection for social as well as for physiological reasons. In South Africa at sexual debut often happens when they are still very young and in many cases is coercive. Understanding the underlying social drivers of this is important and I this issue Rashmika reports on a detailed and extensive investigation into the determinants of sexual debut in women in order to find develop strategies and action plans that will help adolescent girls to make informed and safe decisions in this regard.

The TB mantra has, for many years, been passive case finding with directly observed, short course chemotherapy also known as DOTS. While DOTS has had limited success in some places, the advent of HIV has overwhelmed our efforts at control. The increasing number of people on ART in South Africa has led to a substantial drop in TB notification rates but ways still need to be found to further reduce the transmission of TB. In 1965 Prof. Tony Davies, a close associate of SACEMA, argued in his Master's Thesis at the London School of Hygiene and Tropical Medicine that TB is an inherently relapsing disease and everyone who is treated for TB should be actively followed up for life. He had considerable success in bringing down TB rates in Rhodesia, now Zimbabwe, and scientists working with SACEMA are currently exploring the potential of active case follow-up for controlling this ancient disease.

Two authors discuss malaria. Malaria cannot spread unless either mosquitoes or people carry it with

them. While a great deal of attention has been paid to the environmental determinants of the spread and distribution of mosquitoes, much less attention has been paid to the movement of people. This is taken up by Marshall who shows how women travelling with children in Africa are an important group that can enhance the spread of malaria transmission with important implications for the spread of the parasites. On a much smaller scale malaria depends critically on the ability of the parasites to invade red blood cells and then to burst out into the plasma from where another mosquito can ingest them. Maynard presents a mathematical model that provides insights into the nature and course of this process and could eventually lead to better ways of stopping transmission.

While much progress has been made with regards to each of these critical conditions, HIV, TB and malaria much still needs to be done and SACEMA will surely be at the centre of these important studies.

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