DOTS a double-edged sword in TB management

Hoek *et al*.[1] underscore the problematic role of directly observed treatment, short-course (DOTS) as currently practised in the development of tuberculosis (TB) drug resistance in South Africa. In terms of the current SA National TB Control Programme guideline, DOTS is initiated on newly diagnosed TB based on sputum smear microscopy and/or culture. The patient is put on four first-line drugs: isoniazid (INH), rifampicin (RIF), pyrazinamide (PZA) and ethambutol (EMB), for a specified period until sputum conversion, treatment failure or relapse intervenes. This treatment is initiated without prior drug sensitivity testing (DST), and is predicated on the assumption that all newly diagnosed cases are susceptible to these first-line drugs.

However, there is good evidence that in the South African setting many new TB cases arise from infection with multidrug-resistant organisms (MDR-TB) and are therefore already resistant to INH and RIF. The resulting under-treatment with the only two effective drugs in the regimen – PZA and EMB – sets the stage for developing resistance to both these drugs. If, as usually happens, PZA and ETH are subsequently included in the second-line regimen to manage first-line failures or MDR-TB, the chances of developing further resistance to the other second-line drugs such as streptomycin (SM) are greatly magnified. As a consequence of this line of management, the resulting MDR-TB is liable to include resistance to PZA and EMB as well as SM. The bottom line is that although EMB and PZA may be included in the treatment of MDR-TB, neither one should be counted as one of the four effective drugs in the second-line regimen, not least because resistance to PZA and EMB is difficult to detect on routine cultures. South African guidelines are being revised accordingly.

The ICT Malaria Pf card test is reliable for use in primary care settings

Moonasar *et al*.[2] conducted a field evaluation in Limpopo province to determine the accuracy of the malaria rapid diagnostic test (MRDT) in use in the province's public sector clinics and hospitals. Specifically, they sought to test the diagnostic efficacy of the ICT Malaria Pf card test, manufactured in Australia and widely used in South Africa. The test works by detecting the target antigen in the blood of the patient, known as 'histidine-rich protein II', which is found only in the *Plasmodium falciparum* mosquito. To determine the specificity and sensitivity of the test, they compared its results with those of blood smear microscopy, considered to be the diagnostic gold standard for malaria. The ICT Malaria Pf card test was found to be a highly effective diagnostic tool, with a sensitivity of 99.48% and a specificity of 96.26%, and amply meets the criteria set by the World Health Organization.

Snakebite antivenom can cause severe adverse effects

We publish this prospective study by Wood, Webb and DeMeyer[3] on the management of severe snakebites in northern KwaZulu-Natal as evidence of the high quality of care that can be achieved by dedicated practitioners in outlying non-academic settings, and as a demonstration of how meticulous documentation in these settings can add up to useful research. This study presents the snakebite management experience at Ngwelezane Hospital, located in largely rural north-western KZN, and provides a useful model of how this condition can best be managed in resource-constrained locations. KZN and Mpumalanga have the highest incidence of snakebites in South Africa, at 24 - 34 victims per 100 000 people. The most commonly reported serious cases result from envenomation by the Mozambique spitting cobra and the puff adder. Less than 10% of snakes in southern Africa are poisonous, and these include the Egyptian cobra, black and green mamba, boomslang and vine snake.

Snakebite complications include rapid progressive swelling, compartment syndrome, haematological disorder (thrombocytopenia) and neurotoxicity. The administration of polyvalent antivenom is indicated in the event of progressive complications. But it should be kept in mind that the antivenom can also provoke adverse reactions ranging from an allergic reaction (pruritus, urticaria) to anaphylactic shock (hypotension, bronchospasm). Antihistamine, hydrocortisone and adrenaline are often administered beforehand as prophylaxis based on theoretical considerations rather than empirically proven effectiveness. Antivenom is dosed the same for children as for adults, based on the type of snakebite and the amount of venom injected. It is administered intravenously over 10 minutes in diluted form, and titrated against progression in the clinical condition. Snakebite treatment may eventually include fasciotomy or amputation for deteriorating compartment syndrome.

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3. Wood D, Webb C, DeMeyer J. Severe snakebites in northern KwaZulu-Natal: Treatment modalities and outcomes. *S Afr Med J* 2009; 99: 814-818.