

had painted an alarming picture to the Parliamentary Portfolio Committee on Health of dysfunctional funding of tertiary institutions and, more importantly, the paucity of medical clinical research in this country; this remained fresh in my mind. Secondly, having reported on some exemplary application of the Lung Institute's research in the field, I decided that its 10th anniversary was worthy of coverage, given the context of which I'd recently become aware. The Institute's achievements speak for themselves. While the long-distance runner metaphor may have sounded 'enthusiastic', the facts made it a readily available journalistic tool to convey the message in an entertaining way. As for being 'distasteful', that's a matter of opinion and goes to a debate that Professor Klein has raised – which my article did not speak to. Lastly, and perhaps pertinently for the record (given the literary enthusiasm I displayed), a disclaimer was printed at the bottom of the article stating that I am in no way related to Professor Bateman. Professor Klein puts an entirely different set of issues on the table, and if my article 'raises many questions', that is in keeping with my job.

**Professor S R Benatar, Acting Chair, on behalf of the University of Cape Town Lung Institute directors, replies:** In response to Max Klein's uninformed criticisms and questions about the Lung Institute based on a news report, we begin by recommending that he read the 10-year formal report of the Lung Institute's activities (<http://www.lunginstitute.co.za>).

As part of the extended Faculty of Health Sciences platform for teaching, learning and research, its mission is to serve the University of Cape Town, the Faculty of Health Sciences and the community. Its widely acknowledged significant contributions to all the above have earned its researchers many honours over the past decade.

Apart from its legal status, the Institute is no different from a large research grouping within an academic department. Its academic staff, whose work in the Institute is supported by their research income, have formal faculty appointments and contribute to teaching (all levels) within their departments. Several postgraduate students undertake projects in the Institute towards master's and doctoral degrees, funded by the Institute and supervised by Institute academic staff.

Although the Institute does not directly earn state subsidy, publications by its members with UCT appointments draw subsidy for UCT, as in any university department. In addition to retaining and benefiting from the very considerable outputs of highly motivated staff, without having to provide the overheads ordinarily required for a large research grouping, numerous collaborations with other university departments have generated successful joint grant applications, and support for postgraduates.

The Institute strikingly provides a platform for a wide range of socially responsive and public service activities. Senior Institute staff deliver regular unpaid clinical and consultation services in the Division of Pulmonology, the Department of Critical Care at Groote Schuur Hospital and Brooklyn and Brewelkskloof TB hospitals, and at primary care clinics in the Western Cape.

Notable academic outputs include studies of the burden of lung diseases in South Africa, the testing of new drugs, diagnostics and vaccines for tuberculosis, and a reference allergy service. In the field of knowledge translation, an innovative, integrated practice manual for chronic and infectious diseases for use in primary care clinics has been developed, and is being adopted and rolled out in South Africa as well as in Malawi and Kenya. The Knowledge Translation Unit has trained more than 800 nurse trainers and more than 13 000 primary care nurses in the use of this integrated care guideline.

While an initial and welcome pharma donation received by UCT provided for constructing the building, we refute any misconception

that the Institute is entirely dependent on the pharmaceutical industry. We acknowledge the challenges facing most academic institutions worldwide in their relations with industry, but the Institute's 10-year report provides evidence for the success of our endeavours to become increasingly independent from such support. For several years, income from grants and non-pharmaceutical sources has exceeded income received from research contracts with the pharmaceutical industry. The governing Board of Directors with a finance committee appointed by the directors oversees all aspects of Institute activities, ensuring that funds obtained through research contracts with pharma are raised and utilised transparently, with full accountability and in keeping with university policy.

### Origin of recurrent *Plasmodium vivax* malaria – a new theory

**To the Editor:** The phenomenon of long-term relapse is familiar to many persons who have contracted malaria, and to their doctors. Attacks of *Plasmodium vivax* malaria (so-called benign tertian malaria) in particular can occur after symptomatic illness has been absent in the patient for months or years. Recurrent clinical *P. vivax* manifestations have been thought to originate from a dormant liver form, the discovery of which<sup>1</sup> has become recognised as a classic landmark in the history of parasitology and tropical medicine. I correctly predicted the existence of the stage concerned (extrapolating from my rodent-associated research while a PhD student at Imperial College London) and coined the term 'hypnozoite' for it.<sup>2</sup> For the past three decades, medical students worldwide have been taught that hypnozoites give rise to malarial relapse. However, new findings indicate that there might well be a second cause of recurrent *P. vivax* malaria.

Parasites responsible for recurrence of benign tertian malaria are frequently genotypically different (determined by molecular techniques) from those that gave rise to the initial symptomatic bout of disease. In other cases, parasites are genetically similar.<sup>3,4</sup> The genotypes of sporozoites in inocula that are injected into the skin by mosquitoes are known to be diverse. Assuming that hypnozoites are directly sporozoite-derived (which they appear to be<sup>5</sup>), and that re-infection of any given patient has not taken place, the former (heterologous parasite) situation is therefore perfectly compatible with the hypnozoite concept of relapse.

I now suggest that there is a possible non-hypnozoite basis for the other (i.e. homologous parasite) phenomenon in at least some instances. Rodent malarial stages that might become latent for extended periods have recently been detected in splenic dendritic cells. These parasites are able to infect erythrocytes, and similar forms could be responsible for clinical human malaria that follows splenectomy for splenic trauma.<sup>6</sup> Plasmodial stages like those in rodents will obviously now be searched for in dendritic cells from human spleens. I speculate that such forms or other merozoites may also be the source of recurrent *P. vivax* episodes which are conventionally always ascribed to homologous hypnozoite activation. If a recurrent clinical *P. vivax* attack can indeed be the result of renewed asexual reproduction of merozoites following a period of dormancy, as I hypothesise, then this would explain why parasites isolated from peripheral blood samples in recurrent malaria have sometimes proved to be genetically similar to those that were responsible for the primary clinical infection.

It is easier to appreciate the feasibility of this straightforward explanation than to imagine what the mechanistic basis of a homologous hypnozoite relapse postulation for renewed parasitaemia might be. The latter nevertheless remains a possibility. However, why some sporozoites of a particular genotype would multiply in the liver

early in the infection, whereas others that are genetically homologous would form hypnozoites, is a great malariological mystery! How frequently are these two different paths followed concomitantly by genotypically homologous sporozoites? Or does this never, in fact, happen after all?

**Miles B Markus**

*University of the Witwatersrand  
Johannesburg  
medsynth@yahoo.co.uk*

1. Krotoski WA, Collins WE, Bray RS, et al. Demonstration of hypnozoites in sporozoite-transmitted *Plasmodium vivax* infection. *Am J Trop Med Hyg* 1982;31:1291-1293.
2. Markus MB. Malaria: origin of the term hypnozoite. *J Hist Biol* (in press). <http://dx.doi.org/10.1007/s10739-010-9239-3> (accessed 24 August 2011).
3. Chen N, Auliff A, Rieckmann K, Gattton M, Cheng Q. Relapses of *Plasmodium vivax* infection result from clonal hypnozoites activated at predetermined intervals. *J Infect Dis* 2007;195:934-941.
4. Imwong M, Snounou G, Pukrittayakamee S, et al. Relapses of *Plasmodium vivax* infection usually result from activation of heterogeneous hypnozoites. *J Infect Dis* 2007;195:927-933.
5. Markus MB. The hypnozoite concept, with particular reference to malaria. *Parasitol Res* 2011;108:247-252.
6. Wykes MN, Kay JG, Manderson A, et al. Rodent blood-stage *Plasmodium* survive in dendritic cells that infect naive mice. *Proc Natl Acad Sci USA* 2011;108:11205-11210.

## Infant mental health needs a model of service delivery

**To the Editor:** The United Nations Convention on the Rights of the Child holds governments responsible for ensuring children's right to the highest attainable standard of health by providing breastfeeding support, access to nutritious food, appropriate health care and clean drinking water.<sup>1</sup> If universally implemented, these would lower infant morbidity and mortality substantially. However, this guideline is directed only towards the physical needs of children and neglects their psychosocial and mental health.

The association between malnutrition, infant growth failure and significant long-term adverse psychosocial outcomes in children is well established.<sup>2</sup> Health policies should be comprehensive, include the psychological wellbeing of the child, and improve the social status of women.

Years ago the Western Cape Department of Health established primary health facilities to identify, assess and render basic services. Significant progress has been made. However, while the importance of early mental health intervention for children suffering from malnutrition may be acknowledged, there is little awareness of the importance of the attachment relationship between the young child and the caregiver.

Pathology in the attachment relationship can manifest in various ways, and health care personnel must identify these to enable appropriate and early interventions. The best outcome is ensured when the physical wellbeing of the child is coupled with the psychosocial needs. To succeed in this huge and essential task, a model for service delivery must be developed that incorporates awareness and knowledge of the importance of the caregiving environment. This should be structured, goal-directed, and integrated within the existing infant and young child community health services.<sup>3</sup>

The concept of infant mental health is generally not well known, particularly in communities. In the Western Cape there is one designated infant mental health service at primary level, which has a child psychiatrist and a community counsellor.

At an academic and educational level there are also considerable gaps. The University of Cape Town and the Department of Health of the Western Cape offer 1-hour training and supervision in infant and child mental health in the primary nurse education programmes. Medical students from both medical faculties in the Western Cape receive 2 hours in lectures and clinical tuition in this regard.

Registrars in general psychiatry receive one seminar on infant mental health during their 4-year training period. Paediatric registrars are not formally taught or rotate through child psychiatry, despite the fact that paediatricians provide health care for young children.

Can this situation be improved with the available resources and training facilities? How can improved infant mental health be achieved? Primary health must be infused with infant mental health practices.<sup>4</sup> All stakeholders, provincial health departments, nurse education and pre- and post-grade medical and psychology students' programmes should be engaged.

The primary objective of the model should be adequate delivery of infant mental health services at community level, and if needed select interventions to address concomitant major risk factors. It should train health care workers in assessing and treating at-risk infants and toddlers 0 - 3 years of age. Primary health care nurses are trained mainly in the clinical assessment of physical health, development, and management of childhood illnesses. However, they also must recognise early signs of psychosocial pathology of infants and the developmental wellbeing which is integral to health care. The same programmes can be used for doctors, especially for trainee paediatricians, as both serve the needs of children. Standard tuition models are available to achieve this, but are not taught in any medical or provincial course. The programme should also be available for other professionals in infant mental health and infant-parent psychotherapy.

National and international basic training curricula and protocols have been developed. The provincial and university health departments must be helped to develop and implement policies. If successful, this holds great promise for service and education and will have a lasting effect on the mental health of infants and children.

**Astrid Berg**

*UCT Parent-Infant Mental Health Service  
Red Cross War Memorial Children's Hospital  
Cape Town  
zimi@iafrica.com*

1. <http://www2.ohchr.org/english/law/crc.htm>
2. Walker SP, Wachs TD, Gardner JM, et al. Child development: risk factors for adverse outcomes in developing countries. *Lancet* 2007;369:145-157.
3. Liebermann AF. Infant mental health: A model for service delivery. *J Clin Child Psychol* 1985;14:196-201.
4. Graham MA, White BA, Clarke CC, Adams S. Infusing infant mental health practices into front-line caregiving. *Inf Young Children* 2001;14:14-23.

## Non-emergency patient transport – an integral part of accessible comprehensive health care

**To the Editor:** The Western Cape province operates a fleet of 73 vehicles specifically designed and dedicated to transport non-emergency patients within the provincial health care system. Its population of close to 5 million is spread over an area of 130 000 km<sup>2</sup>, with 70% of the population located in the Cape Town metropole.

To provide equitable access to the full range of health services from clinics in the rural districts to central hospitals located in the metropole is a challenge being successfully addressed by Health Non-Emergency Transport (HealthNET). The service operates on different levels congruent with patients requiring non-emergency transport, as opposed to emergency care provided by the Ambulance Service.

Within the metropole and districts the daily service operates specifically for patients who for medical reasons cannot make use of public transport to attend special clinics such as tuberculosis and HIV services and specialist outpatient clinics at regional and central