Letter to the Editors

"Absolute" or "added" predictive value?

Dear Sirs,

In the October edition of *TM&IH*, Keiser *et al.* (2009) state 'The positive predictive value of the WHO immunological criteria for virological failure of antiretroviral treatment in resource-limited settings is poor, but the negative predictive value is high. Immunological criteria are more appropriate for ruling out than for ruling in virological failure in resource-limited settings.'

increases from 98.3% to 98.5%, an increase of a mere 0.2%. This is clearly a negligible gain, invalidating the statement that '(CD4 criteria) are more appropriate for ruling out'. When pre-test probability almost equals post-test probability, a test is of no value (Table 1).

Notwithstanding this critique, we think this study is invaluable, in confirming that (i) CD4 count, contrary to our former beliefs and worldwide efforts of providing testing, has little place in evaluating treatment failure or success; (ii) we are in need of affordable, point of care tests

Table I Diagnostic gain, measured as increasing and decreasing post-test probability, of WHO CD4 criteria, for failure of antiretroviral treatment, with >10 000 copies on two measurements as reference test

	Treatment failure					Diagnostic gain
WHO criteria+	6		57	Post-test probability of failure	9.4%	7.7%
	17.1	2.9				
	82.9	97.1				
WHO criteria−	29		1917	Post-test probability of no failure	98.5%	0.2%
	35		1974			
Pre-test probability (prevalence) of failure	1.7%	Pre-test probability of no failure	98.3%			

This is a classical example of misuse of predictive values. Although the authors admit in the discussion that '… the negative predictive values were high not because the immunological criteria were a powerful test, but because only few patients developed virological failure', they conclude that these criteria are (more) appropriate for ruling out.

What is important in validating predictors is the added value they offer compared to pre-test probability. In this study, the 'prevalence' of treatment failure is 1.7%, the 'prevalence' of success is 98.3%. With the WHO criteria CD4 results (compared to >10,000 copies on two measurements as reference test), the probability of success

for viral load; and (iii) clinical guidelines should be validated before publishing.

O. Koole and J. Van den Ende
ITG, Antwerpen, Belgium
E-mail: jvdende@itg.be

Reference

Keiser O, MacPhail P, Boulle A *et al.* (2009) Accuracy of WHO CD4 cell count criteria for virological failure of antiretroviral therapy. *Tropical Medicine and International Health* **14**, 1220–1225.

Authors' response: the importance of asking the right question

Dear Sirs,

We thank Drs Koole and Van den Ende for their comment on our recent study (Keiser *et al.* 2009). We analysed more

than 2000 patients from antiretroviral treatment programmes in Africa and South America that routinely monitor both CD4 cell counts and viral load. We concluded that based on a low positive predictive value of the World Health Organization (WHO) immunological