Cardio Calculus

HAART or heart disease? Plug your numbers into this fancy formula, grind a crank, and the answer flies out all over the chalkboard.

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Their eyes didn't actually shoot out of their sockets on springs -- *boinggg!!!* -- but there was a certain cartoonishness in how the audience snapped to attention when Swiss epidemiologist Matthias Egger, MD, presented his mathematical baby at the 2nd International Workshop on Adverse Drug Reactions and Lipodystrophy in HIV in Toronto last September. Oddly, Egger's formula for comparing the likely benefits of HAART (Number Needed to Treat to Benefit, or NNTb) with the potential risk for cardiac disease (Number Needed to Treat to Harm, or NNTh) would have elicited little more than a yawn from public health experts for whom the comparison is second nature, but to HIV researchers it was an eye-opener.

At a time when many HIVers are weighing the risk of HAART-caused heart disease against the consequences of delaying -- or stopping -- combo therapy, this calculation could offer a rational basis for making the heart-stopping big decision. Plus, it might help tell you not only *when* to start treatment but, where cardiac effects are known, *which* drugs to use. Comparing U.S. research on the pre-HAART risk of disease progression with Swiss data on the rate among HAARTers, the Eggerhead first showed that the pills produce an 86 percent reduction in AIDS progression among those with high viral loads (greater than 110,000) and low CD4 counts (under 200), but only a 2 percent reduction among those with low viral loads (3,000-14,000) and higher CD4 counts (200-350). To put some fat on these stats, he then calculated the number of HIVers who would need to be treated for one additional person to benefit. For those with advanced HIV, the ability of HAART to slow disease progression is so great that the NNTb was only one or two people, but for those with better counts, it was 50.

The good Egger then cracked the NNTh code. By adding Australian data on the cardiac risk factors that lipodystrophy sufferers face (increased total cholesterol or triglycerides, decreased HDL cholesterol, high blood pressure, insulin resistance or diabetes) to other risk factors (age, gender, smoking), he showed that for some HIVers, the potential for harm from HAART may outweigh its good. A no-brainer example: An aging two-pack-a-dayer, say, with a 3,000 viral load and 450 CD4s. But with seemingly endless combos of risk factors for both HIV and cardiac disease progression, a plug-in-your-info formula to weigh NNTb vs. NNTh could be as handy as an egg-timer. The magic formula for HIVers is still in the works, but at www.hbroussais.fr/Scientific/fram.eng.html you can calculate your cardio risk (a command of French helps).

Egger’s brainchild, together with other findings from studies reported here from the lipo workshop and the major-league Interscience Conference on Antimicrobials and Chemotherapy that followed, mark a great leap from past years’ woolly theorizing to tools that may help you take heart about taking HAART (or not).

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