

These data have been presented by Prof Y. Lévy at the AIDS Vaccine, 2010.

Title: Optimal priming of poxvirus vector (NYVAC)-based HIV vaccine regimens requires 3 DNA injections. Results of the EV03/ANRS Vac20 Phase I/II Trial.

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Background. Two or three DNA primes have been used in previous smaller clinical trials, but the number required for optimal priming of viral vectors has never been assessed in adequately powered clinical trials. The EV03/ANRS Vac20 phase I/II trial investigated this issue using the DNA prime/poxvirus NYVAC boost combination, both expressing a common HIV-1 clade C immunogen consisting of Env and Gag-Pol-Nef polypeptide.

Methods: 147 healthy volunteers were randomly allocated through 8 European centres to either 3xDNA plus 1xNYVAC (weeks 0, 4, 8 plus 24; n=74) or to 2xDNA plus 2xNYVAC (weeks 0, 4 plus 20, 24; n=73), stratified by geographical region and sex. T cell responses were quantified using the interferon γ Elispot assay and 8 peptide pools; samples from weeks 0, 26 and 28 (time points for primary immunogenicity endpoint), 48 and 72 were considered for this analysis.

Results: 140 of 147 participants were evaluable at weeks 26 and/or 28. 64/70 (91%) in the 3xDNA arm compared to 56/70 (80%) in the 2xDNA arm developed a T cell response ($P=0.053$). 26 (37%) participants of the 3xDNA arm developed a broader T cell response (Env plus at least to one of the Gag, Pol, Nef peptide pools) versus 15 (22%) in the 2xDNA arm ($P=0.047$). At week 26, the overall magnitude of responses was also higher in the 3xDNA than in the 2xDNA arm (similar at week 28), with a median of 545 versus 328 SFUs/ 10^6 cells at week 26 ($P<0.001$). Preliminary overall evaluation showed that participants still developed T-cell response at weeks 48 (78%, n=67) and 72 (70%, n=66).

Conclusions. This large clinical trial demonstrates that optimal priming of poxvirus-based vaccine regimens requires 3 DNA regimens and further confirms that the DNA/NYVAC prime boost vaccine combination is highly immunogenic and induced durable T-cell responses.