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# O314 Predicting the short-term risk of diabetes in HIV-infected patients in the D:A:D cohort: the D:A:D study group

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## Purpose of the study

Diabetes mellitus (DM) is a major risk factor for cardiovascular disease (CVD) among the general population, and a strong risk factor for CVD in the HIV-infected population. Prediction models for the onset of type II DM in the general population have been developed but have not yet been validated amongst HIV-infected individuals. Our objective is to develop a risk assessment model for the short-term risk of DM for HIV-infected populations following the commencement of combination therapy.

## Methods

All patients recruited to D:A:D with follow-up data, without prior DM or MI or other CVD events, and with a complete DM risk factor profile were included. Baseline was defined as the first time point at or after inclusion to the D:A:D study when information on all DM risk factors was available. Data were randomly split, into a training (66%) and validation (34%) data sets. A D:A:D predictive model for the short-term risk of DM was determined in the training dataset using Poisson regression methods. Expected 8-year probabilities of DM events were also determined based on the Framingham Offspring Study DM algorithm, and subsequently converted to predict over the shorter D:A:D follow-up. The D:A:D and the Framingham models were then assessed in the validation dataset. Area under the receiver operating characteristic (AROC) curve and predicted vs. observed events were determined for the D:A:D and recalibrated Framingham models.

## Summary of results

13,609 patients had a complete risk factor profile; 251 cases of new onset DM occurred during 50,296 person-years. Median follow-up was 3.50 years (IQR: 1.36–6.16). The training dataset included 8,990 patients with 170 cases of new onset DM, and the validation dataset included 4,619 patients with 81 cases of DM. Factors predictive of DM in the D:A:D study included: higher glucose, BMI and triglyceride levels, older age, lower HDL and injecting drug use as reported mode of HIV exposure. The performance of the D:A:D and Framingham equations in the validation dataset yielded the following AROC: 0.80 (95% CI:0.75, 0.85); and 0.77 (95% CI:0.71, 0.83). The Framingham algorithm over predicted DM events compared to the D:A:D model for younger age (observed (O) = 19, predicted D:A:D (PD) = 18, predicted Framingham (PF) = 310, lower BMI (O = 40, PD = 39, PF = 49), and lower glucose (O = 48, PD = 45, PF = 61).

## Conclusion

The D:A:D equation performed well in predicting the short-term of DM in the validation dataset, and for specific subgroups fared better than the Framingham algorithm.