## Comparison of Insulin Levels after Injection by Jet and Disposable Syringe

*Malone, J.I., Lowift, S., Grove, N.P., & Shah, S.C. (1986) Diabetes care vol.9, 637~640.*

Intermediate-acting biosynthetic human (NPH) insulin was administered by disposable insulin syringe into the right upper thigh of nine insulin-dependent diabetic youths. Seven days later, the same amount and type of NPH insulin was given in the same anatomic site with a Medi-Jector II, which delivers insulin as a jet stream. Blood was collected before insulin injection and at hourly intervals subsequently for the measurement of glucose and insulin. The total serum insulin mea-sured before the first morning dose with the needle and syringe and the Medi-Jector II was 41.2 + 10.7 uU/ml and 46.2 + 10.7 uU/ml, respectively. During the next 9 h, the areas under the respec-tive total insulin curves were not different, but the area under the free-insulin curve after jet injec-tion was greater than the free insulin area after needle injection (P <.01). The ratio of free/total serum insulin was 0.31+0.02 after needle injection and 0.40+0.03 after jet injection (P <.0025). The peak of total insulin concentration occurred 4.2 h after jet injection of NPH: I h earlier than the peak after needle injection. The plasma glucose at time zero was 197 + 15 mg/ dl before needle injection and 242 + 19 mg/ dl before jet injection. Although diet consumed by each subject on the 2nd study day was identical to that of the 1st day, the mean glucose increase was greater after needle-injected insulin than after jet-spray injection. This indicates that the greater amount of free insulin observed after jet-injected insulin had a direct effect in lowering the plasma glucose. Jet injection may reduce insulin requirements by increasing the availability of free insulin.