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LETTER TO THE EDITOR

The BETA-2 score web app calculator: https://www.beta2score.com/ for assessment of graft function following islet transplantation

To the Editor:

The BETA-2 score gives an estimate of islet graft function following islet transplantation in people with Type 1 diabetes. It is derived from the transplant recipient's fasting glucose, paired fasting C-peptide, insulin dose and Hba1c and generates a single value between 0 and 42, with greater scores associated with superior graft function.[1] Since the score does not require a standardized mixed meal it may be calculated frequently.

The BETA-2 is calculated as follows:

$$\left\{\frac{\sqrt{\text{fasting C}-\text{peptide (nmol/L)}}\times(1-\text{insulin dose (units/kg)})}{\text{fasting plasma glucose (nmol/L)}\times\text{HbA1c (\%)}}\right\}\times 1000$$

The score was first derived and validated in people transplanted in the Edmonton Islet Transplant Programme[1] and has since been externally validated in other allo-[2] and auto-islet transplant populations[3] and has been endorsed by leaders in the field.[4] In terms of utility, a score of >17 in islet transplant recipients at 75-day post-transplant is associated with long term insulin independence.[5]

This formula poses a challenge to calculate rapidly in the clinic setting. The score may now easily be calculated using the web app calculator (https://www.beta2score.com/), and the units may be entered in SI or, conventional units via a quick calculation function on the home page. Health Care Professionals (HCPs) may register for the app: the advantage is that a coded patient profile may be created including date(s) transplanted with associated islet numbers received. Variables to calculate the BETA-2 score are inputted at each clinic visit generating BETA-2 scores and time intervals between scores that are graphically displayed and listed. The data at each individual center can be seen by all HCPs at that specific center only. HCPs can contact the administrator to request to share data between consenting transplant sites. All data may be exported easily to excel spreadsheets. Individual patients may also register and be granted access to view their own data only.

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DISCLOSURE

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REFERENCES

1. Forbes S, Oram RA, Smith A, et al. Validation of the BETA-2 score: an improved tool to estimate beta cell function after clinical islet transplantation using a single fasting blood sample. *Am J Transplant*. 2016;16(9):2704-2713.
2. Gołębiewska J, Solomina J, Kijek MR, et al. External validation of the newly developed BETA-2 scoring system for pancreatic islet graft function assessment. *Transplant Proc*. 2017;49(10):2340-2346.
3. Bachul PJ, Golab K, Basto L, et al. Long-term stability of beta-cell graft function after total pancreatectomy and islet autotransplantation. *Pancreas*. 2021;50(1):e2-e4.
4. Rickels MR, Stock PG, de Koning EJP, et al. Defining outcomes for beta-cell replacement therapy in the treatment of diabetes: a consensus report on the Igls criteria from the IPITA/EPITA Opinion Leaders Workshop. *Transplantation*. 2018;102(9):1479-1486.
5. Bachul PJ, Gołębiewska JE, Basto L, et al. BETA-2 score is an early predictor of graft decline and loss of insulin independence after pancreatic islet allotransplantation. *Am J Transplant*. 2020;20(3):844-851.