Continuous Glucose Monitoring Systems and the Improvement in Hypoglycemic Awareness Post-Islet Transplantation: A Single-Centre Cohort Study

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INTRODUCTION
• Type 1 Diabetes Mellitus (T1DM) affects >400,000 people in the UK[1]
• Intensive insulin therapy is not always effective in reducing glycemic variability[2] – this leads to an increase in hypoglycemia and impaired awareness of hypoglycemia[3]
• Islet Transplantation has been offered at the Royal Infirmary of Edinburgh to 16 patients from Scotland and Northern Ireland with the most poorly controlled T1DM

RESULTS
1. Analyse CGMS data to determine changes in glycemic variability post-transplant

<table>
<thead>
<tr>
<th>HbA1c</th>
<th>CLARKE SCORE</th>
<th>GOLD SCORE</th>
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</thead>
<tbody>
<tr>
<td>Pre-transplant</td>
<td>post-transplant</td>
<td></td>
</tr>
<tr>
<td>HbA1c average</td>
<td>Clarke score</td>
<td>Gold score</td>
</tr>
<tr>
<td>8.2</td>
<td>10.0</td>
<td>12.0</td>
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Aims / Key Questions
Is islet transplantation effective in patients with the most poorly controlled Type 1 Diabetes Mellitus?

Conclusions
Islet transplantation is capable of:
• Improving glycemic control
• Reducing the hypoglycemic burden
• Improving IAH, which may continue even after graft begins to deteriorate
Findings can be combined with other UK centres to increase statistical power.

Ultimately, from research at the Edinburgh site, it can be suggested that islet transplantation offers patients with the most severe T1DM an opportunity to regain control of their condition and improve their quality of life.

METHODS
A retrospective analysis of data collected between January 2011 and March 2014 from the 16 patients who have undergone islet transplantation in Edinburgh.

1. Measure Glycemic Variability using Continuous Glucose Monitoring Systems (CGMS)

2. Measure Impaired Awareness of Hypoglycemia (IAH) using Gold & Clarke scores

STATISTICAL ANALYSIS
• Determine distribution
• Parametric: student’s t-tests to compare two groups (pre-transplant vs each time point post-transplant)
• Non-parametric: Wilcoxon matched-pairs signed rank test

REFERENCES

LIMITATIONS
• Lack of data
• Small sample size
• Lack of control group