



<b>Title</b>	<b>Islet Cell Transplantation for the Treatment of Non-uremic Type 1 Diabetic Patients with Severe Hypoglycemia</b>
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## Aim

To assess the efficacy/effectiveness, safety and status of islet cell transplantation alone (ITA) in treating patients with brittle type 1 diabetes who do not have kidney disease and have not received a previous organ transplant.

## Conclusions and results

Studies have reported on combined islet cell and kidney transplantation in type 1 diabetic patients with end-stage renal failure. No controlled trials have compared ITA with other treatments. A new ITA method, the Edmonton protocol, uses a novel steroid-free immunosuppressive regimen that is less toxic to the pancreatic beta cells and kidneys, an islet cell preparation media that is devoid of xenoprotein contamination, a much shorter cell preparation time, and islet cells derived from multiple cadaveric donors rather than a single donor. Short-term results from the Edmonton series are promising. By January 2002, 17 patients had received the Edmonton protocol. Of the 15 consecutive patients with at least 1 year followup, 12 patients were insulin independent after ITA. After 2 years, four out of six patients were still off insulin. No patient experienced hypoglycemia following ITA, although followup was short. ITA is a minimally invasive procedure that appears to be safe. The risks are primarily related to the procedure itself and the immunosuppressive regimen. The Immune Tolerance Network has launched an international trial to confirm and extend the results of the Edmonton series.

## Recommendations

Limited evidence suggested that ITA is effective in controlling labile diabetes and restoring the ability to recognize hypoglycemia in a select group of patients in the short term. The long-term hormonal effects of ITA are unknown. ITA is a promising procedure that may become an alternative therapy for the small subgroup of patients with type 1 diabetes who have hypoglycemia in the absence of kidney disease. The Edmonton protocol is still under development, and ITA should not be con-

sidered 'standard care' for non-uremic patients with type 1 diabetes and severe hypoglycemia.

## Methods

This report is a qualitative systematic review of primary clinical research. Two researchers reviewed the abstracts, selected the studies, and extracted the data. The methodological quality of the included studies was not formally assessed.

## Further research/reviews required

Determine if ITA prevents or arrests complications associated with chronic diabetes, and whether its hormonal effect is durable. Refine techniques to measure islet cell function and viable cell mass so that the metabolic effects of ITA can be evaluated with more certainty. ITA uses multiple cadaveric organs to treat one patient. Whether this potentially induces an antibody response that will preclude the patient from receiving further organ transplants is unknown. The ethical issue of using multiple scarce organs to treat one patient has yet to be addressed.