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## A comparison between islet and stem cell transplantation for treatment of type 1 diabetes mellitus: A systematic review

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**Introduction:** The incidence of type 1 Diabetes Mellitus (T1DM) has been increasing rapidly worldwide, while the current standard therapy- exogenous insulin supply is considered as unsustainable and highly associated with poor glycemic control that may lead to a life-threatening condition. On the other hand, cellular-based therapy including either islet cell or stem cell transplantation has been recently developed, making it pertinent to compare the effectiveness between the two alternative treatments.

**Aim:** The aim of this systematic review is to compare the safety and effectiveness between islet cell transplantation and stem cell transplantation for future practice change.

**Methods:** Literature search using two databases, PubMed and Ovid Medline, was conducted for primary studies published from January 2000 to November 2015. A quality assessment of identified studies were conducted using ARRIVE, NOS, and MINORS assessment tools. The comparison between treatments was done based on the mean values of insulin independence period and blood glycemic level of the subjects in the studies.

**Results:** In 15 out of 17 included studies, the average insulin-independent period in T1DM patient post-islet cell transplantation was proven to be four years longer compared to post-stem cell transplantation that could only achieve one year at most. The studies also found and support that islet cell transplantation has better blood glycemic control, observed through random blood glucose level ranges from 140 mg/dL to 200 mg/dL and c-peptide levels ranges from 0.3 ng/ml to 4.5 ng/ml which marks the presence of insulin production. However, certain challenges e.g., donor shortage and poor engraftment hinder the widespread application. The studies also revealed that stem cell transplantation differentiated into  $\beta$ -cell-like cells that produce insulin, glucagon, and somatostatin, as well as acting in glucose-stimulated manner, imitating the physiologic mechanism of  $\beta$ -cells, this is in fact considered as a major potential for future development.

**Conclusion:** The current studies has proven a conclusive result in which islet transplantation has relatively higher effectiveness and better outcome compared to stem cell transplantation for treating T1DM patients.

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## Understanding access to care: Lessons from a Malawian study

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According to healthy people 2020, approximately 25% of Americans do not have primary care physician or a health center for regular services, this same number of people also lack health insurance. The debate of access to healthcare has long surrounded around health insurance coverage, costs associated with care and transportation. However, access to healthcare is much more perplexed than insurance coverage, fees and transportation. A recent study accessing barriers to care among pregnant urban women in Malawi has identified contributors to the access to health care problem beyond insurance, costs and transportation. Malawi is considered the poorest country in the world and has universal healthcare for all residents at all government health facilities. In spite of full coverage of care, Malawi continues to see an underutilization of services among its citizen's especially pregnant mothers. Roberts, J., et al., identified three main barriers to accessing care among pregnant women: Culture; patient-provider relationship and; facility systemic operations. This paper discusses these barriers and identifies ways to use this knowledge to improve health care access for all.

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