

Insulin Infusion Set: The Achilles Heel of Continuous Subcutaneous Insulin Infusion

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Abstract

Continuous subcutaneous insulin infusion from an insulin pump depends on reliable transfer of the pumped insulin to the subcutaneous insulin depot by means of an insulin infusion set (IIS). Despite their widespread use, the published knowledge about IISs and related issues regarding the impact of placement and wear time on insulin absorption/insulin action is relatively small. We also have to acknowledge that our knowledge is limited with regard to how often patients encounter issues with IISs. Reading pump wearer blogs, for instance, suggests that these are a frequent source of trouble. There are no prospective clinical studies available on current IIS and insulin formulations that provide representative data on the type and frequency of issues with infusion sets. The introduction of new IISs and patch pumps may foster a reassessment of available products and of patient problems related to their use. The aim of this review is to summarize the current knowledge and recommendations about IISs and to highlight potential directions of IIS development in order to make insulin absorption safer and more efficient.

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Abbreviations: (ATBF) adipose tissue blood flow, (AUC) area under curve, (BMI) body mass index, (CSII) continuous subcutaneous insulin infusion, (IIS) insulin infusion set, (LHT) lipohypertrophy, (SC) subcutaneous, (T1DM) type 1 diabetes

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