

# EFFECTS OF CONTINUOUS SUBCUTANEOUS INSULIN INFUSIONS VERSUS MULTIPLE DAILY INJECTIONS IN TYPE I DIABETES

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## Question



Among men & women diagnosed with Type I diabetes, does the use of an insulin pump compared to manual insulin injections have a greater effect on hemoglobin A1C values?



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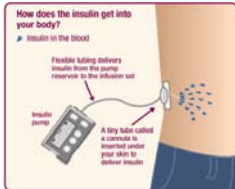
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## CSII VS MDI



- CSII
  - Portable
  - Needle under skin
  - Basal & Bolus
- MDI
  - Multiple
  - Needle injections
  - Rapid & Long acting



<http://www.diabetes.ca>  
<http://www.diabetxcare.com>



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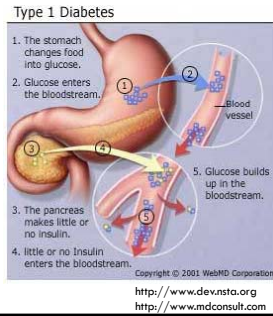
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## Background

### Type I Diabetes

- Chronic Metabolic Disorder
- Beta-cell destruction
- Little/No insulin
- Insulin, diet & exercise



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## Incidence & Prevalence

- In U.S: 10-19 y/o = 19/100,000
- Greatest ages 11-14 = 30/100,000
- 3 million → 5-10% of total diabetic patients
  - 15,000/yr = 40/day
- Ages 0-19: 170/100,000
- 1/400-600
- Onset @ any age
- Mean age onset: 8-12
- Racial differences not well defined

<http://www.jdrf.org>  
<http://www.diabetes.org>  
<http://www.mdconsult.com>

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## Etiology & Risk Factors

- Not many known
- Family History
- Genetics
- Geography
- Viral Exposure
- Low Vitamin D Levels
- Dietary Factors



<http://www.mayoclinic.com>  
<http://www.mdconsult.com>  
<http://image.examiner.com>

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## Studies

- 12 articles reviewed
  - Obtained through computer-based search strategy
  - Published between 1984-2008
  - Many different types:
    - Randomized-controlled clinical trials & cohort studies.
  - Age Range: 3.9-53
  - Number of Participants: 1,052



<http://www.artsjournal.com>

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## Results

- Outcomes Supportive of CSII:
  - HbA1c: 8/12
  - Hypoglycemic events: 10/12

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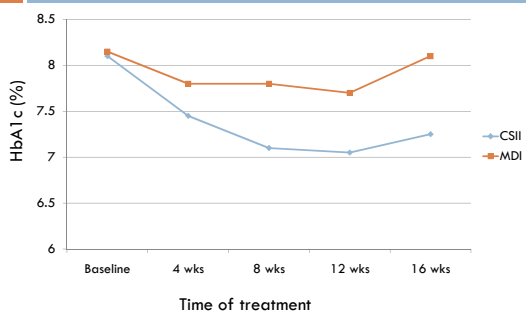
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## Metabolic Control (HbA1c)



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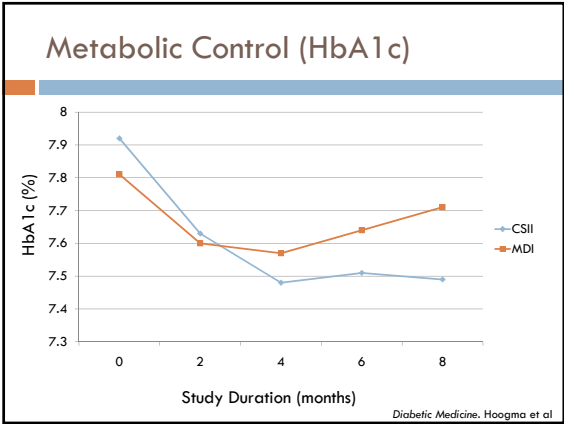
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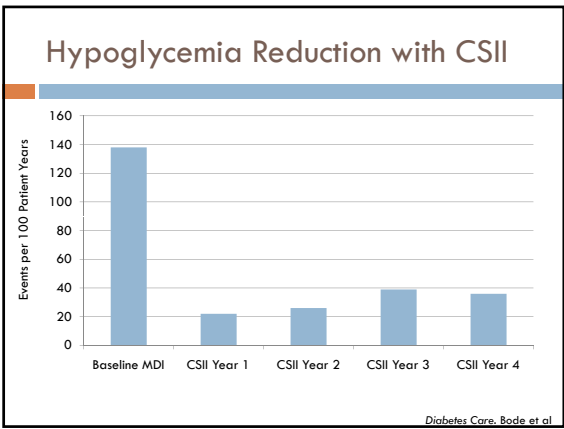
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### Conclusion

- Among men & women diagnosed with Type I diabetes, the use of an insulin pump compared to manual insulin injections improves hemoglobin A1C values.
  - ▣ HbA1C <8.0%
  - ▣ Hypoglycemic episode improvement
- Fallbacks to study design
  - ▣ Inability to blind healthcare providers to treatment groups
  - ▣ Small study sizes
  - ▣ Limited studies with statistical analysis & significant information

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## Clinical Pearls

- Conventional therapy
- Implanted or external
- Short acting insulin – Aspart
- ACE Inhibitors
- Funduscopy Exam
- ADA Recommendations
- Complications – hypoglycemia, DKA, infusion-site reactions, blockage & pump failure

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## Questions

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