# Clinical reviews

Our panel of GPs review recent research papers in their specialist areas that may influence the way you practise

**Reviewers**

**Addiction**
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GP Leeds and Clinical Director Lifeline (North) RCGP regional lead substance misuse

**Cardiovascular disease**
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**Diabetes**
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GP with an interest in diabetes, Suffolk

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**Obstetrics and gynaecology**
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**Paediatrics**
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**Sexual health**
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**Smoking cessation**
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**Urology**
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## Diabetes

# Insulin pump therapy associated with lower cardiovascular mortality

Patients with type 1 diabetes using insulin pump therapy had almost half the risk of death from CHD or cardiovascular disease compared with those receiving multiple daily insulin injections, in a large observational study, published in the *BMJ*.

The study used data from the Swedish National Diabetes Register between 2005 and 2012. Almost every Swede diagnosed with type 1 diabetes has valid information recorded, and this includes the occurrence of cardiovascular disease and death outcomes. The register is so comprehensive that no patients were excluded from follow-up in this study.

In total 18,168 patients with type 1 diabetes were studied. Of these 15,727 were using multiple daily insulin injections, and 2,441 insulin pump therapy. Mean follow-up was 6.8 years equating to 114,135 person-years.

The diabetes register links to other national health registers, which enabled the researchers to allow for confounding variables.

Overall, there were 1,423 cases of fatal or non-fatal cardiovascular disease. Adjusted hazard ratios (HR) were compared with the multiple insulin injection group as reference. The insulin pump group showed significant reductions in risk of death from CHD, cardiovascular disease and all causes:

- Fatal CHD: HR 0.55 (95% CI: 0.36-0.83)
- Fatal cardiovascular disease (CHD or stroke) HR 0.58 (95% CI: 0.40-0.85)
- All-cause mortality HR 0.73 (95% CI: 0.58-0.92)

Hazard ratios were lower, but not significantly so, for fatal and non-fatal cardiovascular events.

The study takes two accepted facts as its starting point. First, both hyperglycaemia and hypoglycaemia are associated with increased cardiovascular disease in diabetes. Second, continuous subcutaneous infusion of insulin using a pump results in improved glycaemic control.

These results chime with the increasing body of evidence suggesting that insulin pump therapy is associated with better control and fewer episodes of diabetic ketoacidosis. This study provides evidence of improvements in hard endpoints, rather than just surrogate measures of control.

'Whether the results reflect the physiological consequences of insulin pump treatment, the clinical management that pump users receive, or the educational aspects of having the pump remains elusive,' the study authors conclude.

The most recent NICE guidance suggests starting all type 1 diabetes patients on basal bolus insulin regimens.[1] This study may support increased use of insulin pump therapy as a cost-effective management option in type 1 diabetes.

**DR MATTHEW LOCKYER**

- **Steineck I, Cederholm J, Eliasson B et al. Insulin pump therapy, multiple daily injections, and cardiovascular mortality in 18 168 people with type 1 diabetes: observational study. *BMJ* 2015;350: h3234**

## REFERENCE

**1** National Institute for Health and Care Excellence. NG17. Type 1 diabetes in adults: diagnosis and management. NICE. London. 2015

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