

## Comparison of Lancing Devices for Self-Monitoring of Blood Glucose Regarding Lancing Pain

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### Abstract

#### **Background:**

Self-monitoring of blood glucose empowers diabetes patients to effectively control their blood glucose (BG) levels. A potential barrier to frequent BG controls is lancing pain, intrinsically linked to pricking the finger several times a day. In this study, we compared different state-of-the-art lancing devices from leading manufacturers regarding lancing pain, and we intended to identify lancing devices that are less painful.

#### **Methods:**

First, 165 subjects compared 6 different BG monitoring systems—consisting of a lancing device and a BG meter—at home for 36 days and at least 3 BG tests per day. Second, the subjects directly compared 6 different lancing devices—independent from a BG meter—in a laboratory setting. The test results were collected in questionnaires, and lancing pain was rated on a numerical rating scale.

#### **Results:**

One hundred fifty-seven subjects were included in the analysis. Accu-Chek BG monitoring systems were significantly ( $p \leq .006$ ) preferred to competitor BG monitoring systems and were rated by >50% of the subjects as “less painful” than competitor BG monitoring systems. Accu-Chek lancing devices were significantly ( $p < .001$ ) preferred to competitor lancing devices and were rated by >60% of the subjects as “less painful” than competitor lancing devices.

#### **Conclusions:**

We found significant differences in lancing pain between lancing devices. Diabetes patients clearly preferred lancing devices that cause less lancing pain. In order to improve patient compliance with respect to an adequate glycemic control, the medical staff should preferentially prescribe lancing devices that cause less lancing pain.

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**Abbreviations:** (BG) blood glucose, (NRS) numerical rating scale, (SMBG) self-monitoring of blood glucose

**Keywords:** lancing device, lancing pain, pain rating, self-monitoring of blood glucose

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