

Trend Analyses of Insulin Delivery Systems in the United States

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Abstract

Background:

Despite potential advantages in insulin pen delivery systems (IPDSs), the percentage of patients using an IPDS is relatively low in the United States.

Objective:

Our aim was to investigate the trend of initiating IPDSs among patients with type 2 diabetes mellitus (T2DM) who newly initiated insulin therapy.

Methods:

A retrospective analysis was conducted using a U.S. database from January 1, 2004, to December 31, 2008. Patients with T2DM who initiated a new insulin type and delivery system were included. The Cochran–Armitage test was used to assess the significance of the trend of initiating an insulin delivery system, including vial/syringe, IPDS overall, reusable pen delivery systems (RPDSs), and prefilled pen delivery systems (PPDSs). Different types of insulin (e.g., basal analog, prandial analog) were examined separately.

Results:

Patients initiating an IPDS increased from 10.6% in 2004 to 48.5% in 2008 ($p < .001$), most notably in basal analog and prandial analog insulin therapies. Although the percentage of patients using a PPDS increased by 36.2 percentage points (from 9.2% in 2004 to 45.4% in 2008; $p < .001$), use of a RPDS increased only by 1.7 percentage points (from 1.4% in 2004 to 3.1% in 2008; $p < .001$).

Conclusion:

There was an overall increase in the use of IPDSs in the United States among patients with T2DM who newly initiated insulin from July 1, 2004, to December 31, 2008. This increase was driven by the use of PPDSs for basal analog and prandial analog insulin therapies. Despite the increasing use of IPDS over time, approximately 50% of patients still initiated insulin using a vial/syringe in 2008.

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Abbreviations: (ICD-9-CM) International Classification of Disease, Ninth Edition, Clinical Modification, (IPDS) insulin pen delivery system, (NPH) neutral protamine Hagedorn, (PPDS) prefilled pen delivery system, (RPDS) reusable pen delivery system, (SEM) standard error of the mean, (T2DM) type 2 diabetes mellitus

Keywords: insulin, pen, type 2 diabetes, vial

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