

Predictors of Initiating Rapid-Acting Insulin Analog Using Vial/Syringe, Prefilled Pen, and Reusable Pen Devices in Patients with Type 2 Diabetes

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Abstract

Background:

Limited data are available on the predictors of insulin delivery device choice. This study assessed the patient- and health-care-system-related factors that predict the initiation of one rapid-acting insulin analog (RAIA) delivery system over another.

Methods:

A retrospective analysis using a claims database (January 1, 2007, through March 31, 2009) was conducted. Patients were required to be diagnosed with type 2 diabetes mellitus, and have ≥ 12 months of continuous eligibility prior to their first prescription of a RAIA on or after January 1, 2008. The three cohorts in the study were vial/syringe ($n = 6820$), prefilled pen ($n = 5840$), and reusable pen ($n = 2052$). Multiple factors were examined using stepwise logistic regression.

Results:

Factors that increased the likelihood of initiating RAIA using prefilled pen versus vial/syringe included endocrinologist visit [odds ratio (OR) = 3.13, 95% confidence interval (CI) = 2.56, 3.82], prior basal insulin use with pen (OR = 4.85, 95% CI = 4.21, 5.59), and use of ≥ 1 oral antihyperglycemic agents (OR = 1.32, 95% CI = 1.20, 1.45). Factors that decreased the likelihood included inpatient admission (OR = 0.76, 95% CI = 0.70, 0.83), nursing home visit (OR = 0.22, 95% CI = 0.18, 0.27), and obesity (OR = 0.67, 95% CI = 0.53, 0.83). There were fewer differences between prefilled and reusable pen initiators. Factors that increased the likelihood of initiating with prefilled versus reusable pen included endocrinologist visit (OR = 1.87, CI = 1.50, 2.34) and inpatient admission (OR = 1.46, 95% CI = 1.30, 1.64).

Conclusion:

Significant differences in predictors were observed between prefilled pen and vial/syringe initiators. The differences were fewer between prefilled and reusable pen initiators. These differences should be taken into consideration when evaluating outcomes associated with specific insulin delivery systems.

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Abbreviations: (CCI) Charlson Comorbidity Index, (CI) confidence interval, (DACON) daily average consumption, (HbA1c) hemoglobin A1c, (MPR) medication possession ratio, (OHA) oral antihyperglycemic agent, (OR) odds ratio, (RAIA) rapid-acting insulin analog, (T2DM) type 2 diabetes mellitus

Keywords: insulin, pen device, type 2 diabetes mellitus, vial

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