

## Inhaled Insulin and Fast Acting Insulin

	Insulin Regular	Insulin Lispro	Insulin Aspart (OHSU)	Insulin Glulisine	Insulin Inhaled
Brand, Maker	<i>Novolin R</i> , Novo Nordisk R	<i>Humalog</i> Eli Lilly	<i>NovoLog</i> , Novo Nordisk	<i>Apidra</i> , Aventis	<i>Exubera</i> , Pfizer
Availability	Non-prescription (except 500 units/mL <i>Humulin R</i> ).	All are prescription.			Prescription
Onset	10 to 20 minutes	15 to 30 minutes			10 to 20 minutes
Peak	30 to 60 minutes; onset more rapid with human than pork.	1 to 3 hours	1 to 3 hours	1 to 1.5 hours	30 to 90 minutes
Duration	1 to 5 hours; peak may be more rapid with human than pork.	3 to 6.5 hours	3 to 5 hours	3 to 5 hours	6 hours
Administration	SC, IM, IV	SC, IM, IV	SC, IM, IV	SC, IM, IV	Oral inhalation
Meal timing	Give 30 to 45 minutes before meals.	Give SC injection within 15 minutes before or immediately after meals.			Within 10-15 minutes of meal ingestion
Cost	\$36.19/10 mL vial (U-100)	\$80.35/10 mL vial	\$83.71/10 mL vial	\$80.87/10 mL vial	\$140.00 (Combo Pack 12) \$175.00 (Combo Pack 15)

Inhaled Insulin (Exubera): Inhaled insulin **is not** recommended for the routine treatment of people with type 1 or type 2 diabetes mellitus. Inhaled insulin may be used as a **treatment option** for people with type 1 or type 2 diabetes mellitus who show evidence of poor glycaemic control despite other therapeutic interventions (including, where appropriate, diet, oral hypoglycaemic agents and subcutaneous insulin) and adequate educational support, and who are unable to initiate or intensify preprandial subcutaneous insulin therapy because of either: a marked and persistent fear of injections that meets DSM-IV criteria for specific phobia 'blood injection injury type' diagnosed by a diabetes specialist or mental health professional or severe and persistent problems with injection sites (for example, as a consequence of lipohypertrophy) despite support with injection site rotation.

While the development of inhaled insulin is an exciting step in the evolution of diabetes therapy, however, its release to the market may be tempered by concerns around appropriate use and **long-term safety**.

The forced expiratory volume (FEV) should be assessed in all patients prior to initiating therapy, three months following initiation and annually. Inhaled insulin is not recommended in patients with a baseline FEV <70% of predicted value

Although approved for patients with Type I diabetes, should be **avoided due to antibody formation**.

Inhaled insulin 1-mg is equivalent to ~3 IU subcutaneous and 3-mg is equivalent to ~8 IU subcutaneous regular insulin dose.

Inhaled Insulin will **not be suitable** for everyone with diabetes; Inhaled insulin is contra-indicated in patients with poorly controlled, unstable or severe asthma or severe Chronic Obstructive Pulmonary Disease (COPD) and smokers, or those people who have smoked within the last six months.

Side effects identified in clinical trials of inhaled insulin have included increased cough, pharyngitis, rhinitis, and sinusitis (27%).

Side effects with lower incidence included shortness of breath (4%), otitis media (6.5%), ear pain (3.9%), and dry mouth (2.4%).

Inhaled insulin should be best used in patients who are having problems with injections ("needle phobic," very few patients have true needle phobias)