

# Insulin Jet

## What's Insulin Jet (InsuJet):

The InsuJet Basic is a European-designed insulin-jet administration system. First developed these devices for individual insulin delivery around 1979, they have never caught on. Their complexity makes them unreliable for many people with insulin-dependent diabetes. February 13, 2013: The PharmaJet Stratis Needle-Free Injector received WHO PQS Certification.

However, this product remains relatively rare and hard to get hold of, and also needs to be regularly boiled and sterilized to stay hygienic.

We use it in patients who find insulin injections uncomfortable or afraid of needles.

## Insulin jets typically contain three parts:

- 1- The delivery device (shaped like a pen).
- 2- Disposable injector nozzle.
- 3- Disposable insulin vial adapter, which is a connector that enables one to withdraw insulin from a vial without using a needle.

## How they work:

The jet injects insulin through the skin by forcing a high-pressured stream of insulin through a very tiny hole at the end of the disposable injector nozzle. This high-pressured stream of insulin penetrates the outer layer of your skin so it can disperse through the lower layers of your skin and into your blood stream.

\*There are two different 'power sources' for achieving the pressure needed, either a compressed spring or a carbon dioxide or nitrogen cartridge. Springs have the advantage of being small, light, economical and durable, and do not need to be disposed of like a cartridge. If they have a disadvantage it is that you get a limited amount of force from a coiled spring but as we only want to get a reasonably small quantity of insulin into the subcutaneous layer, springs produce more than enough pressure for our needs.

## How to use it:

To use the device the spring needs to be compressed (charged) before each delivery. This is usually done by turning part of the device in one direction to wind the spring up. Once it is fully wound the amount of required insulin is chosen by turning the dosing dial. The device is placed in the vial adapter (which holds the insulin vial) and the insulin is drawn into the nozzle. The nozzle is placed firmly against the skin, at 90 degrees to the body, at the chosen injection site and the actuator button is pressed which releases the spring. The insulin is injected through the skin to the correct depth.

### Advantages:

- 1- No needle required.
- 2- Simple to use; just wind, dial, fill and inject.
- 3- Flexible, They can be used with all brands of U-100 insulin in standard 10 ml vials.
- 4- No disposal problems because there are no 'sharps' involved.
- 5- Versatility - Due to the ability in some brands to change nozzles a single device can be adjusted to suit different peoples needs in relation to skin thickness.
- 6- Produce a better spread of insulin into the subcutaneous tissue.
- 7- The insulin automatically goes to the correct depth, no more decisions needed on what length needle to use and no chance of intra-muscular injections.
- 8- Speed of injection.

### Disadvantages:

- 1- Cost, Compared to syringes the initial cost of these devices is high.
- 2- Bruising.
- 3- They are not widely used so the disposable bits can be more difficult to find.
- 4- Sterilization issues.
- 5- Some people do not like the noise the injector makes when it delivers its insulin.

### Efficacy:

- The jet injection of insulin before each meal could bring about better control of blood glucose than could thrice daily syringe injection of insulin.
- Higher plasma free insulin level after 30 min of insulin jet injection
- The decline in free insulin concentration is slower than other method.

### Cost:

The insulin jet itself can cost anywhere from \$200 to \$700 in the United States. You also have to purchase the replacement injector nozzles and insulin adapters.



### 1. Reset Power Pack



Turn Power Pack to the right (clockwise) until a slight click is heard and/or a red "X" is seen in the Dosage Window

### 2. Attach Insulin to Nose



Remove cover plug from vial adapter.

Unscrew nozzle and attach vial to nose.

*Turn injector upside down while attaching vial (as shown)*

*Vial adapter must be attached to insulin vial before loading*

### 3. Load Insulin



Hold injector so that the insulin vial is on top.

Tap vial to remove air bubbles.

Turn Power Pack to the left (counter clockwise) until the correct dosage appears in window.

*Units may also be measured by counting the tactile cues.*

### 4. Remove Insulin Vial



Turn injector upside down again before removing insulin vial.

Reattach nozzle to nose.

### 5. Adjust Comfort Setting



Rotate Power Pack back to the right to achieve the desired comfort setting.

*IMPORTANT: One of our customer care partners will help determine which settings are best for you.*

### 6. Inject



Hold injector perpendicular to injection site.

Press nozzle on skin to create slight indentation.

Slide safety lever to the left.

Depress button to inject.

Hold injector in position approximately 10 seconds after injecting.

## **References:**

- 1) Insujet, Products. <http://insujet.com/index.php?m=products>
- 2) Insulin Jet Injectors, <http://www.diabetesexplained.com/insulin-jet-injector.html>
- 3) Insulin Jet Injectors, <http://www.diabetes.co.uk/insulin/insulin-jet-injectors.html>
- 4) Kimberly Wonderly, Insulin Jet Injectors, Published on January 20, 2012, <http://www.healthline.com/health/type-2-diabetes/insulin-jet-injectors>
- 5) ROY TAYLOR, PHILIP D. HOME, AND K. GEORGE M. M. ALBERTI, R plasma Free Insulin Profiles After Administration of Insulin by Jet and Conventional Syringe Injection, DIABETES CARE, DIABETES CARE 4: 377-379.

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