PUBLICATION SUMMARY

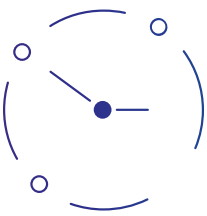
Insulin omission, non-adherence, and lack of dose adjustment contribute to inadequate glucose control in patients with diabetes treated with insulin.

Peyrot M, Barnett AH, Meneghini LF, Schumm-Draeger PM. Correlates of insulin injection omission. *Diabet Med.* 2012;29:682-689.

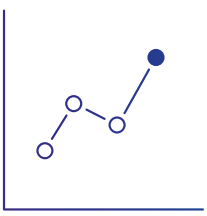
The Global Attitudes of Patients and Physicians in Insulin Therapy study was a multinational survey of patients and physicians regarding insulin therapy: an internet survey of 1,250 physicians (600 specialists, 650 primary care providers) and a telephone survey of 1,530 insulin-treated patients *(180 with type 1 diabetes, 1,350 with type 2 diabetes)* in the United States, United Kingdom, EU and Asia.

Physician results based on a "typical" insulin-treated patient

Physicians *(n=1,250)* rated very few of their patients as "very successful" with insulin tasks including starting insulin when needed *(9.7%)*, taking basal insulin every day *(28.9%)*; taking basal insulin at the same time every day *(18.6%)*; taking bolus/premixed insulin as prescribed *(11.2%)*; adjusting insulin doses *(6.2%)*.



Most *(72.5%)* reported some patients don't take insulin as prescribed



Patients have less success with administration of bolus/premixed insulin than basal insulin

Top results for different aspects of insulin therapy as reported by patients and physicians

	Patients *(n=530)*	Physicians *(n=964)*
Reasons for insulin omission/nonadherence	1. Too busy	1. Skipped meal
	2. Traveling	2. Traveling
	3. Skipped meal	3. Too busy
	4. Stress or emotional problems	4. Embarrassing to inject in public
	5. Embarrassing to inject in public	5. Stress or emotional problems

- The top five reasons for insulin omission/nonadherence were the same for patients and physicians
- The Spearman rank order correlation for the 11 possible reasons *(only top 5 are shown)* for insulin omission/nonadherence was 0.86
- The one major discrepancy was forgetting, which was more highly ranked by patients *(#7)* than physicians *(#11) (Not shown)*

Perceptions of insulin treatment	Patients *(n=1,530)*	Physicians *(n=1,250)*
Patient difficulties	1. Taking insulin at prescribed time or with meals each day*	1. Number of daily injections†
	2. Number of daily injections	2. Changing timing of insulin to meet daily needs
	3. Following healthcare professional instructions/adjusting insulin doses	3. Taking insulin at prescribed time or with meals each day
Dissatisfaction	1. Choose frequency of injections	1. Choose frequency of injections‡
	2. Blood glucose control	2. Choose time of injections§
	3. Choose time of injections	3. Safety regarding low blood sugar
Opinions	1. Wish for good control with insulin not injected every day	1. Wish for good control with insulin not injected every day
	2. Wish insulin regimen would fit daily life changes	2. Wish insulin regimen would fit daily life changes¶
	3. Insulin-treated diabetes controls life	3. Insulin regimen can be restrictive

- The two most commonly reported difficulties patients have with insulin treatment *(as reported by both patients and physicians)* were the number of injections taken and taking insulin at prescribed times; these two aspects of insulin therapy were also among those receiving the highest level of dissatisfaction *(as reported by both patients and physicians)*
- Patients reported difficulty in adjusting insulin doses, in agreement with physician views of their success in this area *(Physician response column, NA)*
- In general, physicians were more dissatisfied with insulin therapy than patients, with the exception of the ability to control blood glucose where they were similar. However, blood glucose control was ranked 2nd in patient dissatisfaction, but 6th in physician dissatisfaction

- More patients reported that insulin treatment had a positive rather than negative impact on life for all domains except finances; however, the advantages were more pronounced in patients with type 2 diabetes, especially in areas other than physical well-being
- A majority of both patients *(59.8%)* and physicians *(68.2%)* felt that insulin regimen can be restrictive and controlled patients' lives, and about half felt that it is hard to live a normal life while managing diabetes *(Not shown)*
- Patient and physician agreement was strongest for the wishes that insulin should be flexible to fit patients' lives and that good control with insulin should not require injections every day

∗ Average of responses to two items *(insulin at prescribed times, insulin with each meal)*
† Physician item "taking insulin frequently"
‡ Physician item "total number of injections per week"
§ Physician item "insulin regimens that better fit patients' dynamic lives"
¶ Physician item "wish insulin treatments could be more flexible"

Clinical implications

- Insulin is well received by patients despite dissatisfaction with some aspects of insulin therapy
- From a patient perspective, insulin therapy is restrictive, making it difficult to take all doses as prescribed, especially given patients' difficulty in adjusting insulin doses to respond to daily changes
- Physicians should consider prescribing more flexible insulin regimens and reducing the burden of the treatment regimen
- An ideal regimen would minimize the number of injections required,[1] the risk of hypoglycemia and the consequences of a delayed or missed insulin dose

Improving treatment

With respect to improving insulin treatment:

- Both patients and physicians agreed:
  - *They would like insulin treatment to be more flexible so that it could be adapted to situational variation in daily activities*
  - *It would be better if insulin did not have to be injected every day*
- Physicians indicated:
  - *It would be an improvement if insulin would maintain its efficacy when patients miss a dose*
  - *They would be more aggressive in treating diabetes if there was no concern about hypoglycemia, suggesting that insulins with less risk of hypoglycemia could be used more aggressively, potentially leading to improvements in blood glucose control and reductions in complications that result from sub-optimal glucose control*

Conclusions

Glucose control is inadequate among insulin-treated patients, in part attributable to insulin omission/nonadherence and lack of dose adjustment. There is a need for insulin regimens that are less restrictive and burdensome with lower risk of hypoglycemia.

Reference:

1. Rubin RR, Peyrot M, Kruger DF, Travis LB. Barriers to insulin injection therapy: patient and health care provider perspectives. *Diabetes Educ.* 2009;35:1014-1022.