

*Injection Techniques Questionnaire (ITQ)*  
*WorldWide Results*

*2014-2015*

**Education**



# **DESCRIPTIVE STATISTICS**

# Who gave the patients their Injection Training?

Injection Instructor	%
General Nurse	22.9
Diabetes Nurse	46.7
Diabetes Educator	12.3
Doctor (General Practitioner)	5.1
Doctor (Diabetes Specialist)	10.0
Pharmacist	2.0
A representative of the pen or needle manufacturer	1.0

# How often does the nurse or doctor examine injection sites?

Frequency	%
Routinely every visit.	28.3
Once a year	12.6
Only if I complain of a problem at a site	20.2
I can't remember my sites ever being checked	38.9

# When was the last time the patient received instructions on Injecting?

Frequency	%
Within the past 6 months	<b>37.4</b>
Within the past 6-12 months	<b>17.6</b>
Sometime in the last 1 to 5 years	<b>21.5</b>
Sometime in the last 5 to 10 years	<b>13.5</b>
Never	<b>10.0</b>

# Topics Patients DON'T ever remember being trained on:

	<b>% patients who can't remember being trained</b>
Injection sites (e.g. thigh, arm, buttock, abdomen)	<b>11.6</b>
Skin thickness and appropriate depth of injection	<b>27.2</b>
Length of needle	<b>25.6</b>
How to do a skin lift or "pinch up" the skin	<b>18.2</b>
How long to hold a skin lift or "pinch up"	<b>25.7</b>
Angle of needle entry	<b>16.1</b>
How long to keep the needle in the skin after injection	<b>16.4</b>
Rotating within an injection site	<b>18.4</b>
Prevention of air bubbles (syringe) or proper priming of pen needle	<b>19.7</b>
Mixing insulin in a syringe (for syringe users)	<b>30.3</b>
Re-suspension of cloudy insulin	<b>25.0</b>
Single use of pen needle/syringe	<b>19.0</b>
Safe disposal of sharps (pen needles, syringes)	<b>28.2</b>

# Who was the HCP who performed the ITQ?

Professional	%
General Nurse	17.1
Diabetes Nurse	56.1
Diabetes Educator	22.8
Doctor (General Practitioner)	1.0
Doctor (Specialist)	3.0

**Almost all were aware of the New Injection Recommendations and had changed their practice based on them**

# What areas of practice did these HCPs change based on the New Recommendations?

<i>TOPIC</i>	<i>% WHO CHANGED THEIR PRACTICE</i>
Psychological care of patients who inject	<b>53,3</b>
Therapeutic injection technique education	<b>71,8</b>
Injection site care	<b>69,3</b>
Insulin storage and suspension	<b>48,8</b>
Injecting process	<b>62,1</b>
The proper use of pens	<b>53,2</b>
The proper use of syringes	<b>33,2</b>
Absorption rates of differing insulin types	<b>47,7</b>
Needle length for children or adolescents	<b>47,5</b>
Lifted skin folds	<b>59,2</b>
Lipohypertrophy	<b>62,7</b>
Rotating injection sites	<b>65,1</b>
Bleeding and bruising at injection sites	<b>37,9</b>
Injections in pregnancy	<b>33,3</b>
Safety needles	<b>43,0</b>
Disposal of injecting material	<b>49,0</b>



# Comparisons from First through Third ITQ

Parameter	1999-2000	2008-2009	2014-2015
Number of <b>Participants</b>	1002	4352	13,289
Number of Participating <b>Centers</b>	22	171	423
Number of <b>Countries</b>	7	16	42
<b>Age</b> of Participants (mean in years)	47.0	48.4	51.9
<b>Duration</b> of therapy (mean in years)	14.7	13.9	13.2
<b>BMI</b> of Participants (kg/m <sup>2</sup> , mean)	26.5	27.3	26.6
<b>HbA1c</b> (% , mean)	8.0	8.1	8.5
Participants taking <b>4 or more</b> injections/day	46.2%	43.9%	44.9%
Participants using <b>Insulin Pen</b>	78.8%	92.3%	89.6%

# Comparisons from First through Third ITQ

Parameter	1999-2000	2008-2009	2014-2015
Participants using 8mm needle	55.0%	48.6%	29.2%
Participants using needle <8mm	9.5%	44.4%	70.8%
Participants using needle >8mm	35.5%	7.0%	0.9%
Participants injecting into Abdomen	85%	88%	90.9%
Participants injecting into Thigh	69%	59%	43.0%
Participants injecting into Buttocks	24%	16%	13.8%
Participants injecting into Arm	34%	29%	31.9%
Participants injecting using pinch up	69.4%	72.9%	63.7%
Rotation of injecting sites	38%	91%	83.9%

# Comparisons from First through Third ITQ

Parameter	1999-2000	2008-2009	2014-2015
Prevalence of occasional <b>bleeding</b> or bruising	62%	61%	60.2%
Prevalence of <b>lipohypertrophy</b>	29%	48%*	30.8%**
Times <b>single needle</b> used (mean)	3.3	3.6	***
Injections <b>sites checked</b> on every office visit	22%	36%	28%
Needles disposed into <b>rubbish</b> directly	47%	38%	55%
Disposal into rubbish <b>without recapping</b>	22%	3.5%	6.9%
Participants desiring <b>more education</b> on injection technique	70%	25%	***

\*patient reported (nurse found lipohypertrophy in 24%)

\*\*nurse found

\*\*\*question posed differently

# Is Reuse associated with Who gave you injection training?

	Reuse	
Educator	Yes	No
General Nurse	768	635
%	54.7%	45.3%
Diabetes Nurse	1652	2403
%	40.7%	59.3%
Diabetes Educator	571	454
%	55.7%	44.3%
GP	271	93
%	74.5%	25.5%
Diabetologist	480	194
%	71.2%	28.8%
Pharmacist	106	33
%	76.3%	23.7%
Industry	74	18
%	80.4%	19.6%

**p < 0.000**

**COMPARATIVE**

**STATISTICS: CHECKING SITES**

# Is frequency of checking injection sites associated with Gender?

Gender	Frequency of Checking Sites			
	Routinely	Yearly	'As Needed'	Never
Female	28.2%	12.8%	21.0%	38.1%
Male	28.3%	12.5%	19.4%	39.8%

**p = 0.097**

# Is frequency of checking injection sites associated with Device?

Device	Frequency of Checking Sites			
	Routinely	Yearly	'As Needed'	Never
Syringe	22.4%	11.4%	22.1%	44.1%
Pen	27.9%	12.6%	19.9%	39.6%

**p = 0.056**

# Is Frequency of Checking Sites associated with DM type?

DM Type	Frequency of Checking Sites			
	Routinely	Yearly	'As Needed'	Never
T1DM	44.0%	19.6%	18.3%	18.0%
T2DM	26.6%	14.8%	22.4%	36.2%
GSM	70.8%	0%	19.4%	9.7%

**p < 0.000**



# Is Frequency of Checking Sites associated with Patient Identity?

Identity	Frequency of Checking Sites			
	Routinely	Yearly	'As Needed'	Never
Adults	26.7%	14.5%	22.8%	35.9%
Adolescents	65.1%	11.3%	12.8%	10.8%
Children	62.3%	14.1%	15.2%	8.4%

**p < 0.000**

# Is Frequency of Checking Sites associated with Who gave Injection Training?

Frequency of Checking Sites				
Educator	Routinely	Yearly	'As Needed'	Never
General Nurse	407	203	445	988
%	16.0%	16.0%	22.8%	33.1%
Diabetes Nurse	1514	720	771	1024
%	59.6%	56.8%	39.6%	34.3%
Diabetes Educator	348	156	293	256
%	13.7%	12.3%	15.0%	8.6%
GP	70	56	124	212
%	2.8%	4.4%	6.4%	7.1%
Diabetologist	180	106	256	342
%	7.1%	8.4%	13.1%	11.5%
Pharmacist	16	14	43	106
%	.6%	1.1%	2.2%	3.6%
Industry	4	13	17	57
%	.2%	1.0%	.9%	1.9%
<b>TOTAL</b>	2539	1268	1949	2985
%	100.0%	100.0%	100.0%	100.0%

**p < 0.000**

# Frequency of Checking Site (%) by Country (1)

Country	Routinely	Yearly	'As Needed'	Never
USA	54.9	14.1	22.4	8.6
Canada	27.9	22.3	10.5	39.3
Russia	13.3	19.6	29.7	37.3
South Africa	31.3	20.0	27.3	21.3
Netherlands	59.2	33.8	1.4	5.6
Belgium	59.9	19.0	12.4	8.8
France	31.6	19.0	16.5	32.9
Spain	47.9	14.2	15.4	22.5
Italy	31.1	25.2	21.2	22.5
Switzerland	32.4	36.5	12.2	18.9
Austria	32.0	21.0	20.0	27.0

# Frequency of Checking Site (%) by Country (2)

Country	Routinely	Yearly	'As Needed'	Never
UK	36.8	27.8	11.7	23.8
Denmark	42.4	24.2	6.1	27.3
Sweden	21.4	24.3	19.4	35.0
Poland	27.5	18.8	13.8	40.0
Germany	53.7	30.0	6.9	9.4
Perú	13.0	26.1	13.0	47.8
Mexico	36.1	4.6	29.6	29.6
Argentina	15.3	11.1	26.4	47.2
Brazil	19.8	9.5	15.4	55.3
Chile	21.1	26.3	15.8	36.8
Colombia	20.5	6.8	34.1	38.6

# Frequency of Checking Site (%) by Country (3)


Country	Routinely	Yearly	'As Needed'	Never
Venezuela	54.2	.0	20.8	25.0
Malaysia	44.7	2.1	4.3	48.9
Australia	34.5	16.7	10.7	38.1
Indonesia	19.2	2.3	58.5	20.0
Philippines	14.9	5.4	43.2	36.5
Singapore	91.7	4.2	4.2	.0
S. Korea	7.9	5.6	9.6	77.0
China	24.9	8.0	16.2	51.0
Turkey	27.3	11.2	25.5	36.0
India	19.6	11.1	31.7	37.6
Ireland	39.5	34.9	9.3	16.3

# Frequency of Checking Site (%) by Country (4)

Country	Routinely	Yearly	'As Needed'	Never
Finland	62.7	32.4	2.9	2.0
Czech Republic	29.7	22.1	18.6	29.7
Nicaragua	7.1	7.1	64.3	21.4
Taiwan	75.0	16.0	6.0	3.0
Saudi Arabia	39.6	13.8	25.8	20.9
United Arab Emirates	34.6	14.4	16.3	34.6
TOTAL	28.3	12.6	20.2	38.9

# Is frequency of checking injection sites associated with HbA1c?


Frequency Checked	Mean	Std. Deviation	N
Routinely	8.24	2.5	2372
Yearly	8.37	1.7	1175
'As needed"	8.49	1.9	1410
Never	8.90	2.1	2014
Total	8.50	2.2	6971



**p < 0.000**

# Is frequency of checking injection sites associated with Age?

Frequency Checked	Mean	Std. Deviation	N
Routinely	47.6	20.8	3521
Yearly	51.9	18.4	1579
'As needed"	52.2	16.6	2521
Never	56.0	14.6	4844
Total	52.3	17.8	12465




**p < 0.000**



# Is frequency of checking injection sites associated with LH?


LH	Frequency of Checking Sites		
	Routinely	Yearly	'As Needed'
Yes	27.8%	30.2%	33.6%
No	72.2%	69.8%	66.4%



**p < 0.000**

# Is frequency of checking injection sites associated with Correct Rotation?

Correct Rotation	Frequency of Checking Sites			
	Routinely	Yearly	'As Needed'	Never
Yes	77.9%	70.9%	67.2%	63.2%
No	22.1%	29.1%	32.8%	36.8%




**p < 0.000**

**COMPARATIVE**

**STATISTICS: LATEST INSTRUCTION**

# Is Timing of Latest Instruction associated with Correct Rotation?


Correct Rotation	Last time received/reviewed instructions on injections				
	Last 6 months	6-12 months	1-5 years	6-10 years	Never
Yes	75.5%	72.8%	65.1%	61.9%	61.3%
No	24.5%	27.2%	34.9%	38.1%	38.7%



**p < 0.000**

# Is Timing of Latest Instruction associated with Reuse?

Needle Reuse	Last time received/reviewed instructions on injections				
	Last 6 months	6-12 months	1-5 years	6-10 years	Never
Yes	44.6%	44.9%	54.7%	58.8%	61.5%
No	55.4%	55.1%	45.3%	41.2%	38.5%



**p < 0.000**

# Is Timing of Latest Instruction associated with Hospitalization for Hypos?

Hospitalization for Hypoglycemia	Last time received/reviewed instructions on injections				
	Last 6 months	6-12 months	1-5 years	6-10 years	Never
Yes	7.4%	7.2%	8.1%	9.3%	12.2%
No	92.6%	92.8%	91.9%	90.7%	87.8%

**p < 0.000**

# Is HbA1c associated with HCP who taught Injection Technique?

Injection Instructor	HbA1c		
	Mean	SD	N
General Nurse	8.64	2.0	1237
Diabetes Nurse	8.37	1.8	3868
Diabetes Educator	8.54	2.0	934
Doctor (General Practitioner)	8.97	2.0	339
Doctor (Diabetes Specialist)	8.48	1.8	627
Pharmacist	9.10	1.9	128
A representative of the pen or needle manufacturer	8.79	1.9	83

**p < 0.000**

# Conclusions (1)

- At present Injection training is done mainly by Nurses and Educators. Only 10% of patients get training from a Diabetes Doctor.
- Less than a third of patients have their injection sites checked at each visit. 2 out of 5 have never had their sites checked at all.
- The frequency of checking sites however varies enormously from country to country.
- Fewer than 2 out of 5 patients claim to have gotten instructions on injecting in the last 6 months. Ten percent of injectors say they have never gotten injection training.



# Conclusions (2)

- Interestingly, needle reuse is less frequent when General Nurses, Diabetes Nurses or Diabetes Educator give injection training than when Doctors, Pharmacists or representatives of Industry do it.
- The frequency of checking injection sites does not vary from males to females or from syringe to pen users, but is much more frequent in adolescents and children than in adults.
- Over 70% of patients with GSM have their sites checked routinely, while less than half of T1DM do and only about a quarter of T2DM.

# Conclusions (3)

- Most Diabetes Nurses check sites routinely while others (including Educators and Diabetes Doctors) rarely do.
- Checking sites routinely is associated with lower HbA1c levels, less LH and more correct rotation.
- Patients are also more likely to rotate correctly if they have received injection instruction in the last 6 months.
- More recent instruction is also associated with lower levels of needle reuse and fewer hospitalizations for hypoglycemia.