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Background

The development of diabetic disease records a trend in growth and the Osmed National Report of 2011 highlights a prescription shift towards the high cost innovative molecules for the treatment of diabetes mellitus type II (DMII) and submits to intensive monitoring by the health ministry. In the management of diabetic patient, the guidelines suggest an early intensive therapeutic intervention and the pursuit of glycemic personal target for avoiding hypoglycemic episodes, which would be more responsible for the increased risk of the development of cardiovascular episodes.

Objectives

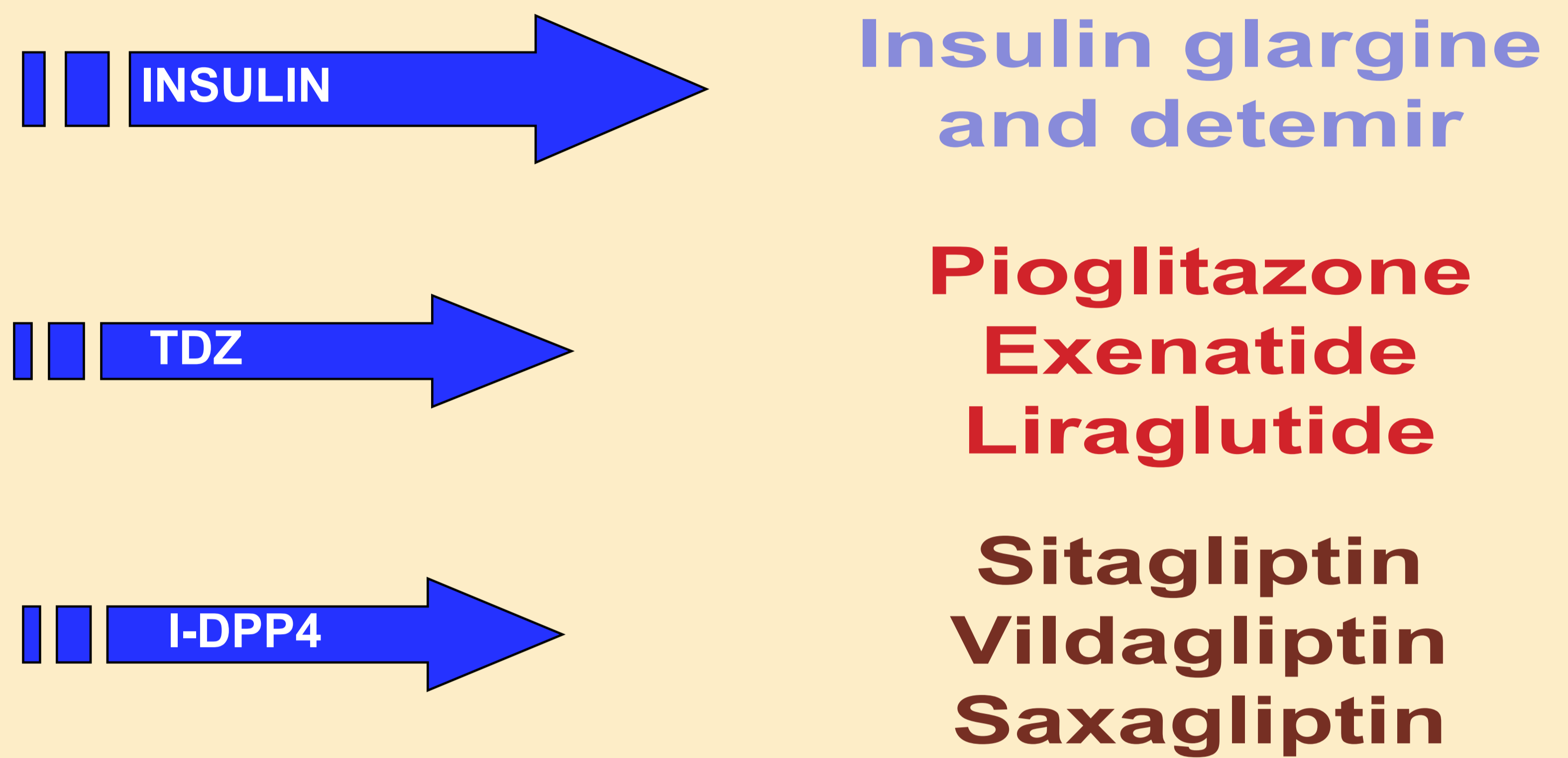
Analysis of population, consumption and kind of diabetic innovative drugs used in Piedmont region for valuing the therapeutic approach of DMII, because the advantages of innovative therapy must be valued too.



Method

First step valued the incidence of DMII in Piedmont, analysing data from the diabetic regional register during the period 2007-2012. Dipeptidyl dipeptidase 4 inhibitors (sitagliptin and vildagliptin alone or in association with metformin and saxagliptin), thiazolidinediones (pioglitazone alone or in association with metformin), glucagon-like-peptide-1 agonists (exenatide, liraglutide), insulin glargine and detemir have been considered innovative drugs. Consumption and kind of drugs have been analysed as the defined daily dose/1000 inhabitants/die (DDD) during a six-month period of 2012 using regional databases of prescriptions which allowed to know population data. Data from 2012 have been compared with 2011.

Innovative Antidiabetic Drugs



Results

A first information is the increase of incidence of DMII, 1,70% in five years, which corresponds to 80.327 patients. Focus on population treated with innovative drugs has pointed out that 21% (61.679/294.590) of diabetic patients is 65 years old and males are much more than female (respectively 53,88% vs 46,12%).

	2012	2007	2012 VS 2007
TOTAL POPULATION	4.457.335	4.401.266	56.069
DM POPULATION	294.590	214.263	80.327
DM INCIDENCE	6,61%	4,92%	1,7%

%21 diabetic population = 65 mean age

SEX	POPULATION	%
Female	28.449	46,12
Male	33.230	53,88
TOTAL	61.679	100,00

The most prescribed drug is insulin glargine with 44% of total consumptions, another 25% of DPP4-inhibitors alone or in association, 20% of pioglitazone alone or in association, 9% of Glucagon Like peptide-1 agonists and 2% of insulin detemir.

INNOVATIVE ANTIDIABETIC DRUG	DRUG	TOTAL Defined Daily Dose	DDD/1000 INHABITANTS DIE	DDD %
INSULIN GLARGINE		3.155.888	3,93	43,84%
INSULIN DETEMIR		144.913	0,18	2,01%
GLP-1	LIRAGLUTIDE	649.200	0,81	9,02%
	EXENATIDE	63	0,00	
	PIOGLITAZONE/METFORMIN	758.912	0,95	
	PIOGLITAZONE	624.848	0,78	
PIOGLITAZONE ALONE OR ASSOCIATED	PIOGLITAZONE/GLIMEPIRIDE	59.192	0,07	20,05%
	SITAGLIPTIN	659.568	0,82	
	SITAGLIPTIN /METFORMIN	646.492	0,81	
I-DPP4 ALONE OR ASSOCIATED	VILDAGLIPTIN/METFORMIN	255.390	0,32	25,08%
	SAXAGLIPTIN	154.644	0,19	
	VILDAGLIPTIN	88.956	0,11	
	TOTAL	7.198.065	8,97	

The comparison with the same period of 2011 highlights an increased consumption in Piedmont of innovative drugs, 23% (8,97 DDD in 2012 vs 6,91 DDD in 2011) while italian data register an increase of 5% (15,69 DDD vs 14,87 in 2011).

INNOVATIVE ANTIDIABETIC DRUG	DRUG	PIEDMONT REGION		
		FIRST SIX MONTHS 2012	FIRST SIX MONTHS 2011	2012 VS 2011
INSULIN GLARGINE		3,93	3,79	3,68%
INSULIN DETEMIR		0,18	0,28	-54,50%
GLP-1	LIRAGLUTIDE	0,81	0,22	73,25%
	EXENATIDE	0,0001	0,0001	-27,19%
PIOGLITAZONE ALONE OR ASSOCIATED	PIOGLITAZONE/METFORMIN	0,95	1,13	-19,17%
	PIOGLITAZONE	0,78	0,16	79,19%
	PIOGLITAZONE/GLIMEPIRIDE	0,07	0,09	-17,08%
I-DPP4 ALONE OR ASSOCIATED	SITAGLIPTIN	0,82	0,46	43,50%
	SITAGLIPTIN /METFORMIN	0,81	0,43	46,04%
	VILDAGLIPTIN/METFORMIN	0,32	0,19	40,47%
	SAXAGLIPTIN	0,19	0,10	46,95%
VILDAGLIPTIN	0,11	0,06	46,96%	
TOTAL		8,97	6,91	22,94%

INNOVATIVE ANTIDIABETIC DRUG	DRUG	ITALY		
		FIRST SIX MONTHS 2012	FIRST SIX MONTHS 2011	2012 VS 2011
INSULIN GLARGINE		4,96	4,26	14,12%
INSULIN DETEMIR		1,50	0,88	41,59%
GLP-1	LIRAGLUTIDE	0,87	0,66	24,68%
	EXENATIDE	0,25	0,36	-42,41%
PIOGLITAZONE ALONE OR ASSOCIATED	PIOGLITAZONE/METFORMIN	2,29	3,22	-40,62%
	PIOGLITAZONE	1,42	1,97	-38,55%
	PIOGLITAZONE/GLIMEPIRIDE	0,23	0,40	-75,88%
I-DPP4 ALONE OR ASSOCIATED	SITAGLIPTIN	1,28	1,05	18,21%
	SITAGLIPTIN /METFORMIN	1,43	1,16	19,07%
	VILDAGLIPTIN/METFORMIN	0,76	0,48	37,49%
	SAXAGLIPTIN	0,48	0,33	31,94%
VILDAGLIPTIN	0,22	0,12	43,50%	
TOTAL		15,69	14,87	5,22%

Discussion and conclusions

Increased consumption of these drugs suggests that medical prescriptions could probably move on therapeutic innovative molecules. It's important the discussion and comparison with clinicians and PHD about data analysis showed above, with the aim to estimate the effective advantages of innovative drugs in terms of **compliance**, **reduction of adverse reactions**, **increased quality of life**.

Focus on adverse reactions in ITALY and in PIEDMONT due to innovative antidiabetic drugs:

From 01/01/2011 al 31/12/2012	ADVERSE REACTIONS IN ITALY					TOTAL	%
	DEATH	SERIOUS	NOT SERIOUS	NOT INDICATED			
INSULINA DETEMIR	-	11	5	-	16	3,10%	
INSULINA GLARGINE	-	113	42	2	157	30,43%	
EXENATIDE	-	9	25	1	35	6,78%	
LIRAGLUTIDE	-	18	134	0	152	29,46%	
PIOGLITAZONE	-	12	15	-	27	5,23%	
SITAGLIPTIN	-	9	45	-	54	10,47%	
VILDAGLIPTIN	-	2	9	-	11	2,13%	
SAXAGLIPTIN	-	6	58	-	64	12,40%	
TOTAL	0	180	333	3	516	100,00%	

From 01/01/2011 al 31/12/2012	ADVERSE REACTIONS IN PIEDMONT REGION					TOTAL	%
	DEATH	SERIOUS	NOT SERIOUS	NOT INDICATED			
INSULINA DETEMIR	-	-	-	-	-	-	-
INSULINA GLARGINE	-	5	3	-	8	18%	
EXENATIDE	-	-	1	-	1	2%	
LIRAGLUTIDE	-	1	20	-	21	48%	
PIOGLITAZONE	-	-	-	-	-	-	
SITAGLIPTIN	-	-	7	-	7	16%	
VILDAGLIPTIN	-	-	2	-	2	5%	
SAXAGLIPTIN	-	-	5	-	5	11%	
TOTAL	0	6	38	3	44	100%	

	N. PIEDMONT	N. ITALY	%PIEDMONT VS ITALY
INSULINA DETEMIR	-	16	0,0%
INSULINA GLARGINE	8	157	5,1%
EXENATIDE	1	35	2,9%
LIRAGLUTIDE	21	152	13,8%
PIOGLITAZONE	-	27	0,0%
SITAGLIPTIN	7	54	13,0%
VILDAGLIPTIN	2	11	18,2%
SAXAGLIPTIN	5	64	7,8%
TOTAL	44	516	8,5%