Diabetes Miletus Type 1 Drugs

	Structure	Onset	Peak	Effect	Administration	Notes
Short Acting (Regular Insulin Preparation) Humulin R, Novolin R (those are recombinant human)	animal insulin, human insulin It's a Hexameric analog	30-45 mins	2-4 hrs	6-8 hrs	2-3 times /day or more. S.C. 30-45 mins before meal IV in emergency (diabetic ketoacidosis)	Physical characteristics: Clear solutions at neutral pH. It doesn't have a baseline as it falls rapidly until you take it before the next meal in 30-45 mins. Uses: Designed to control postprandial hyperglycemia & treat emergency diabetic ketoacidosis
Intermediate acting Insulin/ NPH (Isophane)	insulin hexamer bound to zinc and mixed with colloidal material known as protamine (Stronger structure)	1-2 hrs	5-7 hrs	13-18 hrs	Twice daily	
Ultra-Short Acting Insulin Lispro, aspart, glulisine	hexamers of insulin where the AA connected to zinc (proline) is replaced by aspartic acid (looser structure) It's a monomeric analog	0-15 mins	30-90 mins	3-4 hrs	2-3 times /day or more. S.C. 5 mins (no more than 15 mins) before meal IV in emergency (diabetic ketoacidosis)	Physical characteristics: Clear solutions at neutral pH. It doesn't have a baseline as it falls rapidly until you take it before the next meal 5 mins. Uses: Similar to regular insulin but designed to overcome the limitations of regular insulin.
Long acting Insulin Insulin glargine	insulin hexamer bound to chemicals rather the zinc like glutamic acid and others that hold them tight	2 hrs	flattened peakness	24 hrs		
Amylin analog (Pramlintide)	* Is a new adjuvant approved drug that can be used with Insulin to lower the dose of Insulin that is given to a patient. * It's not used as a monotherapy.					

Regimens:

1. Premixed Regular + intermediate regimen:

*Providing two injections with regular and intermediate insulin one at 8 am and one at 6 pm

*Positive points: It's inexpensive and only with 2 injections and we have postpandiary peaks and a baseline.

*Negative point: We have insulin with no meal and this is an area of risk for hypoglycemia so we advise them to eat in between meals.

2. Ultra short acting + Long acting regimen:

It's better than the premixed regimen in mimicking normal pancreatic function but requires 4 injections, 3 with the ultra short acting at meals and one long acting daily, add to that an advantage that there's no need to eat between meals or have risk of hypoglycemia and that the ultra short acting is taken 5 mins before meal which means you're definitely going to eat unlike the short acting where it's 30-45 mins.

Diabetes Miletus Type 2 Drugs

	↓A1C	Adm	Action	Adverse Effects	Notes
Sulfonylureas Glimepiride (Amaryl)	1-1.5	half an hour before meals	bind to an ATP-dependent K+ channel on the cell membrane of pancreatic beta cells. promoting insulin secretion	weight gain, hyperinsulinemia and hypoglycemia	
Meglitinides "Repaglinide & Nateglinide"		10 mins prior to a meal	Insulin secretagogues that mimic Ultra-Short Acting Insulin: short-lasting & fast working		-Same side effects & mechanism of action as Sulfonylureas -It has minimal effect on overnight or fasting glucose level.
Biguanides "Metformin" (Glucophage)	1.2		Mechanism of action is unknown, but some suggestions are: I. Stimulation of glycolysis in tissues. II. Reduction of hepatic and renal gluconeogenesis. III. Slowing glucose absorption from the intestine with increase glucose to lactate conversion by enterocytes. IV. Reduction of plasma glucagon levels. **Has other actions:** -Reduces hyperlipidemia (LDL) -Decrease cardiovascular mortality -Reduce all-cause mortality in patients with CKD, CHF, or CLD with hepatic impairment - Metformin-associated lower risks were noted for cancers - Decreases metabolic syndromes & Insulin Resistance	Lactic acidosis (rare) -The risk of hypoglycemia is far less than Sulfonylureas agents -Does not result in weight gain (Ideal for obese patients) **Contraindicated in pregnancy**	-The drug of choice in newly diagnosed type 2 diabetes
Glitazones			Bind to PPARs and one of these PPARs (PPARϒ) increases glucose metabolism.	Fluid retention leading to edema, weight gain and potentially aggravating heart failure **Contraindicated in patients with decreased ventricular function.**	Resiglitazone is the most common one. Troglitazone was withdrawn from the market due to an increased incidence of druginduced hepatitis.
Alpha-Glucosidase inhibitors "Acarbase and Miglitol"		in the begin-ning of the meals.	Act by delayed the digestion of carbohydrates, thereby decreasing the glucose absorption	flatulence, diarrhea, and abdominal cramps. **Contraindicated in patients with inflammation bowel disorder, colonic ulceration, and intestinal obstruction**	NOT the drug of choice
DPP inhibitors "Sitagliptin/ Vildagliptin/ Saxagliptin"	0.5 - 0.7			Almost no side effects; stuffy runny nose, headache & upper respiratory tract infections are very rare.	Used as an adjuvant therapy with Metformin
GLP-1 receptors agonist (Ends by either glutide or tide)	1.5	"Dulagl-utide" is an oral drug. Others are SC		severe/fatal pancreatitis & weight loss.	Effective in treating Obesity and Diabetes.
SGLT-2 Inhibitors	1.5 very effe-ctive		Inhibit SGLT-2 which excrete high level of blood glucose in the urine.	weight loss, Vaginal and male genital infections, Increased thirst, frequent Urination & UTIs especially in women.	

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