	Pharmacological Actions	MOA	Adverse effect
C.N.S	**1- Antipsychotic effect :** ❖ **Produce emotional quieting and psychomotor slowing** ❖ **Decrease hallucinations, delusions and agitation.**	**Blockade of dopamine receptors in the mesolimbic system.** **Atypical drugs exert their antipsychotic action through blocking serotonergic ($5HT_2$) & dopaminergic receptors.**	**1- Sedation, drowsiness, fatigue (haloperidol , Risperidone)**
	2- Extrapyramidal Symptoms : **Abnormal involuntary movements such as tremors, parkinsonism & tardive dyskinesia.**	**Blockade of dopamine receptors in the nigrostriatum**	**Some occurring early in treatment as: Parkinson's syndrome.** **Other Extrapyramidal Symptoms are late– occurring : 1- Tardive Dyskinesia** **2- Neuroleptic Malignant Syndrome**
	3- Endocrine effects: Galactorrhea, amenorrhea, gynecomastia & impotence.	**Prevent dopamine inhibition of prolactin release from pituitry→ Hyperprolactinemia**	**Galactorrhea, amenorrhea, gynecomastia & impotence**
	4- Metabolic effects : **Changes in eating behavior and weight gain**	**Blockade of dopamine receptors in the medullary – periventricular pathway .**	**Changes in eating behavior and weight gain**
	5- Anti-emetic effect : **Effective against drug & disease- induced vomiting (not- motion sickness)**	**Blockade of dopamine receptors in the CTZ of the medulla**	
A.N.S	**1- Anticholinergic Effects :-**	**Blockade of muscarinic receptors**	**Blurred vision,Dry mouth,Urinary retention,Constipation(Clozapine, Chlorpromazine)**
	2- Antiadrenergic Effects	**Blockade of α- adrenergic receptors**	**Postural hypotension,Impotence,Failure of ejaculation(Chlopromazine , Thioridazine)**
OTHR	1- **Temperature regulation : May cause lowering of body temperature**	**Heat loss as a result of vasodilation (α- blocking) Or due to central effect**	
	2- ECG changes :	**Prolongation of QT interval** **Abnormal configuration of ST- segment & T wave.**	
	Antihistaminic effect :	**H1 receptor blockade**	Sedation
	4- Quinidine –like actions		

PHARMACOKINETICS

- **Incompletely absorbed**
- **Highly lipid soluble**
- **Highly bound to plasma proteins**
- **Undergo extensive first-pass hepatic metabolism.**
- **Excretion by the kidney**

THERAPEUTIC USES:

PSYCHIATRIC :

-Schizophrenia (primary indication)
-Acute mania
-Manic-depressive illness (bipolar affective disorder) during the manic phase

NON-PSYCHIATRIC:

1- Nausea and vomiting prochlorperazine and benzquinamide are only used as antiemetics
2- Pruritis
3- Preoperative sedation

Other ADRS

-Obstrucive jaundice
-Granular deposits in cornea
-Retinal deposits (thioridazine)
-Weight gain
- Agranulocytosis

- **(Clozapine) about 1-2%**
- **usually happen after 6-18 weeks**
- **Weekly WBC is mandatory**

- Seizures (Clozapine)

Typical Antipsychotics	Atypical Antipsychotics
1-Phenothiazine derivatives : **Chlorpromazine** **Thioridazine** **2- Butyrophenones** **Haloperidol** **3- Thioxanthene** **Thiothixene**	**1- Dibenzodiazepines** **Clozapine** **2- Benzisoxazoles** **Risperidone** **3- Thienobenzodiazepines** **Olanzapine** **4- Dibenzothiazepines** **Quetiapine**
Positive Symptoms • Hallucinations • Delusions • Paranoia	**Negative Symptoms** • **Social withdrawal** • **Anhedonia** • **Emotional blunting**
• **Treat +ve symptoms** • **Block only dopaminergic receptors** • **Not effective in refractory schizophrenia** • **Extrapyramidal side effects**	• **Treat +ve & -ve symptoms** • **Block both dopaminergic & serotonergic receptors.** • **Effective in refractory cases of schizophrenia** • **No or few extrapyramidal side effects**

Atypical Antipsychotics	MOA	Adverse Effects
1-CLOZAPINE	**Blocks both D_4 & $5HT_2$ receptors**	• **Agranulocytosis** • **Seizures** • **Myocarditis** • **Excessive salivation (during sleep)**
2-RISPERIDONE	**Blocks D_2 & $5HT_2$ receptors**	• **Postural hypotension** • **QT prolongation** • **Weight gain** **Contraindicated in patients with long QT interval**
3-OLANZAPINE	**Blocks D_1- D_4 & $5HT_2$ receptors**	• **Weight gain** • **Sedation** • **Flatulence , increased salivation & thirst** • **Postural hypotension**
4-QUETIAPINE	**Blocks D_1-D_2 & $5HT_2$ receptors**	• **Dry mouth** • **Sluggishness** • **Hypotension** • **Sedation** • Increased appetite (weight gain) • Abdominal pain • Constipation