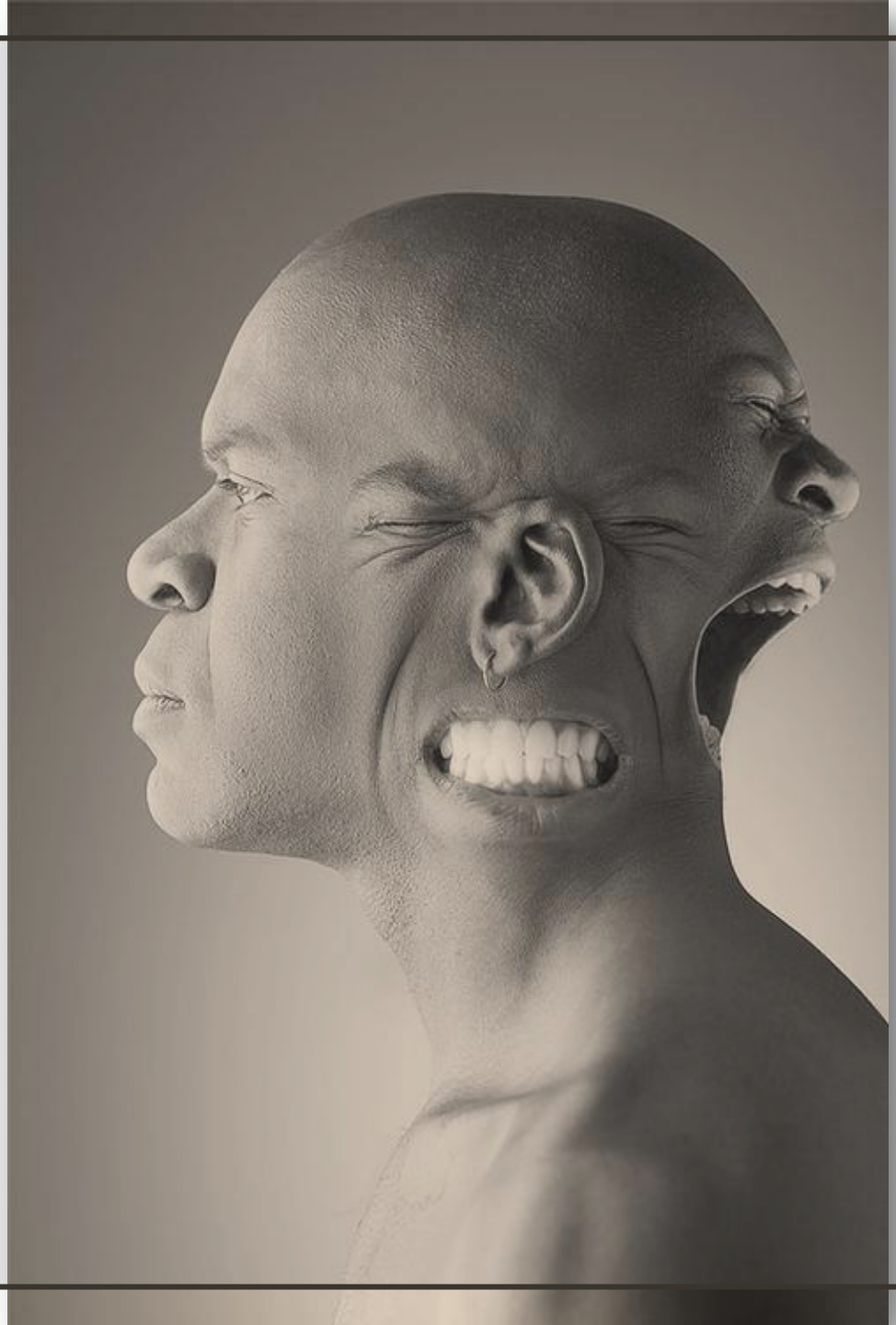
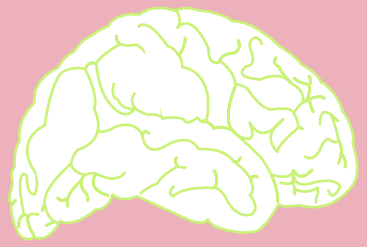


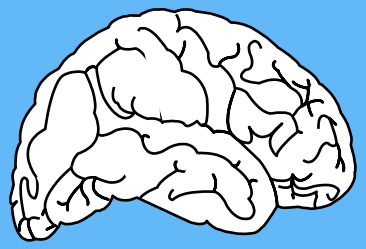
Psychiatry

433 Team

Lecture 3

Schizophrenia





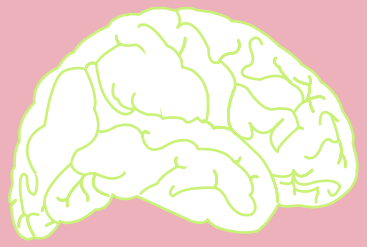
- Blue = Slides
- Green = Dr. Fatimah Notes
- Gray = Explanation

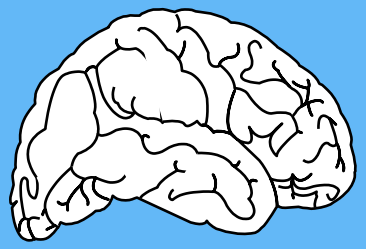
What is schizophrenia?

- It is not a single disease but a group of disorders with heterogeneous etiologies.
- Found in all societies and countries with equal prevalence & incidence worldwide. (Not related to culture)
- A life prevalence of 0.6 – 1.9 %
- Annual incidence of 0.5 – 5.0 per 10,000
- Peak age of onset are 10-25 years for ♂ & 25-35 years for ♀

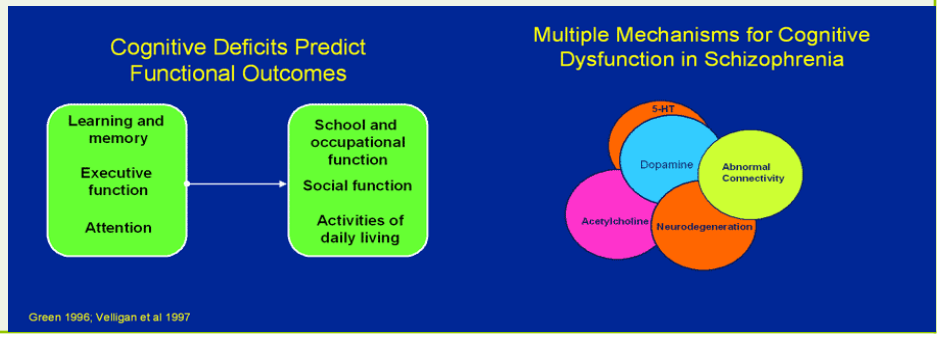
Clinical Features:

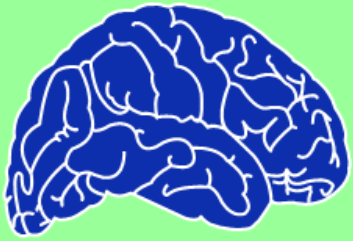
- No single clinical sign or symptom is pathognomonic (specific) for schizophrenia.
- Patient's history & mental status examination are essential for diagnosis.
- Picture of schizophrenia includes positive and negative symptoms last at least for one month :
  1) Positive Symptoms → Excess or distortion of normal functions, such as:
     - Delusions (False, fixed, unshakable beliefs)
     - Hallucinations (Abnormal perceptions)
     - Disorganized speech (or they might not speak at all)
     - Disorganized behavior (Behaving in a 'not age-appropriate' way, and being violent most of the time)
  2) Negative Symptoms → a diminishment or absence of characteristics of normal function, like:
     - Affective flattening or blunting
     - Poverty of speech
     - Poor grooming
     - Lack of motivation
     - Social withdrawal
- Social / Occupation dysfunction
- Duration of at least ***6 months*** of disturbance
- Premorbid history includes schizoid or schizotypal personalities, few friends & exclusion of social activities.
- Prodromal features (precursor) include obsessive compulsive behaviors.

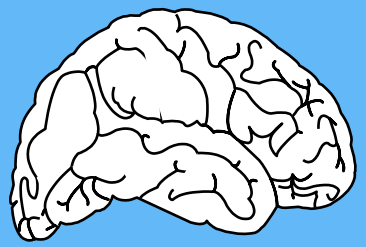




Mental Status Examination:

Appearance and behavior:	**Variable presentations**
Mood, feelings, affect :	**Reduced emotional responsiveness, inappropriate emotion.**
Perceptual disturbance:	**Hallucinations, illusions**
Thought:	○ **Thought content (delusions)** ○ **Form of thought (looseness of association)** ○ **Thought process (thought blocking, poverty of** ○ **thought content, poor abstraction, perseveration)**
Impulsiveness, violence, suicide and homicide	○ **Suicide:** killing self. ○ **Homicide:** killing others.
Insight and judgment:	○ **POOR**
Cognitive functioning:	



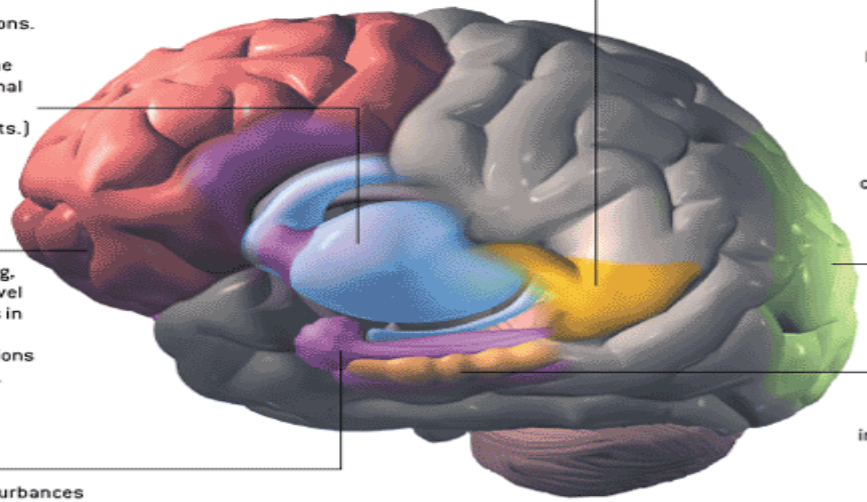


THE BRAIN IN SCHIZOPHRENIA

MANY BRAIN REGIONS and systems operate abnormally in schizophrenia, including those highlighted below. Imbalances in the neurotransmitter dopamine were once thought to be the prime cause of schizophrenia. But new findings suggest that impoverished signaling by the more pervasive neurotransmitter glutamate—or, more specifically, by one of glutamate's key targets on neurons (the NMDA receptor)—better explains the wide range of symptoms in this disorder.

BASAL GANGLIA
Involved in movement and emotions and in integrating sensory information. Abnormal functioning in schizophrenia is thought to contribute to paranoia and hallucinations. (Excessive blockade of dopamine receptors in the basal ganglia by traditional antipsychotic medicines leads to motor side effects.)

AUDITORY SYSTEM
Enables humans to hear and understand speech. In schizophrenia, overactivity of the speech area (called Wernicke's area) can create auditory hallucinations—the illusion that internally generated thoughts are real voices coming from the outside.



OCCIPITAL LOBE
Processes information about the visual world. People with schizophrenia rarely have full-blown visual hallucinations, but disturbances in this area contribute to such difficulties as interpreting complex images, recognizing motion, and reading emotions on others' faces.

FRONTAL LOBE
Critical to problem solving, insight and other high-level reasoning. Perturbations in schizophrenia lead to difficulty in planning actions and organizing thoughts.

HIPPOCAMPUS
Mediates learning and memory formation, intertwined functions that are impaired in schizophrenia.

LIMBIC SYSTEM
Involved in emotion. Disturbances are thought to contribute to the agitation frequently seen in schizophrenia.

ALFRED T. KAMAJIAN

Most likely affected areas of the brain:

- Frontal Lobe
- Basal Ganglia
- Limbic System
- Temporal (Hearing), Occipital (Vision)

Etiology

- **EXACT ETIOLOGY IS NOT KNOWN**

1- Stress-Diathesis Model:

- Integrates biological, psychosocial and environmental factors in the etiology of schizophrenia.
- Symptoms of schizophrenia develop when a person has a specific vulnerability that is acted on by a stressful influence.

Predisposing factors → precipitating factor

2- Neurobiology

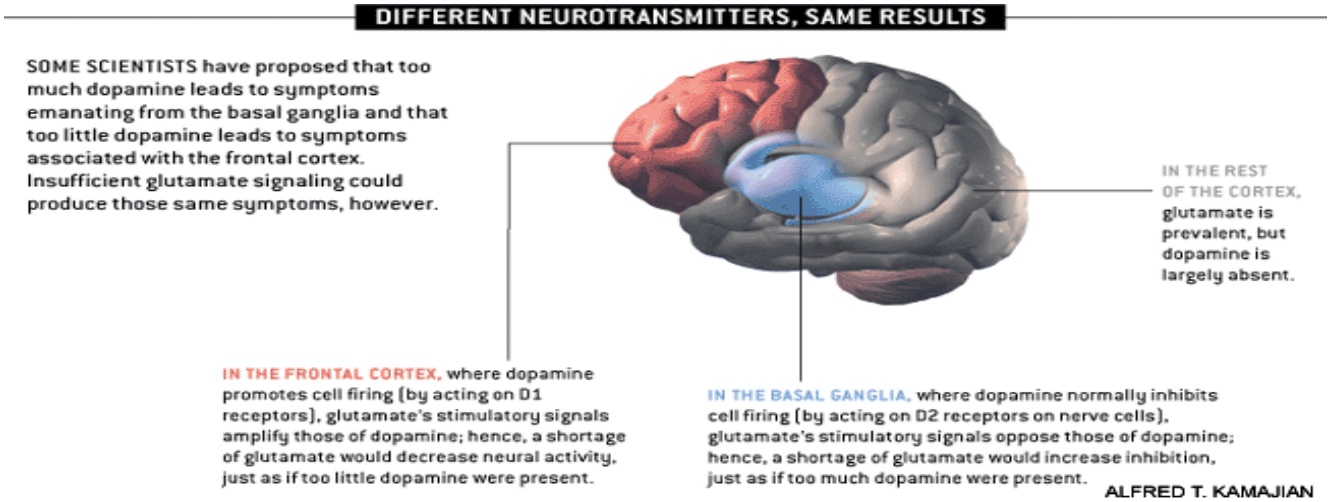
Certain areas of the brain are involved in the pathophysiology of schizophrenia: the limbic system, the frontal cortex, cerebellum, and the basal ganglia.

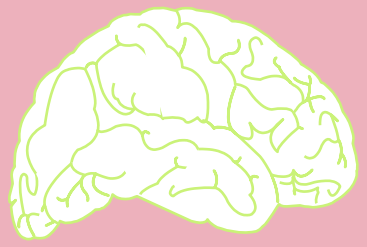
A. Dopamine Hypothesis;

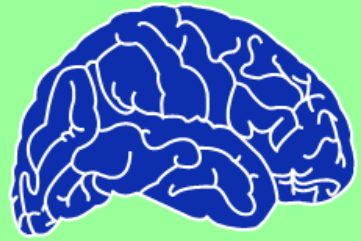
Too much dopaminergic activity (whether it is ↑ release of dopamine, ↑ dopamine receptors, hypersensitivity of dopamine receptors to dopamine, or combinations is not known).

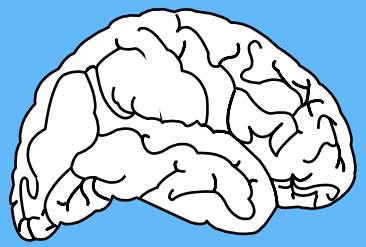
B. Other Neurotransmitters;

Serotonin, Norepinephrine, GABA, Glutamate & Neuropeptides.









Etiology

C- Neuropathology;

Neuro-pathological and neurochemical abnormalities have been reported in the brain particularly in the limbic system, basal ganglia and cerebellum.
Either in structures or connections.

D- Psychoneuroimmunology;

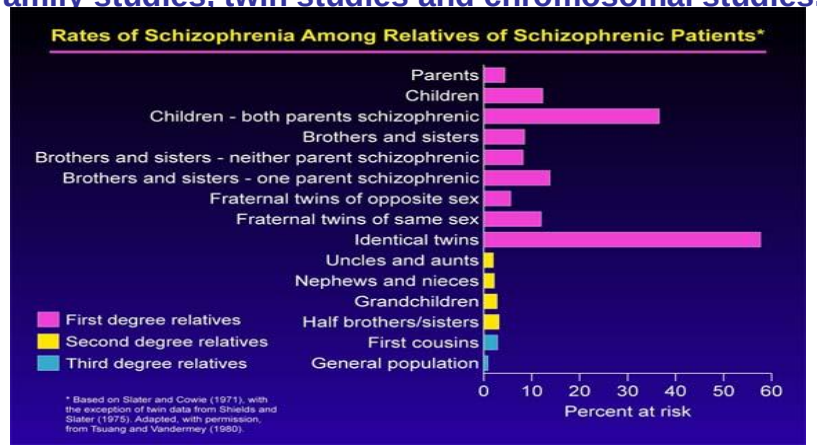
↓ T-cell interlukeukin-2 lymphocytes, abnormal cellular and humoral reactivity to neurons and presence of ANTI-BRAIN ANTIBODIES.
These changes are due to neurotoxic virus ? or endogenous autoimmune disorder ?

E- Psychoneuroendocrinology;

Abnormal dexamethasone-suppression test
↓ LH/FSH
A blunted release of prolactin and growth hormone on stimulation.

3- Genetic Factors

- A wide range of genetic studies strongly suggest a genetic component to the inheritance of schizophrenia that outweighs the environmental influence.
-These include: family studies, twin studies and chromosomal studies.

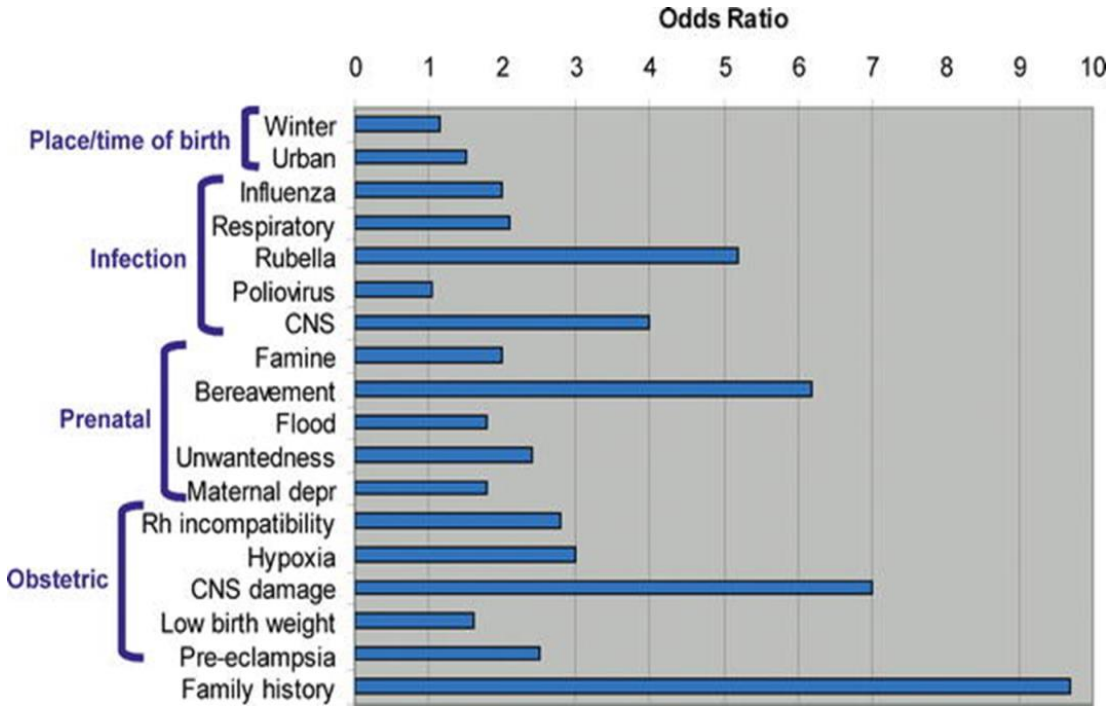


Etiology

4- Psychosocial Factors;

- In family dynamics studies, no well-controlled evidence indicates specific family pattern plays a causative role in the development of schizophrenia.

- **HIGH EXPRESSED EMOTION FAMILY : INCREASE RISK OF RELAPSE.**

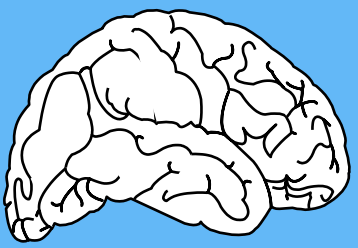


Course:

- Acute exacerbation with increased residual impairment.
- Full recovery: very rare.
- Longitudinal course: downhill (they are treated for life time).

Differential Diagnoses:

Non-psychiatric disorders	Psychiatric disorders
○ Substance-induced disorders e.g: AMPHETAMINE ○ Epilepsy (TLE) ○ CNS diseases ○ Trauma ○ Other diseases as hypothyroidism, SLE.	○ Schizophreniform disorder from month to 6 months ○ Brief psychotic disorder less than month ○ Delusional disorder ○ Affective disorders (mood disorders) such as bipolar disorder & depression ○ Schizoaffective disorder more than 6 months ○ Personality disorders (schizoid, schizotypal & borderline personality) ○ Malingering & Factitious disorders



Treatment:

1. Biological therapies
2. Hospitalization
3. Psychosocial therapies

Treatment:

1- Biological Therapies:

A. Antipsychotic medications the mainstay of the treatment of schizophrenia.
- Generally, they are remarkably safe.

- Two major classes:
1- Dopamine receptor antagonists (Typical or Conventional), (1st generation) e.g. haloperidol, chlorpromazine.

2- Serotonin-dopamine receptor antagonists (Atypical), (2nd generation) e.g. Risperidone, clozapine, olanzapine).

- Depot forms of antipsychotics e.g. Risperidone Consta is indicated for poorly compliant patients.

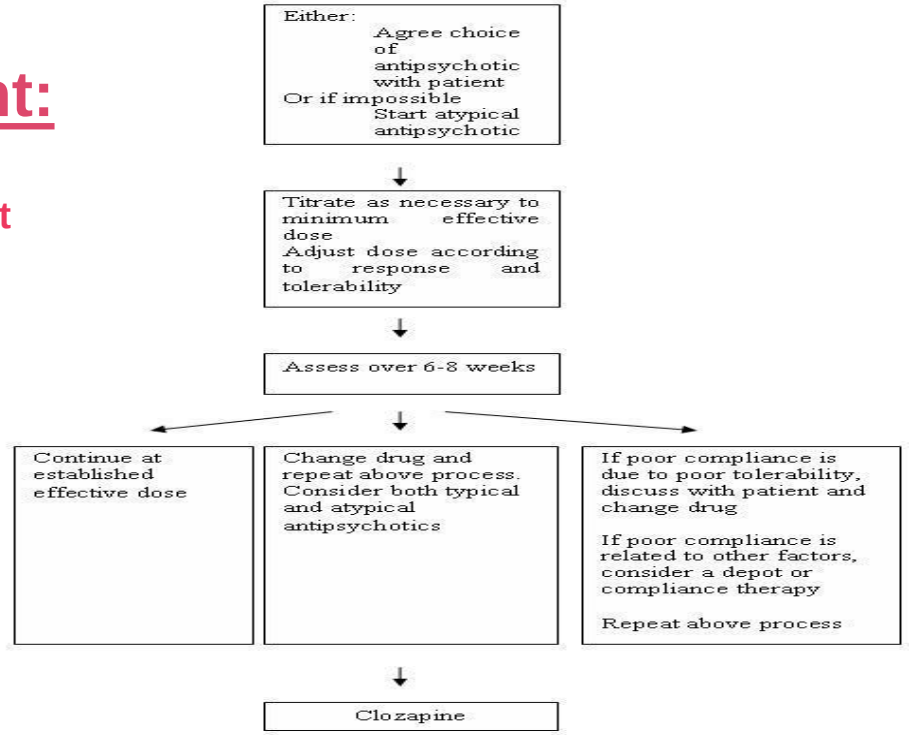
B. Other drugs:
1- Anticonvulsants
2- Lithium
3- Benzodiazepines

C. Electroconvulsive therapy (ECT):
for catatonic or poorly responding patients to medications.

2- Indications for Hospitalization:
- Diagnostic purposes
- Patient & other's safety
- Initiating or stabilizing medications
- Establishing an effective association between patient & community supportive systems

Treatment:

- Pharmacological Treatment



- Drugs Side effects

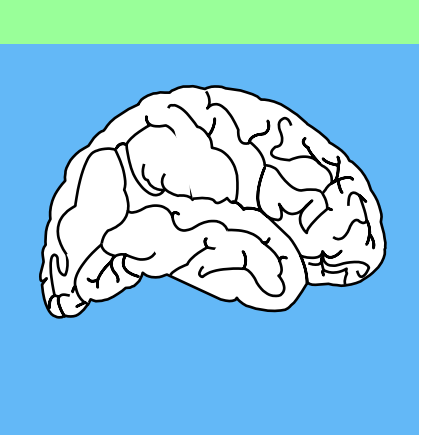
First generation antipsychotics	*Second generation antipsychotics*	*Clozapine*
Extrapyramidal effects Dystonia Pseudoparkinsonism Akathisia Tardive dyskinesia	Olanzapine Weight gain Sedation Glucose intolerance and frank diabetes mellitus Hypotension	Sedation
Sedation		Hypersalivation
Hyperprolactinaemia	Risperidone Hyperprolactinaemia Hypotension EPS at higher doses Sexual dysfunction	Constipation
Reduced seizure threshold		Reduced seizure threshold
Postural hypotension	Amisulpiride Hyperprolactinaemia Insomnia Extrapyramidal effects	Hypo & hypertension
Anticholinergic effects Blurred vision Dry Mouth Urinary Retention	Quetiapine Hypotension Dyspepsia Drowsiness	Tachycardia
Neuroleptic malignant syndrome		Pyrexia
Weight gain		Weight gain
Sexual dysfunction		Glucose intolerance and diabetes mellitus
Cardio-toxicity (including prolonged QTc)		Nocturnal enuresis
		Rare serious side effects Neutropaenia 3% Agranulocytosis 0.8% Thromboembolism Cardiomyopathy Myocarditis Aspiration pneumonia

Treatment:

- 3- Psychosocial Therapies:
- Social skills training
- Family oriented therapies (Esp. for High Expressed Emotion family)
- Group therapy
- Individual psychotherapy
- Assertive community treatment
- Vocational therapy

Psychosocial treatments with demonstrated efficacy include family interventions, supported employment, assertive community treatment, social skills training, and cognitive behaviorally oriented psychotherapy.

Good Prognosis Factors	Poor Prognosis Factors
1. Late age of onset 2. Acute onset 3. PPT factor 4. Presence of mood component 5. Good response to TTT 6. Good supportive system	1. Young age of onset (Because personality is not established yet) 2. Insidious onset 3. Lack of P.T. 4. Multiple relapses 5. Low IQ 6. Pre-morbid personality 7. Negative symptom 8. POSITIVE FAMILY HISTORY (BECAUSE THE GENETICE LOAD IS VERY HIGH)



NOTES:

✓ **Predisposing factors:**

Genetic load (VERY HIGH)
Personality
Painful childhood
Temperament

✓ **Precipitating factors:**

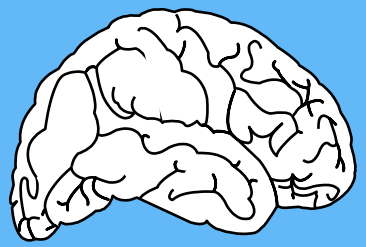
Stress
Social factors
Changes like moving or changing a job

✓ **Maintaining factors:**

Financial/family support

❖ If you have a family history of mental illness it would probably be beneficial to take some reasonable steps to reduce or avoid exposure to the risk factors -- especially those factors involved in pregnancy, prenatal care and early child
care.

❖ For teens: To lower their risk of schizophrenia
1- avoidance of STREET DRUGS 2- maintenance of healthy friendships
3- Early treatment for any depression, sadness and anxiety.



QUIZ!!

1-Positive symptoms of schizophrenia include:
A-Lack of motivation B-Delusions C-Poverty of speech D-Social withdrawal

2-Features of schizophrenia should have a duration of at least:
A-6 months B-2 weeks C-3 months D-4 months

3-Areas of the brain that are involved in the pathophysiology of schizophrenia include:
A-Limbic system B-Basal ganglia C-Cerebellum D-All of the above

4-Psychosocial therapies of schizophrenia include:
A-Group therapy B-Family oriented therapy C-Social skills training D-All of the above

5-Patient with schizophrenia will have poor prognosis if he has:
A-Good supportive system B-Positive family history C-Acute onset D-None of the above

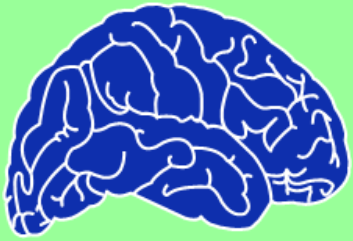
6-Patient with schizophrenia will have good prognosis if he has:
A-Young age of onset B-Multiple relapses C- Late age of onset D-Negative symptoms

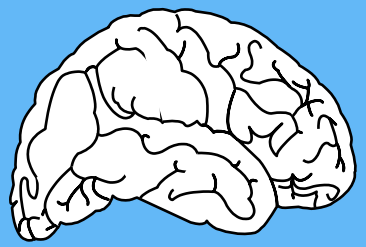
7- One of the following is a good prognostic factor:
A) Young of onset B) Negative symptoms C) Acute onset
D) Positive family history

8- Dopamine hypothesis indicated that there's:
A) Decrease in release of dopamine
B) Hypersensitivity of dopamine receptors
C) Decrease in dopamine receptors
D) Decrease responsiveness of receptors to dopamine

9: …….. is a high risk factor for developing schizophrenia:
A) Infection B) Place of birth C) CNS damage D) Family history

1-B 2-A 3-D 4-D 5-B 6- C 7- C 8- B 9- D





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Best of luck!

Psychiatry

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