Schizophrenia – What is it?

- A psychotic disorder involving disturbance of thought, emotion, and behavior
- Considered by many to be the most devastating mental illness that exists
- Lifetime prevalence of about 1%
- Onset usually in late adolescence
- Substance abuse is co-morbid in about 50% of schizophrenia patients

Characteristics

- Broad impairments
- Thought disorder
- Delusions
- Hallucinations
- Disorganized speech
- Inappropriate emotions
- Catatonia or immobility
- Loss of touch with reality
NOT split personality

- It’s not multiple personality or split personality disorder – that’s a common myth!
- Rather it’s a shattered personality

Symptom summary

Positive Symptoms
- Hallucinations
- Delusions
- Disorganized thought

Negative Symptoms
- Flat affect
- Apathy
- Emotional withdrawal

Cognitive Deficits
- Difficulty in thinking processes or in everyday situations
  - Memory
  - Attention
  - Planning
  - Decision Making

Hallucinations

- Sensory experiences that happen in the absence of environmental stimulation
- Most commonly auditory (hearing voices)
- Are not “in the patient’s head” but are actually perceived through sensory regions of the brain (e.g., auditory cortex) which are active during hallucination.

(a) Activation in response to auditory stimulation during hallucinations compared to (b) following recovery, suggesting competition from endogenous stimulation by hallucinations in (a).

Halligan and David, Nature Rev Neurosci 2001
Delusions

- Beliefs held with strong conviction despite evidence to the contrary.
- **Grandeur**: patient believes he/she is somehow special or has supernatural powers, famous, or immortal.
- **Persecution**: patient believe he/she is being targeted, followed, conspired against, spied on, or attacked (paranoid)

Delusions and Hallucinations

Thought Disorder

- Trouble organizing thoughts and logically connecting them
- Can manifest as garbled paraphasic speech with made up words (neologisms)
- Tangential thought – concepts are only loosely associated and not clear
- Lack of observance for the main subject of discourse. Deviates from discourse to irrelevant and tangential ideas
- Logic is circumstantial
Thought Disorder

Observed psychotic symptoms

- Voices speak one’s thoughts out loud
- Two or more hallucinated voices discuss one in third person
- Voices describe one’s actions as they happen
- Bodily sensations are imposed by an external force
- Thoughts stop and one feels they are extracted by an external force
- Thoughts, not really one’s own, are inserted
- Thoughts are broadcast into the outside world and heard by all.

Negative symptoms

- **Negative:** Behavioral deficits
  - **Avolition:** lack of energy and inability to persist in routine activities
  - **Alogia:** refers to a reduction in the amount or content of speech
  - **Anhedonia:** is an inability to experience pleasure
  - **Asociality:** refers to a severe impairment in forming or maintaining social relationships.
Possible motor symptoms

- **Catatonia**: prolonged motor immobility states that alternate with periods of excitability

External signs of the disease

- Train of thought is incomprehensible and confused
- Incapacity for emotional empathy
- Hallucinations that last more than a few days and not caused by medication use
- Delusions of grandeur or persecution
- Sudden and total neglect of everyday obligation
- Sudden hostility towards friends or strangers
- Report from family and friends that the person is no longer the person they know.

Cognitive Deficits in SZ
Neural Deficits in SZ

Etiology – causes of SZ

- Genetics?
  - Runs in families
  - Genetic risk but no deterministic genes
  - Genetic concordance rate about 40-60% based on identical (i.e. monozygotic) twin studies
- Early childhood or in utero brain damage (e.g. due to hypoxia) or viral infection
- Acute stressful episode during adolescence may interact with a genetic or developmental vulnerability to precipitate the disease

Pruning abnormality in SZ?

Treatments for SZ - Antipsychotics

- **Typical antipsychotics** (available since 1950's)
  - Chlorpromazine (Thorazine)
  - Haloperidol (Haldol)
  - Perphenazine (Etrafon, Trilafon)
  - Fluphenazine (Prolixin)
- **Atypical antipsychotics** (new generation 1990's)
  - Clozapine (Clozaril) → can cause agranulocytosis
  - Risperidone (Risperdal)
  - Olanzapine (Zyprexa)
  - Quetiapine (Seroquel)
  - Ziprasidone (Geodon)
  - Aripiprazole (Abilify)
  - Paliperidone (Invega)

Cure?

- No cure or prevention yet
- Treatments are reasonably effective at least in terms of alleviating positive symptoms
- A lot of clinical research in this area

**NAPLS**

NAPLS is a consortium of clinical research programs dedicated to the early detection and prevention of psychotic disorders and other forms of serious mental illness.
Some Hollywood Portrayals