



NPTEL ONLINE CERTIFICATION COURSES

Basics of Mental Health & Clinical Psychiatry

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Lecture 11: Electrical activity of brain

CONCEPTS COVERED

- Physiological basis of EEG
- Evoked potentials
- Waves of EEG
- Applied aspects

The term electroencephalogram, coined by **Hans Berger**, refers to the graphic record of brain electrical activity, or brain waves. (alpha waves)

Electroencephalography is a graphic representation of the difference in voltage between two different cerebral locations plotted over time.



Each synapse acts like a battery driving current in a small loop.
Both excitatory postsynaptic potentials (EPSPs) and inhibitory postsynaptic potentials (IPSPs) contribute to the synaptic activity recorded as EEG.

Molecular

External granular layer

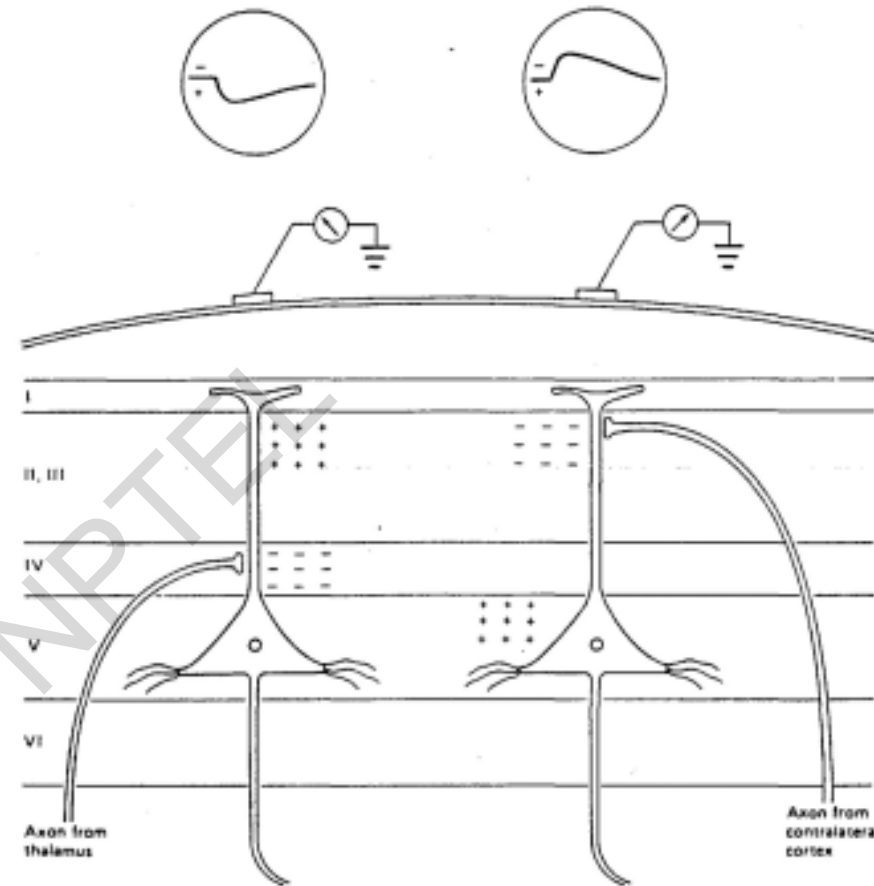
External pyramidal layer

Internal granular layer

Internal pyramidal layer

Multiform layer

Pyramidal neurons, the major projection neurons in the cortex, make up the majority of the EEG signal (particularly layers III, V and VI), because they are uniformly orientated with dendrites perpendicular to the surface, long enough to form dipoles.



EEG is not AP

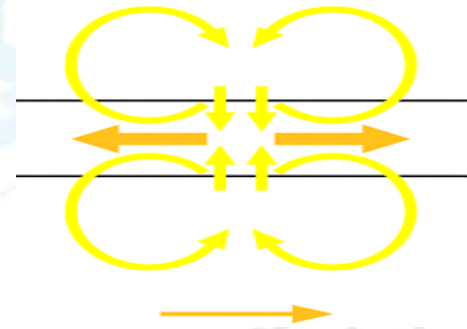
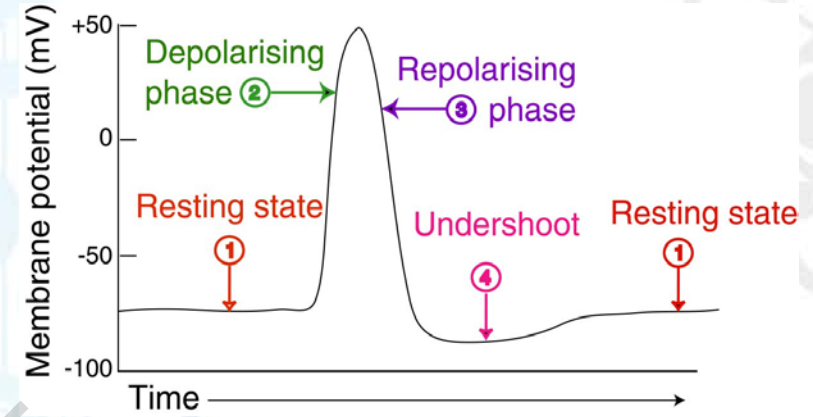
Action potential

Rapid, transient, all-or-none nerve impulses.

They are generally too short in duration (a few ms) and too “deep” to contribute significantly to the EGG signal.

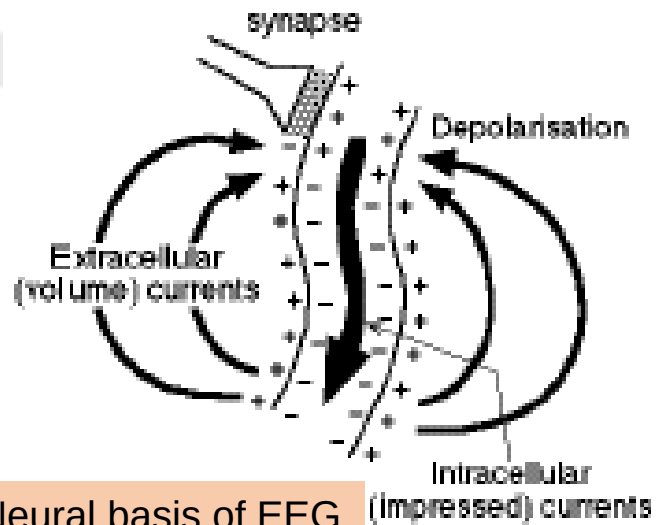
In addition they create 2 dipoles = *quadrupole*

Finally, synchronous firing is unlikely preventing the summation of potentials



Post synaptic potentials summate spatially and temporally.

A single pyramidal cell may have more than 10^4 synapses distributed over its soma and dendritic surface.



Neural basis of EEG

When an EPSP is generated in the dendrites of a neuron, Na^+ flow inside the neuron's cytoplasm creating a current sink.

The current completes a loop creating a dipole further away from the excitatory input

The thalamus acts as the pacemaker ensuring synchronous rhythmic firing of pyramidal cells.

It takes a combined synchronous electrical activity of approximately 108 neurons in a minimal cortical area of 6cm^2 to create visible EEG

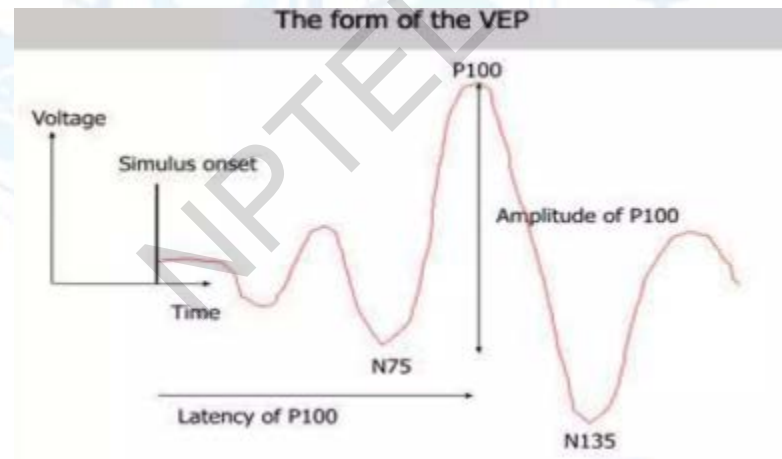
EEG records spontaneous potentials, but evoked potentials are recorded following a stimulus

EEG- microvolts, Evoked potentials – very few microvolts.

It requires averaging the same event over multiple trials (typically 100+), in order to average out noise/random activity, but preserve the signal of interest.

3 types-

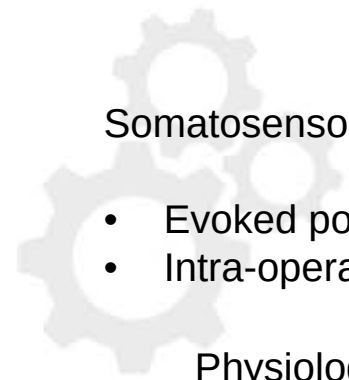
- 1.Sensory
2. Motor
- 3.Event related



Somatosensory evoked potential

- Evoked potentials of large diameter sensory nerves
- Intra-operative monitoring

Physiological basis of SSEP-

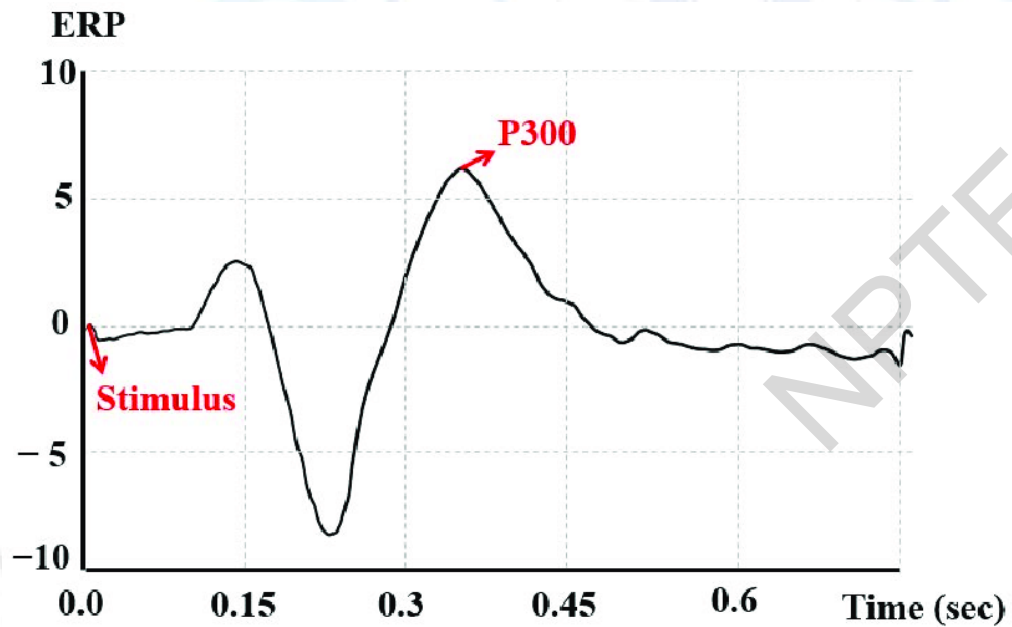


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Event related potentials-“higher” cognitive processes, e.g. attention, expectation, memory.

P 300 important waveform to assess neurodegenerative conditions.



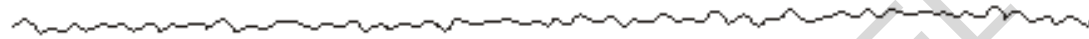
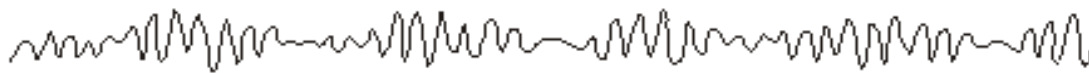
Beta (β) 13-30 Hz

Parietally and
frontally



Alpha (α) 8-13 Hz

Occipitally



Theta (θ) 4-8 Hz

Children,
sleeping adults



Delta (δ) 0.5-4 Hz

Infants,
sleeping adults



Waves of EEG

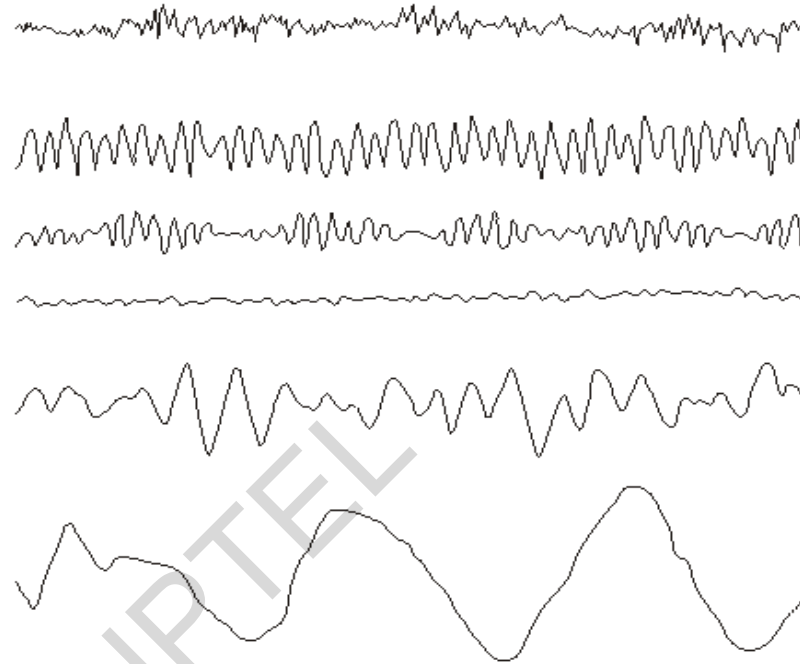


Seen during alertness, active concentration, EYES OPEN

Relaxation, awake, CLOSING of the eyes

Drowsiness, light sleep

slow wave sleep-deep sleep



Beta

Alpha

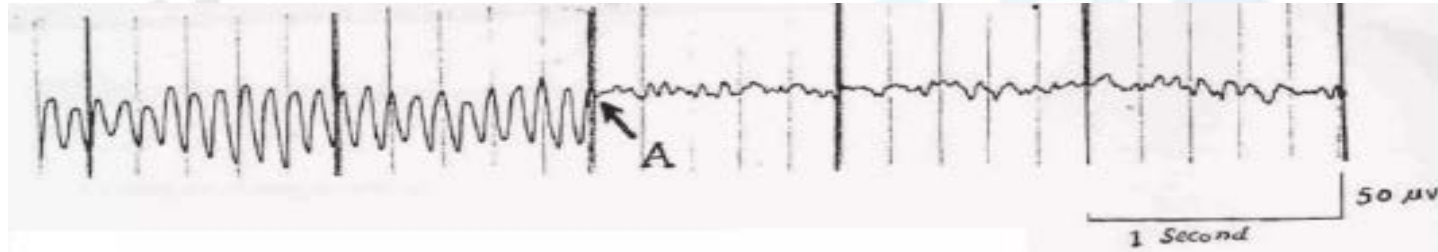
Theta

Delta

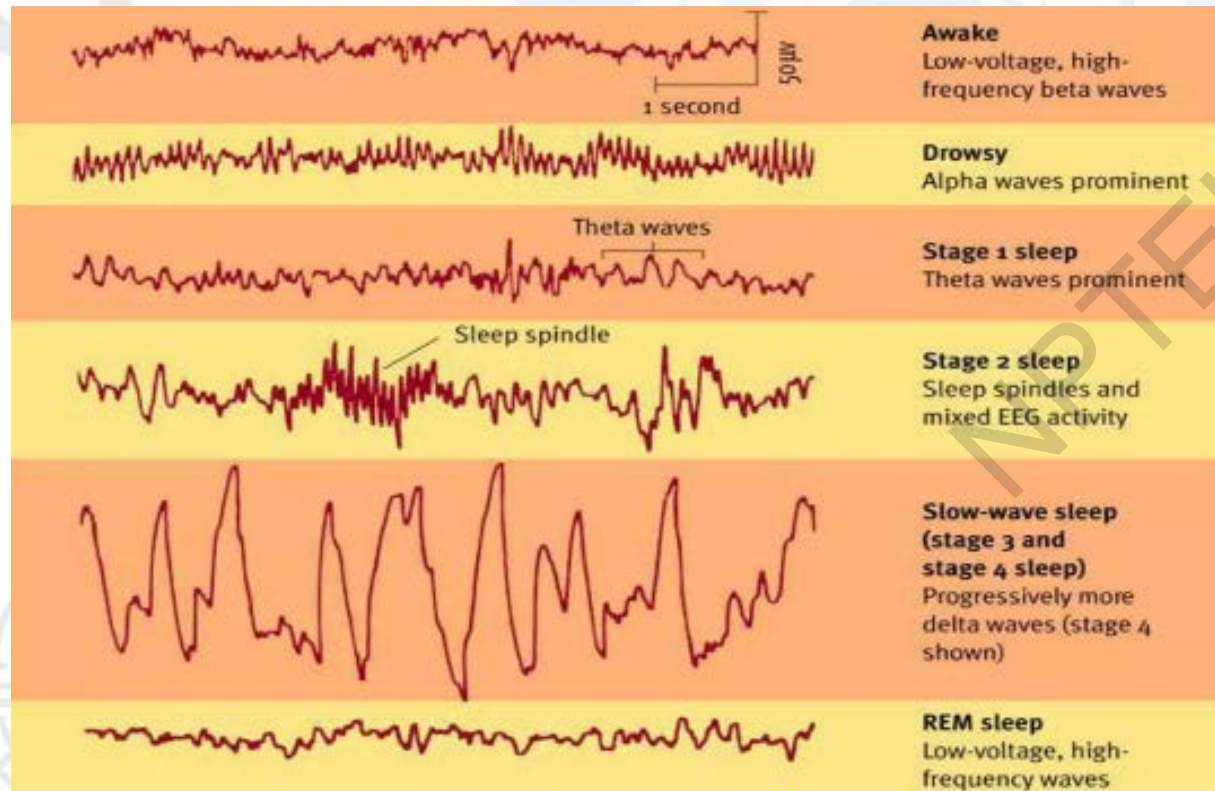
Gamma (30 – 100+ Hz):

Cross-modal sensory processing, short-term perceptual memory

Alpha block occurs with mental activity

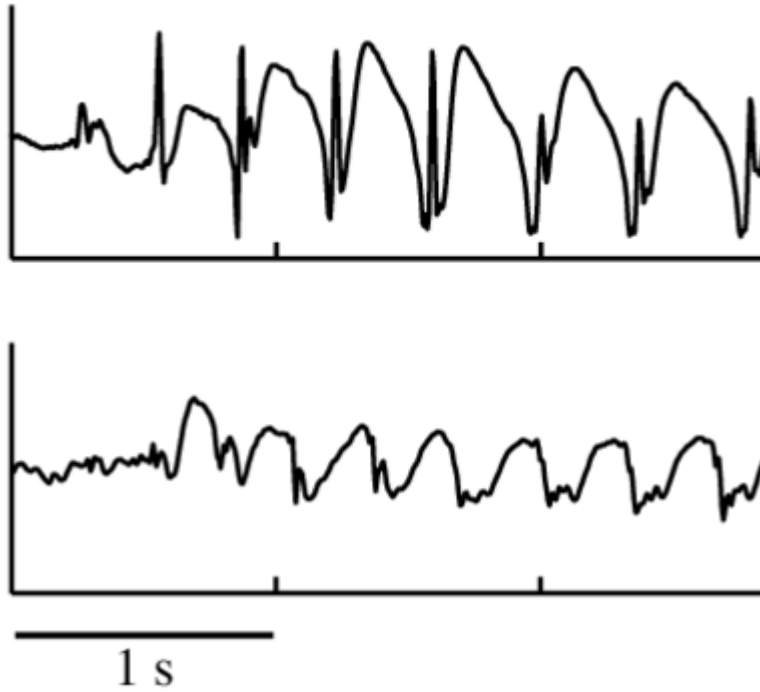


Desynchronization/alpha block

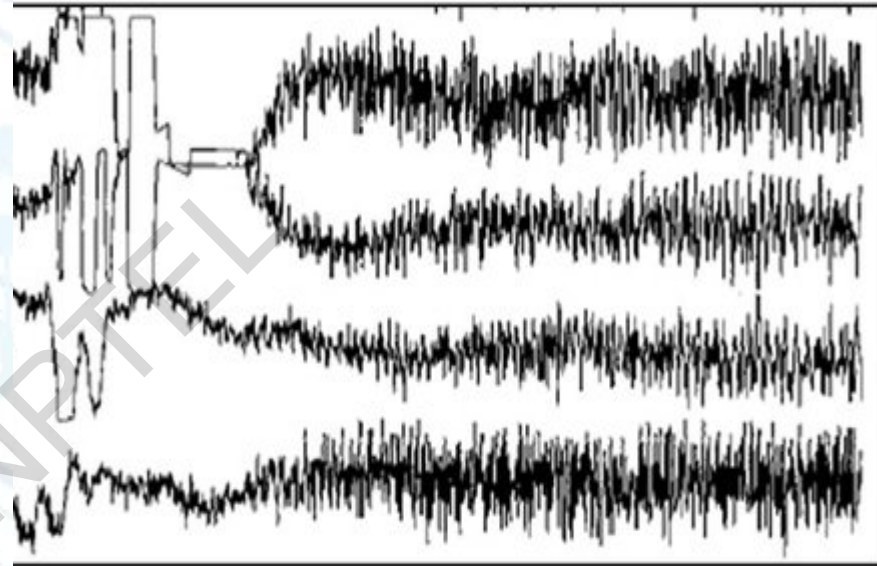


EEG pattern seen in sleep

Slow wave complexes spikes- absence seizures
3/sec, 4-6/sec-myoclonic jerks



Polyspikes- Generalized tonic-clonic seizure



Keypoints

- EEG is not recording of AP
- EEG records spontaneous potentials, but evoked potentials are recorded following a stimulus
- Alpha waves are seen during relaxation, awake and eye closed.
- Slow wave sleep comprises of theta and delta waves.

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**THANK
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NPTel ONLINE CERTIFICATION COURSES

Course Name **Mental health & basics of clinical psychiatry**

Faculty Name **Dr Sumit Kumar**

Department Name **Psychiatry**

Tata Main Hospital Jamshedpur

Lecture 12 : Descriptive Psychopathology

KEY POINTS

Mental health and its implications
Phenomenology
Empathy
Consciousness
Disorder Of Perception.
Disorder Of Thinking
Formal Thought Disorder
Insight

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Basics Of Psychiatry

Mental Health

According to the World Health Organization (WHO), mental health is “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community”.

The concept that mental health is not merely the absence of mental illness

Components of mental health

- a) Emotional wellbeing -happiness, interest in life, satisfaction
- b) Psychological well-being - one's own personality, managing the responsibilities of daily life, good relationships with others, and being satisfied with one's own life
- c) Social well-being refers to positive contribution to society (social contribution), feeling part (social integration), belief that society is a better place for all people (social actualization), society works makes sense to them (social coherence).

Why mental health is important?

- Basic cognitive and social skills ability to recognize, express and modulate one's own emotions,
- Flexibility and ability to cope with adverse events
- Adapt to changes that different life epochs or contingent situations may require.
- Lack of flexibility may result in great distress for a person undergoing sudden and/or important life changes.
- ***Disturbances of the mind- body interaction may result in psychotic experiences, eating disorders, self-harm, body dysmorphic disorder or poor physical health – thus comes the role of a psychiatrist here.***

Phenomenology

- Psychopathology is the systematic study of abnormal experience, cognition and behaviour.

Explanatory psychopathologies -assumed explanations according to theoretical reasoning.

Descriptive psychopathology -abnormal experiences as recounted by the patient and observed in his behaviour

- Phenomenology -involves the elicitation and description of abnormal psychological events, the internal experiences of the patient and his consequent behaviour
- Descriptive psychopathology therefore includes **subjective aspects** (phenomenology) and **objective aspects** (description of behaviour)

Empathy

- Empathy is a complex psychological influencing social interaction; it plays a role in the understanding of other's feelings, suffering, and behavior with a significant link to compassion. It is a motivated phenomenon that allows people to connect emotionally, mainly by sharing experiences and feelings.
- Understanding a patient's feelings, concerns, and expectations can help a physician to provide better care.
- Imagining things from the patient's point of view can reveal a different perspective to address them.
- Empathy can break down some perceived barriers between the patient and the healthcare team.
- Linked to neuroanatomical structures such as the amygdala, anterior cingulate cortex, and anterior insula.

Consciousness 'is a state of awareness of the **self** and the **environment** (Fish, 1967)

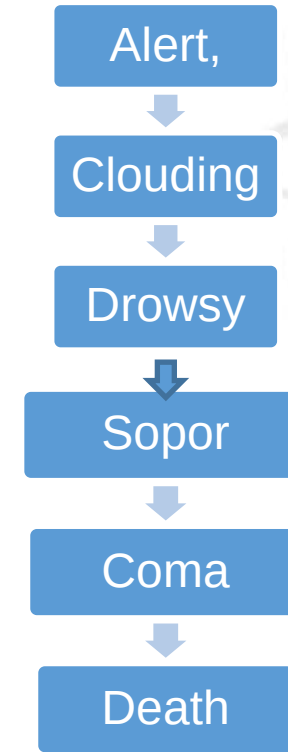
*Awareness of **experience*** as opposed to the categorizing of events as they occur.

Second, it refers to the subject reacting to objects **deliberately**

Third, it denotes a knowledge of a **conscious self**.

Unconscious, according to Jaspers (1959),

1. Something that is not an inner existence and does not occur as an experience;
2. Something that is not thought of as an object and has gone unregarded;
3. It is something which has not reached any knowledge of itself .



Levels of Consciousness

Disorders of Perception



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Definition

American Psychological Association (APA) defines **perception** as

"the process or result of becoming aware of objects, relationships, and events by means of the senses, which includes such activities as recognizing, observing, and discriminating".

Sensation :- entails the ability to, encode, transduce and ultimately perceive information generated by stimuli arising from both the external and internal environment, and much of the brain is devoted to these tasks.

For much of what we perceive the sensory input provides only raw materials for experience but the perceptual system searches for the percept which is most consistent with the sensory data, thus making perception an active process rather than a passive one. (Morgan & King)

Sensory Distortions

The perceived object is correctly recognized and identified yet there is a deviation from its customary appearance without prejudicing the knowledge of the kind of thing that it is (Cutting, 1997).

Distortions Can be of 3 types:

- a) visual
- b) Auditory
- c) tactile perception.

False Perception

Illusion

The term illusion also appears to have been originally coined by Cicero from the Latin *illusio*, *illusionis* (deception), *illudere* (to deceive).

Jaspers (1963)

Defining illusion as experiences that correspond to transpositions (or distortions) of real perceptions where external sensory stimuli unite with certain transposing (or distorting) elements so that in the end we cannot differentiate one from the other.

Fish (1967)

Defined illusions as stimuli from a perceived object combined with a mental image that produces a false perception

[Illusion occurs in the severe depressive illness, delirium and even in Schizophrenia]

Paramnesia

Déjà vu- Illusion of visual recognition in which a new situation is incorrectly regarded as a repetition of a previous experience (CTP).

It is a disturbance in which the associated feeling of familiarity that normally occurs with previously experiences events, occurs when the event is experienced for the first time (SIMS) *[occurs occasionally in normal persons but they may become excessive in temporal lobe leisons]*.

Jamais vu- Paramnestic feeling characterised by a false feeling of unfamiliarity with real situation that one has previously experienced (CTP).

Deja entendu- Illusion that what one is hearing, one has heard previously (CTP).

Deja pense - Condition in which a thought never entertained before is incorrectly regarded as a repetition of a previous though

Hallucination:

With normal sensation, we are able to distinguish **perceiving** with our sense organs from *imagining* the same objects; hallucinations similarly are experienced as *sensation* and not as *thought* or *fantasy*.

When a subject experiences something, he realizes its possible **relevance** for his own emotions, needs or actions; hallucinations also have this quality of behavioural relevance.

Normal sensation has a quality of **objectivity**, in that the experiencer feels that under favourable circumstances he would be able to experience the same something with another modality of sensation; this is also the experience of the hallucinator.

An object is considered to **exist** if the observer feels certain that it still exists even though nobody else is experiencing it at that time; perceived objects and hallucinations share this quality.

- Experience of object perception and hallucination is **involuntary**, in that the experiencer feels that it is impossible or extremely difficult to alter or dismiss the experience simply by wishing to do so.
- Normally, the experiencer is aware, or through simple questioning becomes aware, that his experience is not simply the result of being in an unusual mental state; this quality of **independence** is present with normal perception and with hallucination

3 types

I st person II nd Person III rd Person

Various modalities

a) Auditory b) Visual c) Tactile d) Gustatory e) Olfactory

- Hallucinations of bodily sensation may be *superficial*, *kinaesthetic* or *visceral*.

Superficial – thermal, haptic , Hygric

Kinaesthetic - Joint position sense

Pseudohallucination

Pseudohallucination is a perceptual experience which is figurative, not concretely real, and occurs in inner subjective space, not in external objective space.

It may have clear and vivid details. It may be retained for sometime and it can not be deliberately evolved. It is sometimes described as 'as if' phenomenon . (SIMS)

Pseudo hallucination as a separate form of perception from true hallucination.

Pseudo hallucination is more like sense perception (or true hallucinations) than fantasy.

Quality of Pseudo hallucination:

1 . Definite edges

2. vivid

3. coloured

4 . constant over some time and not created voluntarily. (Kandisky).

Not located outside subjects mind

Insight present

Lack of clarity

Experienced passively

Imagery

□ [Jaspers \(1962\)](#) described the formal characteristics of images:

- a) Images are figurative and have a character of subjectivity.
- b) Appear in inner subjective space.
- c) Not clearly delineated.
- d) Insufficient.
- e) Images dissipate and always have to be recreated.
- f) Images are actively created and are dependent on our will

Both visual hallucinations & Imagery occur in the absence of relevant sensory stimuli.
both regarded as concept of sensory-like mental phenomena (SLMP).



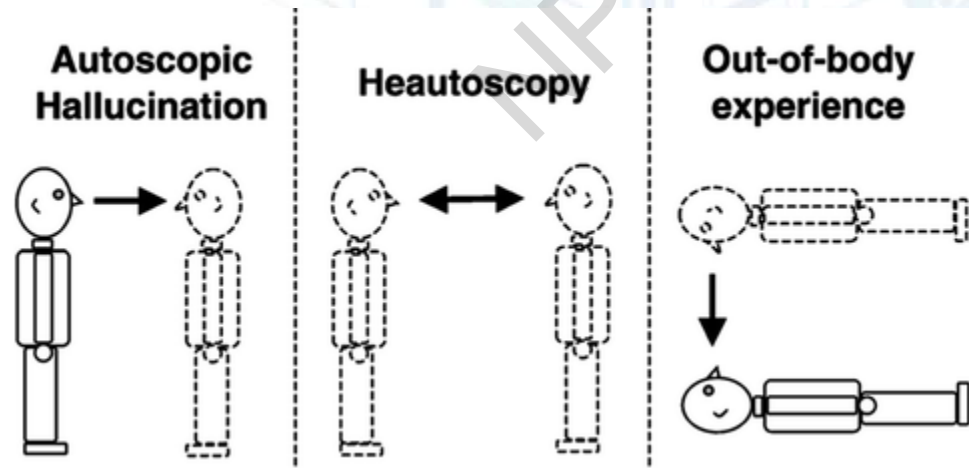
Recapitulation

		NORMAL
		Perceptual distortion
		Illusion
		Hallucination

Autoscopy

Autoscopy is the experience of seeing an image of oneself in external space and knowing that it is oneself, It is sometimes called the phantom mirror image.

Visual experiences where subjects see an image of themselves in external space viewed from within their own physical body' (Denning and Berrios, 1994). [Occurs in depression , anxiety , severe distress]



- Hallucinations that occur while going to sleep (***hypnagogic***) and on waking (***hypnopompic***).

[hypnagogic hallucinations were first mentioned by Aristotle]

[Occurs in normal subjects, Narcolepsy, toxic states , post infective states , Phobic anxiety disorders]

- **Extra Campine Hallucinations:**

Experienced outside the limits of the sensory field, outside the visual field or beyond the range of audibility

[occur in schizophrenia, epilepsy and organic states and also as *hypnagogic hallucinations* in healthy people]

- **Synaesthesia** can be defined as the perception of an object, presented in one sensory modality, at the same time as in a different sensory modality.

[Synesthesia is a rare experience where one property of a stimulus evokes a second experience not associated with the first.]

- **Functional hallucination:** Strange phenomenon in which an external stimulus is necessary to provoke hallucination, but the normal perception of the stimulus and the hallucination in the same modality are experienced simultaneously.
- Stimulus in one sensory modality producing a hallucination in another is called a ***reflex hallucination***

Disorders of Thinking



Delusion

- Delusion is a false unshakable belief or idea which is out of keeping with the patients educational , cultural and social background , it is held with extraordinary conviction and subjective certainty.

Origins Of Delusion

- Trema-- delusional mood representing a total change in perception
- Apophany – a search for finding new meaning
- Anastrophy - heightening of psychosis
- Consolidation- forming of a new world
- Residium - eventual autistic state

Resolution Of Delusions

Resolution of delusions: Brett- Jones et al. (1987) have observed three outcomes in their study that might be called '**recovered**'

Integration-

1. Low conviction in their belief, but remain preoccupied by the ideas.
2. They try to actually 'integrate' the experience into their lives and to redefine them in non-psychotic terms.
3. These patients are usually keen to discuss and try to understand what had happened in nonpsychotic terms.

Sealing over

Patients completely reject their belief and the preoccupation drops to zero.

Patients try to seal over their psychotic experiences and show strong reluctance to discuss their experiences.

Encapsulation-

Certain patients retain high conviction but preoccupation and interference decreases.

Double book keeping - identified by Bleuler

Patient's live in two worlds at the same time.

Primary Delusions

Schneider (1959) suggested

- Delusional mood: patient has the knowledge that there is something going on around him that concerns him, but he does not know what it is. Usually the meaning of the delusional mood becomes obvious when a sudden delusional idea or a delusional perception occurs.
- Delusional intuition): A delusion appears fully formed in the patient's mind. This is also known as an autochthonous delusion.
- Delusional Memory: delusional interpretation of a normal memory. These are sometimes called *retrospective delusions*.
- Delusional Percept: "Two Memberdness" .Delusional interpretation of normal perception

Schneider² defines delusional perception as the attaching of "an abnormal significance or meaning to an actual perception without (understandable) cause almost always in the direction of self-reference.

Secondary delusions are derived apparently from a preceding morbid experience.

Delusion Of reference

Mis-interpretation of events and incidences in the outside world as having direct personal reference to oneself.

Delusion Of Persecution

The person believes that people around him are against him and are trying to harm him in one way or the other.

Delusion Of Infidelity

The person believes that his/her spouse is unfaithful and is having illicit relationship with someone else

(Othello/ Morbid Jealousy).

[occur in Schizophrenia, affective psychosis, organic brain disorders and alcohol dependence syndrome]

- Delusion Of Grandiosity: The patient has sense of inflated worth, power, knowledge , identity, or special relationship to a deity or famous person.

3 variants: a) Ability b) Identity c) Mission

[occur in Schizophrenia, drug dependence, bipolar affective disorders and organic brain disease.]

- Delusion Of Love/De cleramboult : patient is convinced that some person is in love with them although the alleged lover may never have spoken to them.

[Schizophrenia, delusional disorder and in abnormal personality states.]

- Nihilistic delusions (delusions of negation/Cotard Syndrome): occur when the patient denies the existence of their body, their mind, their loved ones and the world around them.

[agitated depression, involuntal melancholia and also in Schizophrenia and delirium]

- Delusions of enormity- Patient believes that they can produce a catastrophe by some action (e.g. they may refuse to urinate because they believe they will flood the world.
- Delusions of poverty- The patient with delusions of poverty is convinced that they are impoverished and believe that destitution is facing them and their family.
- Delusions of ill health- Individuals with delusions of ill health may believe that they have a serious disease, such as cancer, TB, AIDS, a brain tumor.
- Delusions of guilt- Patient is self-reproachful and self-critical and believes that they are a bad or evil person and have ruined their family, committed an unpardonable sin.

Delusional Misidentification Syndromes

Delusional misidentification syndromes are a group of delusional phenomena in which patients misidentify familiar person, objects, or self, and believe that they have been replaced or transformed.

- Capgras Syndrome: Belief that a familiar person or object has been replaced by a nearly identical duplicate or impostor.
- Fregoli Syndrome: Belief that a familiar person acquires different physical identities while the psychological identity remains the same
- Syndrome of Inter-metamorphosis: Belief that another person has changed both his physical and psychological identities, i.e., has been transformed into another.
- Syndrome of Subjective Doubles/doppelganger : Belief that another person has been physically trans- formed into the patient's own self.

Insight

Anthony S. David, 1990[1] defined concept of insight having at least three distinct dimensions:

1. The recognition that one has a mental illness (awareness).
2. The ability to re-label unusual mental events (delusions and hallucinations) as pathological (attribution).
3. The recognition of the need for treatment (action).

Insight refers to a multidimensional concept which includes 4 A's:

Awareness of one's own symptoms (absence ---- anautognosia)

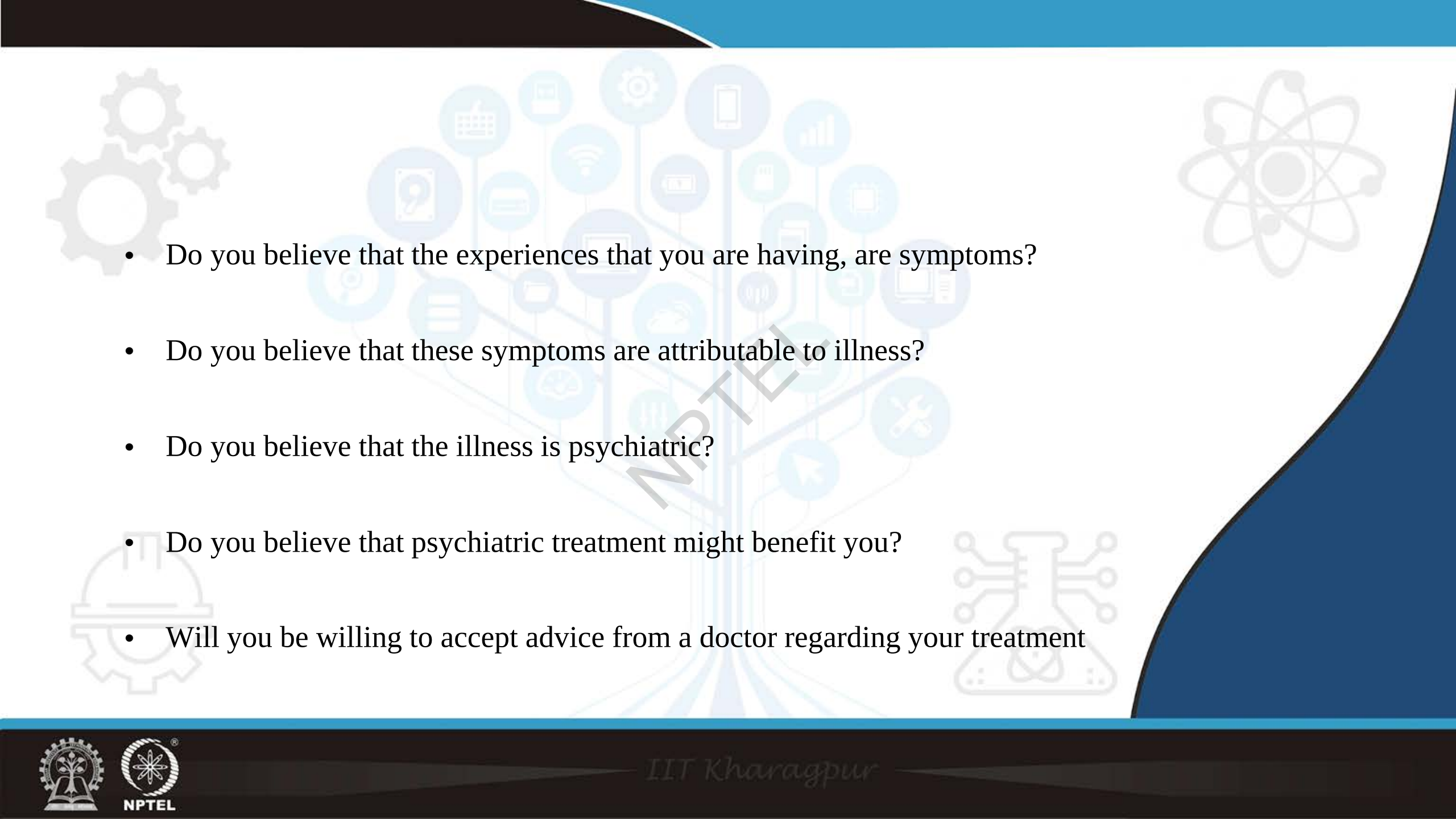
Attribution of symptoms to mental disorder appropriately (absence – dysautognosia)

Appraisal or analysis of consequences of such symptoms

Acceptance of treatment

Level Of Insight:

- Grade-1 Complete denial of illness.
- Grade-2 Slight awareness of being sick and needing help, but denying at the sametime.
- Grade-3 Awareness of being sick, but it is attributed to external or physical factors.
- Grade-4 Awareness of being sick, due to something unknown in self.
- Grade-5 Intellectual insight- awareness of being ill and that the symptoms/ failures in social adjustment are due to own particular irrational feelings/ thoughts; yet doesn't apply this knowledge to the current/ future experiences.
- Grade-6 True emotional insight- it is different from intellectual insight in that the awareness leads to significant basic changes in the future behaviour.

- 
- Do you believe that the experiences that you are having, are symptoms?
 - Do you believe that these symptoms are attributable to illness?
 - Do you believe that the illness is psychiatric?
 - Do you believe that psychiatric treatment might benefit you?
 - Will you be willing to accept advice from a doctor regarding your treatment

Formal Thought Disorder

- Formal refers to aberrations in the thought process in contrast to aberrations in the thought content (i.e., delusions).
- As FTD affects the thought process as well as thought expression, it is defined as a severe language and speech disturbance in people at high risk of developing psychosis as well as in patients with on-affective psychoses, affective psychoses, and nonpsychotic disorders

How are FTD formed??

In periods of increased demands for communication performance
[e.g., during critical life events or transition into the next stage of life]



Gray Matter deficits in temporo-parietal regions of the left hemisphere may trigger a dysfunction in the bilateral language network, including the IFG, STG and IPL)



This dysfunction of the language network may be mediated by aberrations in WM tracts of the language network (UF, SLF, ILF, IFOF) and the corpus callosum



which is the major connection between the two hemispheres of the brain



As a result of these structural and functional aberrations, FTD emerges



Leading to communication difficulties in social situations.

Circumstantiality

- Disturbance in the associate thought and speech processes in which a patient digresses into unnecessary details and inappropriate thoughts before communicating the central idea [CTP].
- Thinking proceeds slowly with many unnecessary and trivial details, but finally the point is reached. **The goal of thinking is never completely lost and thinking proceeds towards it by an intricate and convoluted path** [Fish].

[Seen in epileptic personality change, obsessional personality, Schizophrenia, dementia].

Tangentiality

- Oblique, digressive or even irrelevant manner of speech **in which the central idea is not communicated** (CTP).
- Refers to replying to a question in an oblique, tangential or even irrelevant manner. The reply may be related to the question in some distant way or the reply may be unrelated and seem totally irrelevant (TLC).

Perseveration

The thought process tends to persist beyond a point at which they are relevant. It presents itself as repeatedly same answer or motor act even if the stimulus that elicits the response has changed and demands a different answer or motor act

[Occurs in Organic cases]

Thought Block

- Abrupt interruption in train of thinking before a thought or idea is finished; after a brief pause, person indicates no recall of what was being said or was going to be said; also called as thought deprivation (CTP).

[Typically occurs in Schizophrenia, can also occur in a very anxious and exhaust person]

Loosening of association

- Characteristic Schizophrenic thinking or speech disturbance involving a disorder in the logical progression of thoughts, manifested as a failure to communicate verbally adequately; unrelated and unconnected ideas shift from one subject to another (CTP). Loosening of association denotes a loss of normal structure of thinking.

Derailment

- Gradual or sudden deviation in the train of thought without blocking; sometime used synonymously with loosening of association. There is a breakdown in both the logical connection between ideas and the overall sense of goal-directedness. The words make sense, but the sentences do not make sense. (CTP).

Neologisms

- These are new words which are constructed by the patient or ordinary words which he uses in a special way (Fish).
- A neologism is defined as a completely new word or phrase whose derivation can not be understood (TLC)

Flight of ideas

Characteristic of mania.

Thoughts follow each other so rapidly, that there is no general direction for thinking.

Chance associations take place to connect succeeding thoughts.

Arise from distractions in the environment or distractions in the elements of one's own or someone else's speech.

1. **Clang associations** where thoughts are associated by the initial syllabic structure of words rather than their meaning. e.g., clover, cloud, clap, clan, etc.

2. **Punning**: Here words get associated as one word has dual meaning e.g. fast – 'to starve' or 'speed up' and

3. **Rhyming**: Here words get associated as they have similar sounds e.g. cat, rat, bat, etc.

Schizophrenia- first part of speech : Mania – last part of speech

CONCLUSIONS

1. In this Lecture we have covered concepts of psychopathology , its various types how is it different from phenomenology difference between empathy and sympathy.
2. Basic difference between disorders of perception and thought wherein we have discussed about hallucinations and delusions and tried to differentiate the terms with imagery , pseudohallucinations .
3. Various delusional misidentification syndromes , analogy of Insight
4. Clarity regarding formal thought disorders in brief.

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**THANK
YOU !**



NPTEL ONLINE CERTIFICATION COURSES

Course Name Mental Health & Basics Of Clinical Psychiatry

Faculty Name Dr Sumit Kumar

Department Name Psychiatry

Tata Main Hospital

Lecture 13: Principles Of Personality Development

Topics at a Glance

- Attachment
- Defence mechanism
- Topographical theory and structural theory of mind
- Sigmund Freud & Personalities concerned during Neo-Freudian Era
- Concept of Personality and its categorical classification

Attachment

Attachment theory given by **British Psychoanalyst John Bowlby**

Attachment is defined as emotional bond between children and caregiver and is evidenced by an infant's seeking and clinging to the caregiver usually mother.

Attachment is a central motivational force essential for human interaction and has important consequences for later development and personality functioning

Bonding is used interchangeably with Attachment but has a different meaning altogether.

"Bonding is mother's feeling for her infant and requires skin to skin contact"

Harry Harlow (American Psychologist) :

Demonstrated emotional and behavioural effects from birth and prevented from forming attachments in rhesus monkeys.

He identified 4 phases of attachment:

- 1. Pre -attachment stage- (birth to 8-12 weeks) -babies orient towards to their mother follow them and move rhythmically.*
- 2. Attachment in the making (8-12 weeks to 6 months) – Infants become attach to one or more persons in the environment.*
- 3. Clear cut attachment (6-24 months) - infants cry and show distress when separated from mother but when returned stops crying.*
- 4. Fourth phase – (> 25 months) Mother figure is seen as independent and complex relationship between child and mother develop.*

Sigmund Freud

- Founder of classic Psychoanalysis
- Born in Freiburg , Moravia (Czech republic), Neurologist later died in England

Psychoanalysis involves bringing to the surface repressed memories and feelings by means of a careful unravelling of hidden meanings of verbalized materials and unwitting ways in which patients ward off underlying conflicts through defensive forgetting and repetition of the past.

Psychoanalysis 3 crucial aspects

1. Therapeutic technique
2. Scientific and theoretic knowledge
3. Method of investigation

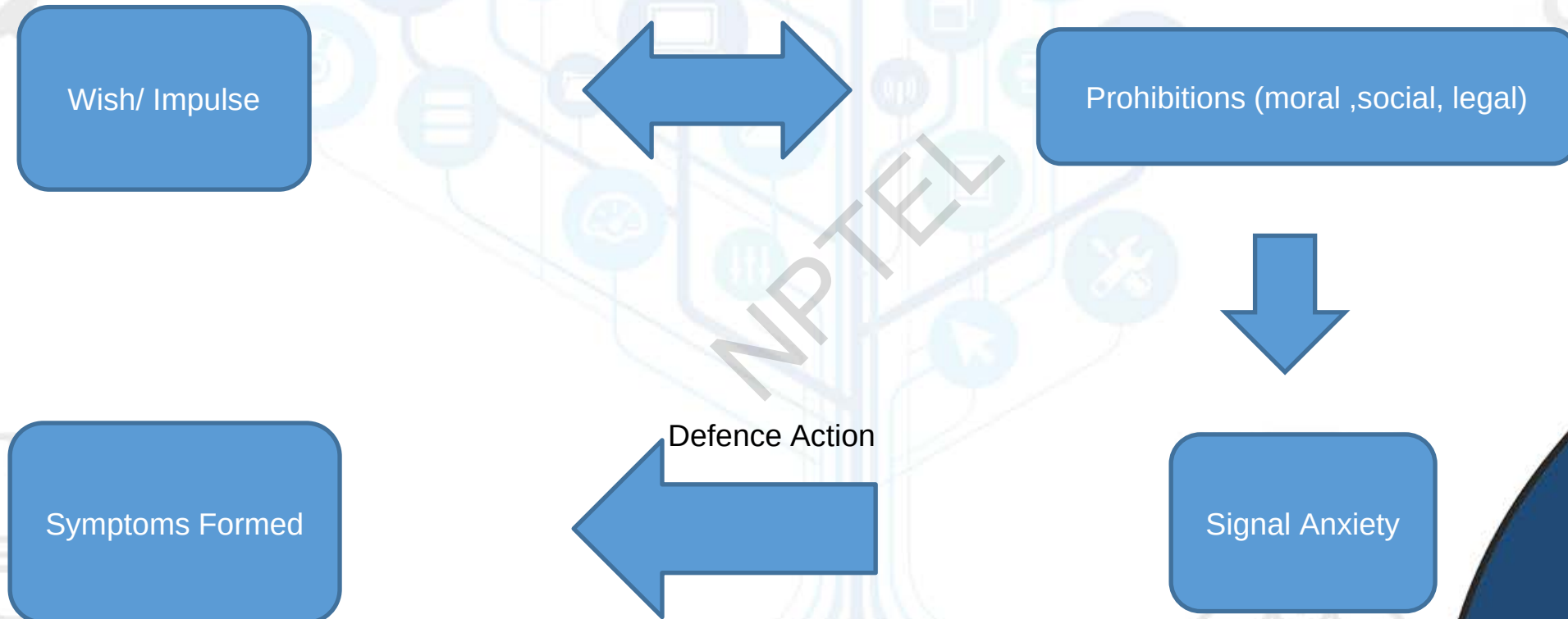
Defence Mechanism

Defence Mechanisms are mental operations that are involuntary and unconscious and contribute to reduce internal and external stresses.

Vaillant (1977) classified in 3 categories

1. Mature
2. Immature
3. Neurotic defences.

Defence Mechanism: how is it Formed



Mature

Altruism

Ascetism

Anticipation

Sublimation

Suppresion

Humour

Immature

Acting out

Blocking

Hypochondriasis

Introjection

Regression

Passive aggressive

Schizoid fantasy

Somatization

Projection

Narcisstic-Psychotic

Projection

Denial

Distortion

Neurotic (Primitive)

Repression

Reaction formation

Rationalization

Isolation

Dissociation

Displacement

Intellectualization

Externalisation

Sexualisation

Identification with aggresor

Defence Mechanism

Mature Defence mechanism

• Altruism

Constructive and gratifying service to others to receive a vicarious satisfaction and does not involve giving up one's pleasures.

(Altruistic behaviour - Surrender of direct gratification of instinctual needs takes place to satisfy the needs of others to the detriment of the self)

Conflict suffered Defeat

Action Offers unconditional help

Process Replaces aggression and competition by support and achieves **vicarious** satisfaction.

(vicarious- Felt or experienced by watching or reading about somebody else doing something)

Humour

Comical representation of feelings and thoughts overtly without personal discomfort and without producing an unpleasant effect on others.

Conflict : Failure, loss or destruction of belongings

Action : Highlighting amusing aspects of threat signals or outcome

Process : Anxiety converted to comedy.

Anticipation

Plans realistically for future inner discomfort and expects worse to occur with mental preparation.

Conflict : Sudden threat event

Action : Predicting probabilities and planning countermeasures

Process : Matching events and coping resources to achieve a sense of control

Sublimation

Altering a socially objectionable impulse to a socially acceptable one wherein impulses are channeled to achieve gratification

Conflict : Unacceptable impulses

Action : Socially acceptable behaviour

Process : Rechaneling impulses into acceptable expressions.

Suppression

Consciously or semiconsciously postponing a conscious impulse or conflict wherein the issues may be deliberately cut off, but they are not avoided. Discomfort is acknowledged but minimized.

Conflict : Painful event or sexual impulse

Action : Postponement of painful problems and feelings

Process : Intentional blocking of recall (NOT unconscious forgetting – contrast from repression)

Neurotic Defences



Displacement

Process by which interest and/or emotion is shifted from one object onto another less-threatening, often less-retaliating one.

Conflict : Fear/threat by an object; love or hate for an object

Action : Expression of love/hate/anger or fear against an unprovoking stimulus

Process : Transfer of feelings from one object to a substitute

Dissociation

Unconscious defence mechanism involving the segregation of any group of mental or behavioural processes from the rest of the person's psychic activity.

Conflict : Promiscuous, hostile or irresponsible behaviour

Action : clinically: Multiple personalities, fugue, amnesia)

Process : Temporary alteration of identity including consciousness, memory and perception.

Isolation

Splitting or separating an idea from the affect that accompanies it normally but is now repressed seen in OCD

Conflict : Painful emotions or memories

Action : Talking about emotional events without feeling (clinically: obsessions)

Process : Separate content from affect, remove affect completely.

Rationalization

Rational explanations in an attempt to justify attitudes, beliefs, or behaviour that may otherwise be unacceptable involves finding excuses that will justify unacceptable behaviour when self esteem is threatened

Conflict : Low self-esteem along with socially unacceptable behaviours

Action : Self-serving explanations and justification of behaviours

Process : False but socially acceptable explanations are offered for unacceptable behaviours

Reaction Formation

Transforming an unacceptable impulse into its exact opposite. Characteristic of obsessional neurosis

Conflict : Feelings of hostility and disinterest

Action : Devotion, self-sacrificing behaviour, cleanliness, correctness

Process : Substituting wishes/feelings that are exactly opposite to true feelings.

Repression

Expelling or withholding from consciousness an idea or feeling with help of

- i) Primary Repression- curbing of ideas and feelings before they have attained consciousness
- ii) Secondary repression - excludes from awareness what was once experienced at a conscious level.

Conflict : Threatening feelings / memories/ fears

Action : Gaps in memory; often unnoticed

Process : Banning thoughts and feelings from recall; subject unaware (not conscious)

Intellectualisation

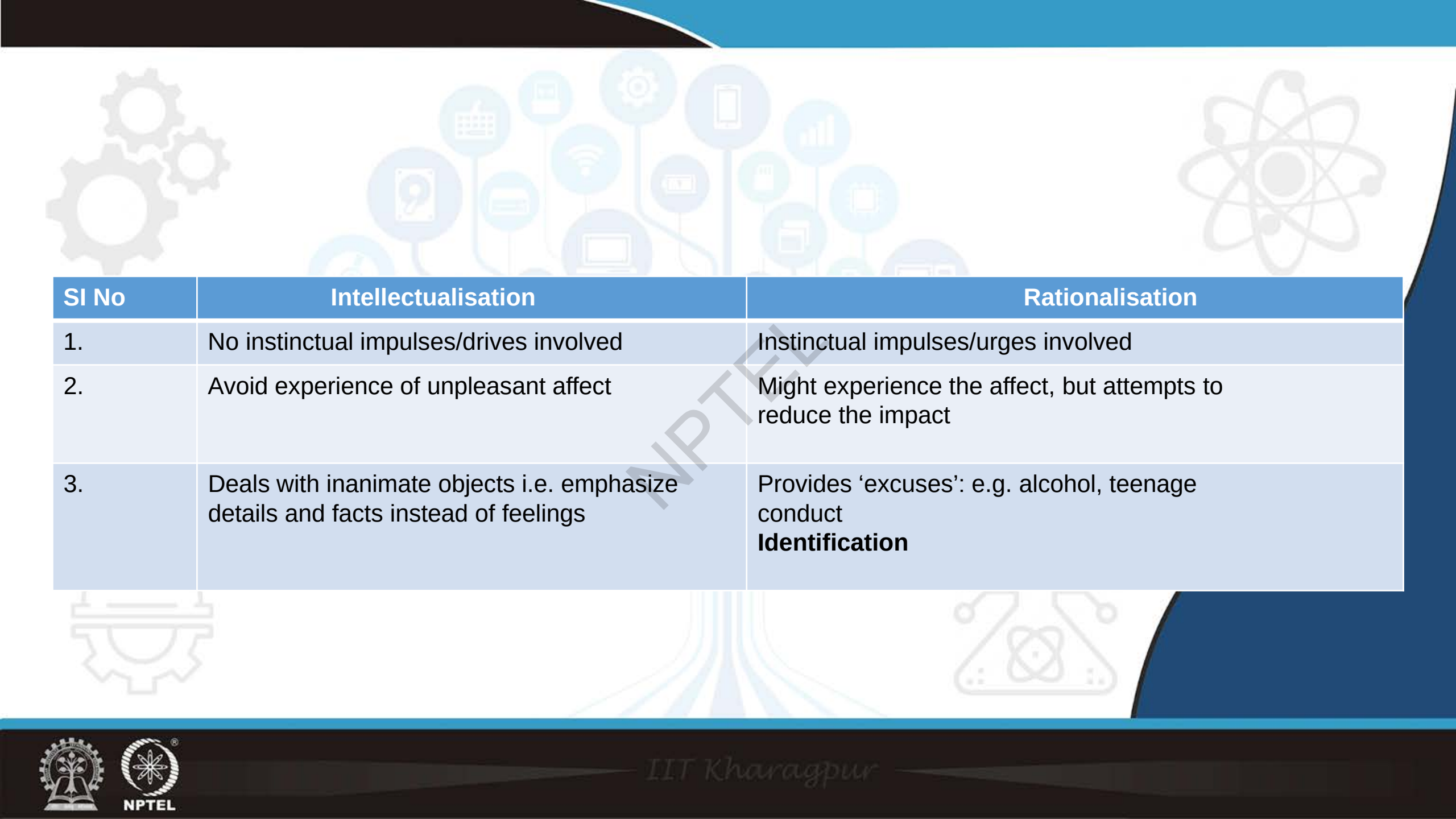
Using intellectual processes to avoid affective expression or experience.

Here the needless emphasis is focused on the inanimate to avoid intimacy with people attention is paid to external reality to avoid the expression of inner feelings, and irrelevant details are emphasised to avoid perceiving the whole.

Conflict : Disturbing feelings and thoughts ('dissonance')

Action : Abstract thinking, doubting, indecisiveness, generalizations

Process : Removing personal and emotional components of an event and focusing only on factual aspects.



SI No	Intellectualisation	Rationalisation
1.	No instinctual impulses/drives involved	Instinctual impulses/urges involved
2.	Avoid experience of unpleasant affect	Might experience the affect, but attempts to reduce the impact
3.	Deals with inanimate objects i.e. emphasize details and facts instead of feelings	Provides 'excuses': e.g. alcohol, teenage conduct Identification

Identification with the aggressor

Observed where the victim of aggression begins to assume the qualities of the proponent of aggression.

Conflict : Sexual threat or life / limb threatening violence

Action : Perpetrates violent acts

Process : Identify with aggressor, may reduce direct resistance and aid in survival during acute trauma

Undoing

Seen in OCD and is associated with magical thinking and rituals. A student might think that if he taps his table three times before the start of his exam, he will surely succeed!.

Conflict : Sadistic wishes, unacceptable impulses

Action : Superstitions (compulsive behaviour clinically)

Process : Symbolic negating of an impulse

Immature Defence Mechanism

Acting Out

Expression of an unconscious wish or impulse through action to avoid being conscious of an accompanying affect.

Conflict : Sexual and aggressive impulses

Action : Violence, stealing, rape, lies

Process : Non-reflective and uncontrolled wish-fulfilment

Passive Aggression

Expressing aggression towards authorities indirectly through passive obstructive activities.

Conflict : Resentment, hostility, low self esteem

Action : Procrastination, loss of follow through

Process : Expression through inactivity

Somatization

Converting psychological states and tension to bodily symptoms

Conflict : Threat or unidentified fear

Action : Bodily Complaints

Process : Converting mental tension to physical symptoms

Regression

Moving back into childish or earlier developmental phase to avoid confronting a conflict.

Conflict : Threat or humility

Action : Childish, immature behaviour

Process : Moving back to earlier developmental stages

Narcissistic Defence Mechanism

Projection

Refers to perceiving and reacting to unacceptable inner impulses as though they originated outside the self.

Conflict : Hostility, unacceptable wishes

Action : Ideas of reference, prejudice, suspiciousness, injustice

Process : Attributing one's own feelings to be coming from others.

Denial

Explicit refusal to acknowledge a threatening reality. It may persist despite constant explanation of the facts.

(It is not same as conscious avoidance of painful topics or thoughts.)

Conflict : Painful reality

Action : Stubborn and angry negation of reality that is visible to onlookers

Process : Refusal to acknowledge the awareness of reality; disavow problems at unconscious level

Topographical theory of Mind

Topographical theory

The mind is divided into three regions:

the conscious system,
the preconscious system
the unconscious system

The conscious system

Receives and process information from the outside world.

Its contents are communicated via speech and behaviour.

Attention cathexis refers to the investment of psychic energy on a particular idea or feeling to process it consciously.

Operates secondary process thinking mainly.

The unconscious system:

Contains the contents of censored or repressed wishes, etc.

Characterized by primary-process thinking,

Governed by the pleasure principle.

Shift of cathexis happens very often and quickly

Evident via parapraxes (Freudian slips) and dreams.

The preconscious system:

As and when needed service

Interfaces with both unconscious and conscious

contents of unconscious become conscious by squeezing through the preconscious

Maintains the 'repressive barrier' to censor unacceptable wishes and desires (not the repressed contents).

Structural Theory of the Mind

Id: full of the instinctual aspects of the individual (e.g., sexual and aggressive impulses), mostly unconscious

The Pleasure Principle is the innate tendency to avoid pain and seek pleasure

Ego: the executive organ of the mind- linked in with reality

The reality principle is a learned function, which requires delay or postponement of wish fulfillment according to environmental reality.

Superego: the seat of internalised morals and values. Can be quite punishing ('thou shalt not...') or helpful in striving for a goal (the Ego Ideal).

Repression

Unacceptable ideas, memories and thoughts are pushed out of awareness, into the unconscious.

Parapraxes and dreams

Parapraxes (Freudian slips) and dreams give clues as to what is in the unconscious.

Parapraxes are considered to be due to the *return of the repressed* materials that slips out as words during conversation.

Free association

The patient is encouraged to say whatever comes into his mind, however fleeting or trivial. This helps to reveal aspects of the unconscious mind.

Dreams

Made up of unconscious mental matter, residues from the day, and stimuli experienced during sleep (e.g., heat)

Dream work

Turns **latent** into **manifest** content and includes the following processes:

Condensation:

Two or more unconscious impulses are combined into a single image.

E.g., a strict father and a punitive teacher combine in the dream into one frightening monster

Diffusion or Irradiation: one unconscious impulse is represented by several images (the opposite of condensation)

Displacement:

The energy invested in one object or idea gets transferred to another..

Unconscious thoughts
and wishes

Latent
Dream



Dream
Work



Manifest
Dream

Condensation,
displacement,
diffusion,
symbolic
representation

What dreamer
recalls

Symbolic representation:

An innocent or less highly charged image is used in the place of something that is potentially too overwhelming. E.g., a wishful fantasy about shooting one's father becomes an image of hunting a stag.

Instincts:

Freud maintained that the mind developed in order to manage our instincts.

Dual instinct theory holds that sexual energy and aggressive energy are the dual instincts.

Libido is the force by which the sexual instinct is represented in the mind.

It can also be considered as a part of **Eros**.

Aggression is an instinct with destruction as aim and originates in skeletal muscles.

It can also be considered as part of **Thanatos**

Destructive, aggressive instincts (part of **Thanatos**: the Death instinct)

Life-affirming libidinal/sexual instincts (considered part of **Eros**: the Life instinct).

The pressure that arises from the instincts pressing to be fulfilled leads to anxiety

Erickson's Psychosocial stages

SI No	Psychosocial stage	Associated virtue	Psychopathology	Age of Attainment
1.	Trust vs Mistrust	Hope	Psychosis Depression Addiction	Birth
2.	Autonomy vs Shame	Will	Paranoia Obsession compulsion	18 months
3.	Initiative vs guilt	Purpose	Conversion Disorder Phobia Psychosomatic disorder	3 years
4.	Industry vs Inferiority	Competence	Creative Inhibition	5 years
5.	Identity vs Role Confusion	Fidelity	Gender Identity Disorder	13 years
6.	Intimacy vs Isolation	Love	borderline personality Schizoid personality	20 years
7.	Generativity vs Stagnation	Care	premature Invalidism Mid life crisis	40 years
8.	Integrity vs Despair	Wisdom	Extreme Alienation Despair	60 years



1. **Autonomy**- refers to children gaining more control over activities and acquiring new skills which is crucial for building self-esteem, failing which a sense of **shame** is felt.
2. **Industry**- Capable of learning, creating and accomplishing numerous new skills and knowledge, can have serious problems in terms of competence and self-esteem, if we experience unresolved feelings of inadequacy and inferiority among our peers
3. **Initiative & Guilt**- If not able to perform with respect to peers and friends then early years of life has deleterious repercussions in the development of the growing child.
4. **Industry**- During 6 to 12 years of age we are capable of learning, creating and accomplishing numerous new skills and knowledge.
5. **Identity vs. role confusion** - Occurs during adolescence. Up to this stage, according to Erikson, development mostly depends upon what is done to us. But from teenage onwards, our development depends primarily on what we do
6. **Intimacy** -The inherent strength of young adulthood is love, and the major task is **intimacy** and formation of a future bond partner.
7. **Generativity**- A middle aged adult seeks satisfaction through productivity in career and family / social network.
8. **Integrity** An older adult reviews/cherishes life accomplishments prepares for end of life by pursuing lifelong interests

Freud Psychosexual Development

SI No	Stages	Age	Pleasure Zones	Major Development	Fixation
1.	Oral	0-18 months	Mouth ,Lips	Breastfeeding	smoking, Over eating,Nail biting
2.	Anal	18mnths—3yrs	Anus	Anal- sadistic Toilet training	OCD
3.	Phallic	3 – 5 yrs	Genital	Oedipus/Electra complex	Sexual Dysfunction Identity disorders
4	Latency	5-6 to 11-13 yrs	Environment	Defence mechanism	Non learning
5.	Genital	11-13 to adolescence	Genitals	Full Sexual Maturity	Fully mature personality

Freud organized psychosexual maturation into 5 distinct phases.

Each stage symbolizes the concentration of the libido or instincts on a different area of the body (i.e., erogenous zones).

In order to mature into a well-functioning adult, one must progress sequentially through each of the aforementioned psychosexual stages.

When libidinal drives are repressed or unable to be appropriately discharged, the child is left wanting and unsatisfied.

[Libidinal- sexual energy]

Freud identified this dissatisfaction as fixation.

Fixation at any stage would produce anxiety, persisting into adulthood as neurosis.

Neo Freudian Era

Carl Gustav Jung

Swiss Psychiatrist, known for Analytical Psychology

Proposed Psychic Apparatus consists of

Collective Unconscious-

Consists of all mankind's common symbolic past.

Archetypes-

Representational images with universal symbolic meaning

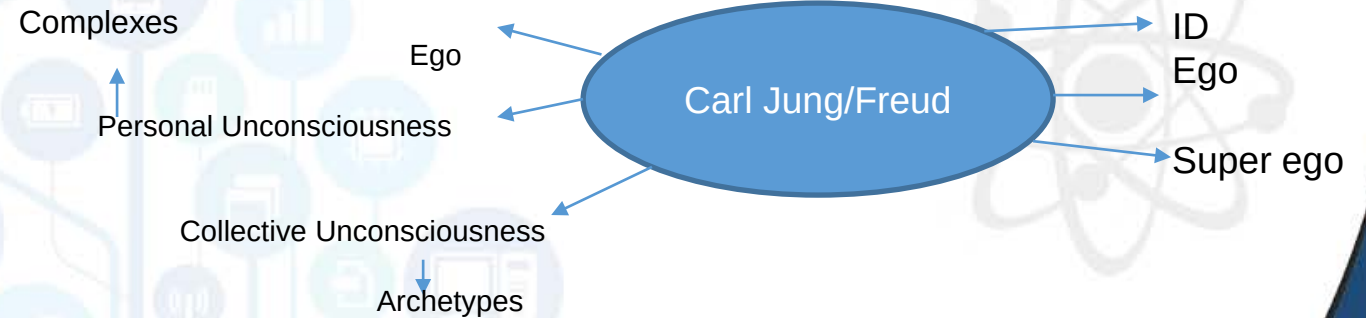
Complexes-

stimulated by interpersonal interactions as a result of interaction with complexes and archetypes.

There are 2 types of Personalities.

Introverts- Focus on inner world of thoughts ,emotions and sensations

Extroverts – More oriented towards people , outer world and material goods



a) Shadow b) Anima/ Animus c) Self d)Persona

Donald Winnicott

Holding' proposed by Winnicott has been modified and adapted for psychotherapy: Containing, holding

Described about the transitional object as blanket , teddy bear as the link between developing children and mothers.

A child can separate from mother because a transitional object provides feelings of security in her absence.

Ronald Fairbairn and Michael Balint

British Psychoanalyst elaborated on the early stages in infants' relationship with need satisfying objects and on gradual development of a sense of separateness from the mother.

Melanie Klein

Credited with theory of "Object relations theory" along with Winnicott, Ronald Fairbairn and Michael Balint

1. Places less emphasis on biological based drives and more importance on interpersonal relationships.
2. In object-relations theory, objects are usually persons, parts of persons (such as the mother's breast), or symbols of one of these, with primary object being the mother.
3. The child's relation to an object (e.g. the mother's breast) serves as the prototype for future interpersonal relationships.
4. Objects can be both external (a physical person or body part) and internal, comprising emotional images and representations of an external object (e.g. good breast vs. bad breast).
5. The conceptualisation of internal objects is linked to Klein's theory of unconscious phantasy, and development from the paranoid-schizoid position to the depressive position

Mother-Infant relationship Results into Projection → introjection and lastly → Persecutory anxiety-
→ Paranoid-schizoid behaviour → Depressive position

Karen Horney

German Physician-Psychoanalyst

Emphasized the importance of social and cultural influences on psychosexual development.

Focused her attention on differing psychology of men and women and explored vicissitudes of marital relationships.

(Vicissitudes-Change or variation going through)

3 separate concepts of Self

Actual self-sum total

Real self- in reality

Idealized self-what he/she want to be.

Transference

The feelings, thoughts and attitudes given to a person in the present (such as the therapist)

Do not benefit that person but actually originate from a person or figure in the patient's past (such as a parent).

Transference is said to be **bidimensional** – it includes replaying past experiences + seeking new relationship with therapist.

Countertransference

The therapist's spontaneous feelings and emotions that are evoked when s/he 'tunes in' to the patient's unconscious communication, including the patient's transference.

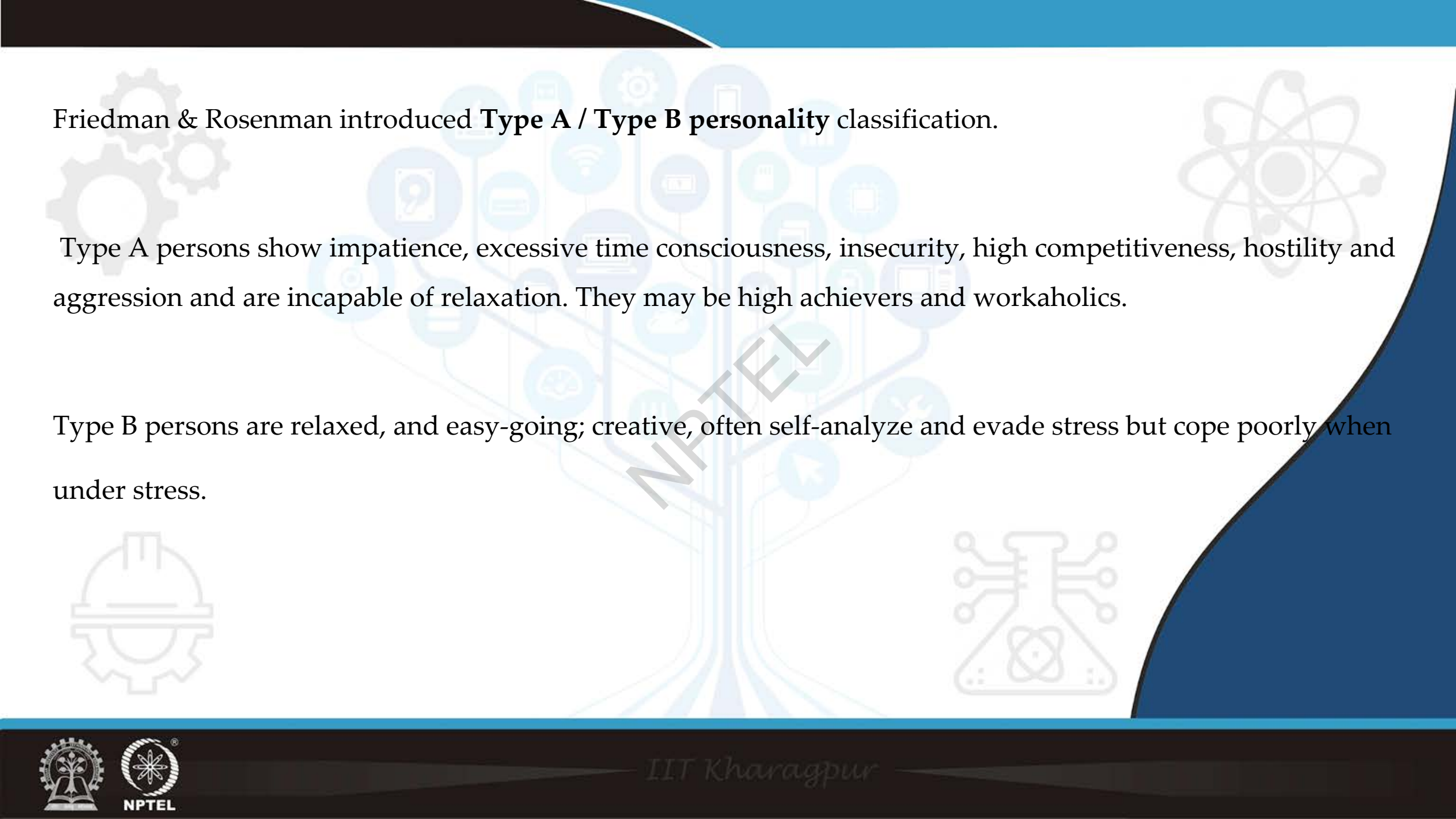
Personality Disorders

DSM defines Personality disorder as an enduring pattern of behaviour and inner experiences that deviates significantly from the individual's cultural standards, is rigidly pervasive, has onset in adolescence, is stable through time, leads to unhappiness and impairment which manifest in at least 2 of the following 4 areas:

a) Cognition b) Affectivity c) Interpersonal Function d) Impulse Control

Theories of personality consider the following different dimensions:

1. Personality as an enduring & consistent feature (dispositional) vs. influenced by situations (situationalism)
2. Personality traits are shared and comparable (nomothetic) vs. traits are unique to individuals (idiographic)



Friedman & Rosenman introduced **Type A / Type B personality** classification.

Type A persons show impatience, excessive time consciousness, insecurity, high competitiveness, hostility and aggression and are incapable of relaxation. They may be high achievers and workaholics.

Type B persons are relaxed, and easy-going; creative, often self-analyze and evade stress but cope poorly when under stress.

Cloninger's psychobiological model of personality

The temperamental dimensions include

Novelty-seeking (includes frustration avoidance, impulsive decision-making)

Harm-avoidance (pessimistic worry about the future, passive avoidant behaviour, fear of uncertainty)

Reward-dependence (sentimentality, social attachment, and dependence on praise and approval)

Persistence (high perseverance and tolerance of frustration)

Categorical Classification: Personality

SI NO		
Cluster A		
1.	Paranoid	
2.	Schizoid	
3.	Schizotypal	
Cluster B		
1.	Borderline	
2.	Histrionic	
3.	Dissocial	
4	Narcissistic	
Cluster C		
1.	Anxious-Avoidant	
2.	Emotionally Dependant	
3.	Anankastic/obsessive compulsive	

CONCLUSIONS

In this lecture we have learned basic concepts of Attachment and eminent personalities with their contributions in this field.

Concepts associated with defence mechanism

Basic understanding of Object relation theory with developmental theories like Freud's sexual theory.

Concepts of Personality and its categorical subtypes

REFERENCES

1. Oxford Text book Of Psychiatry
2. Comprehensive Text book Of Psychiatry (Kaplan & sadock)



**THANK
YOU !**



NPTEL ONLINE CERTIFICATION COURSES

Course Name **Mental health & basics of clinical psychiatry**

Faculty Name **Dr Sumit Kumar**

Department Name **Psychiatry**

Tata Main Hospital Jamshedpur

Lecture 14 : Schizophrenia

Topics at a Glance

- **Prelude and Evolution of Schizophrenia**
- **Classification system of psychiatric illness**
- **Schizophrenia**
- **Various psychotic Spectrum disorders**

Schizophrenia & Related disorders

Prelude

- Schizophrenia is a disorder with variable phenotypic expression and poorly understood, complex etiology, involving a major genetic contribution, as well as environmental factors interacting with the genetic susceptibility.

Evolution of Schizophrenia

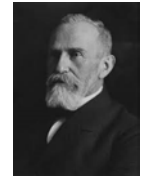


Emil Kraepelin German psychiatrist (late 19th and the early 20th century)

Gave the term “**Dementia Praecox**”.

He Proposed that all clinical cases have common patterns which results in severe cognitive and behavioural decline and elaborated 9 different forms.

Considered abandoning **categorical disease model** and replacing them with **dimension based model**.



Eugene Bleuler Swiss Psychiatrist modified Kraepelin’s concept to include

Non affective psychoses & Atypical depressive or manic episode.

Coined term “Schizophrenia”

Proposed **Basic** (obligatory – 4 A’s) & **Accesory** (supplementary –hallucinations and delusion) symptoms

4 a ‘s--

Autism,Association,Ambivalence,Affect

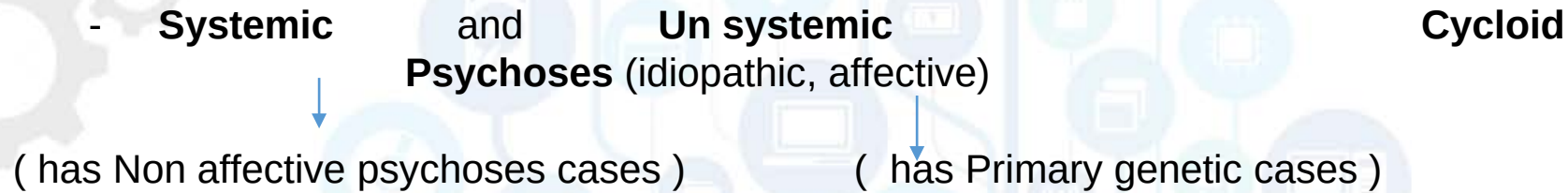


German Psychiatrist **Kurt Schneider**, who proposed First Rank Symptoms (**FRS**) of **Schizophrenia** in 1959

Audible thoughts,voices commenting on actions,voices arguing,made impulse,made will,made volition,delusional percept,somatic passivity



Leonhard gave the concept of Endogenous psychoses



Crow Proposed Type I” (positive) schizophrenia characterized by hallucinations, delusions, and formal thought disorder, with a presumed underlying dopaminergic dysfunction,

while patients with “**Type II” (negative) schizophrenia** displayed social withdrawal, loss of volition, affective flattening, and poverty of speech, presumed to be associated with structural brain abnormalities.

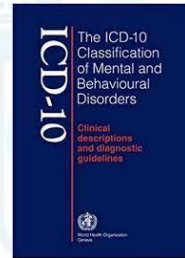


Carpenter and collaborators proposed the delineation of a subtype of schizophrenia characterized by enduring “**primary” negative symptoms** that could not be construed as sequelae of other psychopathology

Classification Of Psychotic Disorders

Timeline

Followed in India and European countries



1948: 1st
ICD

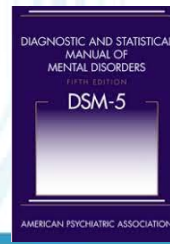
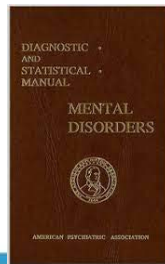
1994: ICD 10

2022: ICD 11

1952: 1st
DSM

1994: DSM IV

2022: DSM V-
TR



22 chapters
F code belongs to Psychiatric illness

ICD



DSM

Psychiatric
Illness

Followed in USA

Psychosis



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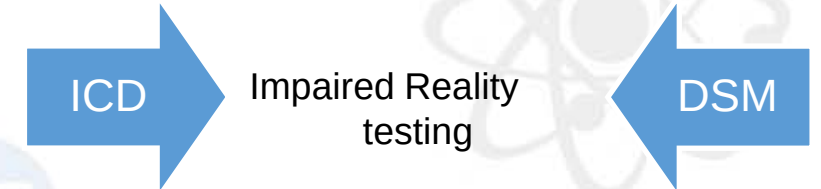
IIT Kharagpur

Current conceptualization of Psychosis:

Refers to the presence of delusions, hallucinations without insight, or both.

- According to current diagnostic classification systems

Impaired reality testing remains central conceptually to psychosis.



Psychosis can be considered to be a set of symptoms in which a person's mental capacity, affective response, and capacity to recognize reality, communicate, and relate to others is impaired.

Diagnostic and Statistical Manual Of Mental disorders (DSM) V

Schizophrenia Spectrum differ

- Type
- Number
- Complexity
- Severity
- Duration
- Features



Brief Psychotic Disorder- at least 1 day to 1 month

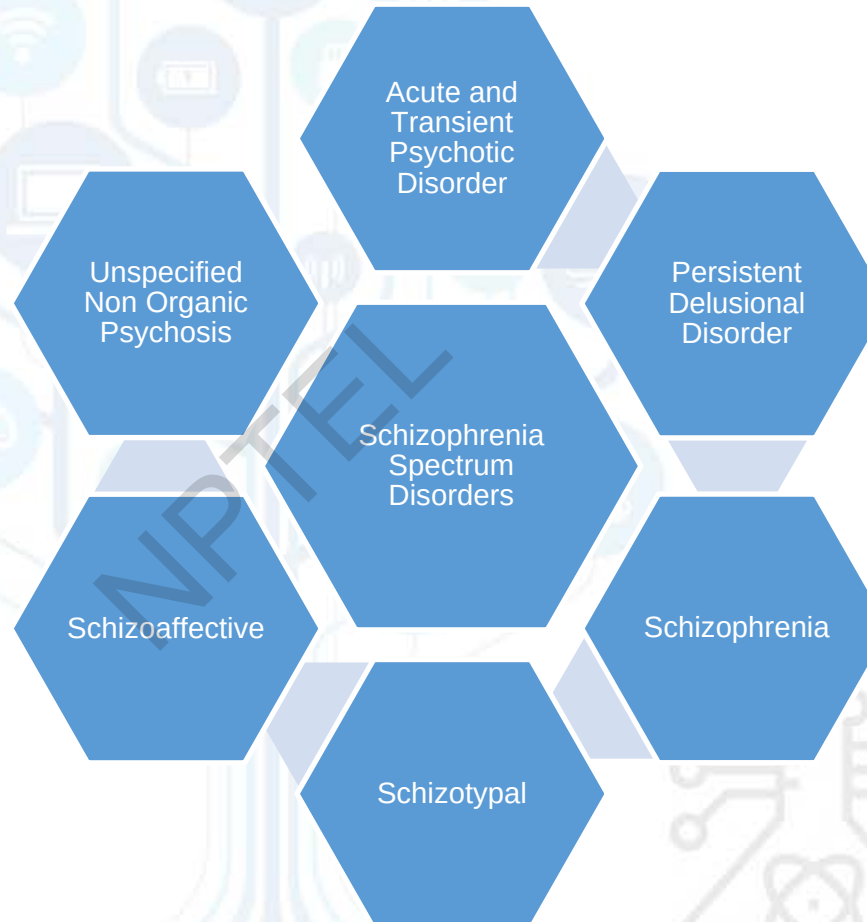
Delusional Disorder- At least 1 month

Schizophreniform Disorder- At least 1 month but less than 6 months

Schizophrenia – At least 6 months

International Classification Of Diseases (ICD 11)

ATPD- 48 hrs to 1month
PDD- 3months
Schizophrenia- 1 month or more
Schizotypal- atleast 2 years



Diagnosis: Schizophrenia

ICD

At least one of

1. Thought echo, thought insertion/withdrawal/broadcast
2. Passivity, delusional perception
3. Third person auditory hallucination, running commentary
4. Persistent bizarre delusions

OR two or more of:

1. Persistent hallucinations
2. Thought disorder
3. Catatonic behaviour
4. Negative symptoms
5. Significant behaviour change

Duration

More than 1 month

DSM

At least one of

1. Bizarre delusions
2. Third person auditory hallucinations
3. Running commentary

OR two or more of:

1. Delusions
2. Hallucinations
3. Disorganized speech
4. Grossly disorganized behaviour
5. Negative symptoms

Duration *1 month of characteristic symptoms*

With 6 months of social/occupational dysfunction

ETIOLOGY

I. Genetic : 1st degree relatives high genetic loading risk decreases with 2nd and 3rd degree relatives

II. Social and Environmental:

i) Social Class

ii) Deprivation

iii) Urbanisation

iv) Childhood adversity (Child sexual abuse – hallucinations Bullying – Persecutory Delusions)

v) Migration and ethnicity (Synergism between urbanicity and familial liability)

vi) Life Events

3 weeks prior to the onset of acute symptoms
experiencing life events doubles the risk of developing schizophrenia over 6 months.

III Obstetric complications

Premature rupture of membranes
Low birth wght
Premature birth

V Post Natal

Uterine Atony
Fetopelvic disproportion
Vaccuum extraction
Cesarean section
traumatic Delivery

VII Parental Age

Advanced Paternal age (genetic mutation in father)

IV Prenatal Factors

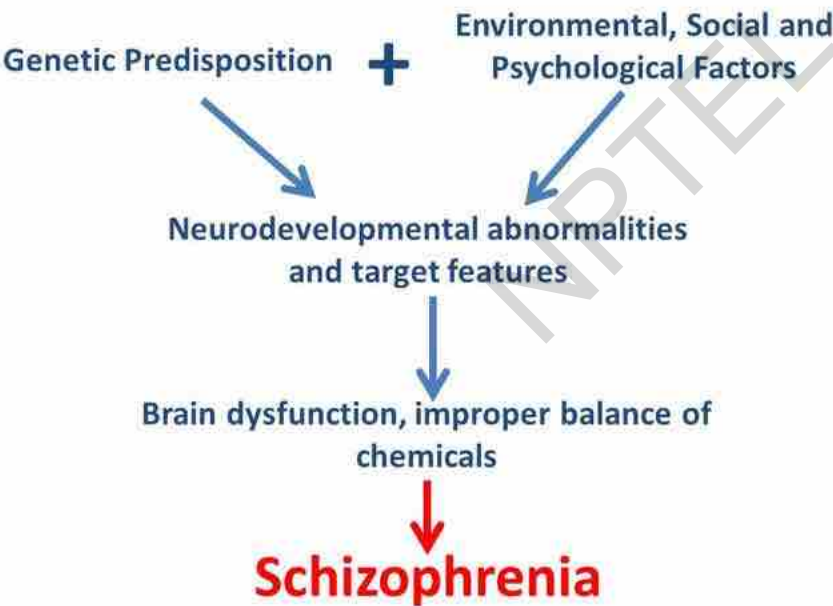
2nd trimester exposure to respiratory infections influenza (7 fold), Pneumonia , polio, rubella , HSV
Childhood infection meningitis , encephalitis
Famine with maternal food deprivation.
Rh incompatibility
Hypertension during pregnancy
Diabetes
Antepartum Haemorrhage

VI Substance Misuse

Cannabis – 6% risk of heavy use

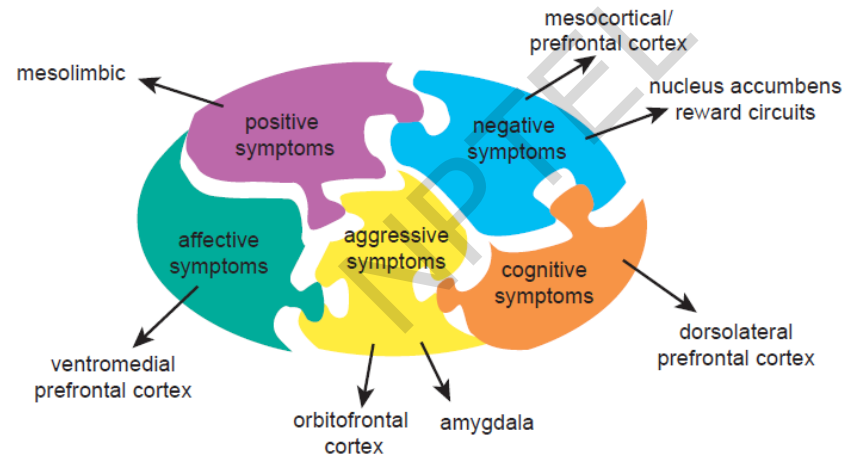
VIII

Risk increases with decrease in
Intelligence quotient



SIGNS & SYMPTOMS

1. Positive- Delusion
hallucination
Conceptual disorganisation,
Excitement/Catatonia
Grandiosity
suspiciousness/persecution, hostility



3. Cognitive- working memory
Attention
Processing speed
visual and verbal learning,
substantial deficit in reasoning ,
planning, abstract thinking
Problem solving

2- .Negative
Blunted Affect
Emotional withdrawal
poor rapport
Apathetic social withdrawal
Difficulty in abstract thinking
Lack of spontaneity & flow of conversation
stereotyped thinking

EPIDEMIOLOGY

Onset earlier in Men 10 -25 years

Females much later 25-35 years.

Prevalence 1 % in USA

4/1000 in UK

1.5-2.5/1000 in India

WHY SCHIZOPHRENIA HAPPENS??

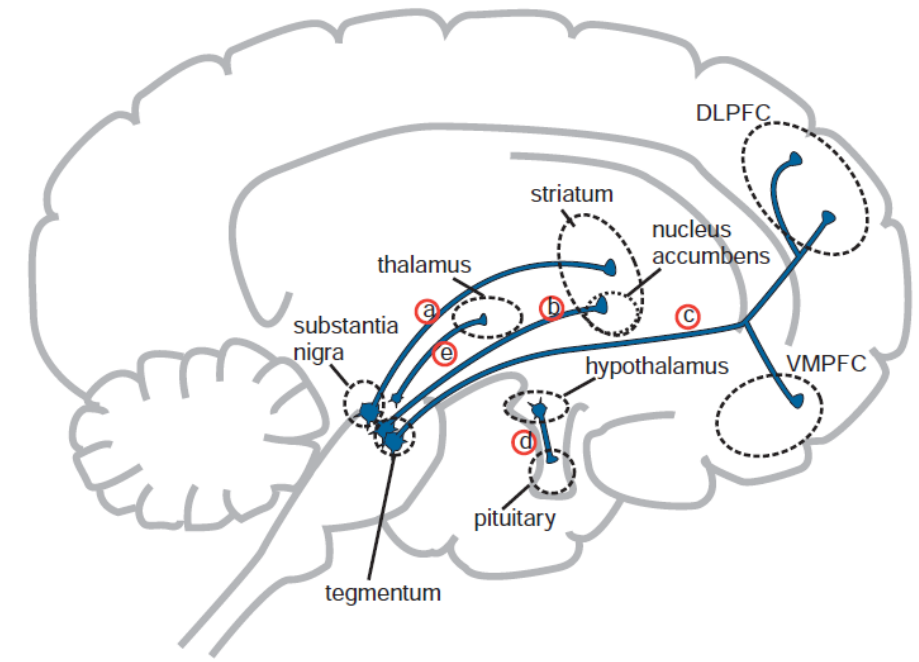
- Current hypothesis for the cause of schizophrenia proposes that **glutamate activity at NMDA receptors is hypofunctional due to abnormalities in the formation of glutamatergic NMDA synapses during neurodevelopment.**

GABA interneurons in prefrontal cortex contain a calcium binding protein called **parvalbumin (pvb)**.

↓
(Pvb) GABA interneurons form faulty postsynaptic connections to incoming glutamate neurons in prefrontal cortex

↓
Resulting into **defective NMDA receptor containing synaptic connections with incoming pyramidal neurons**

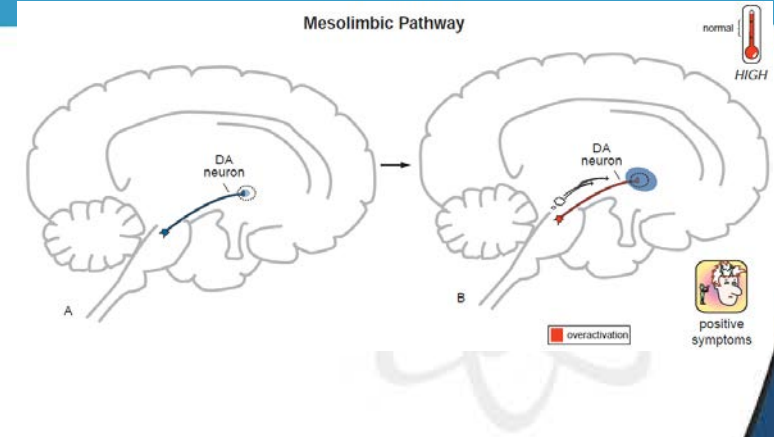
DOPAMINE PATHWAYS



5 Dopamine pathways

- a) Nigrostriatal Dopamine Pathway
- b) Mesolimbic Dopamine pathway
- c) Mesocortical Dopamine pathway
- d) Tubero-infundibular pathway
- e) Thalamic

MESOLIMBIC PATHWAY



Mesolimbic dopamine pathway, which projects from the ventral tegmental area in the brainstem to the nucleus accumbens in the ventral striatum



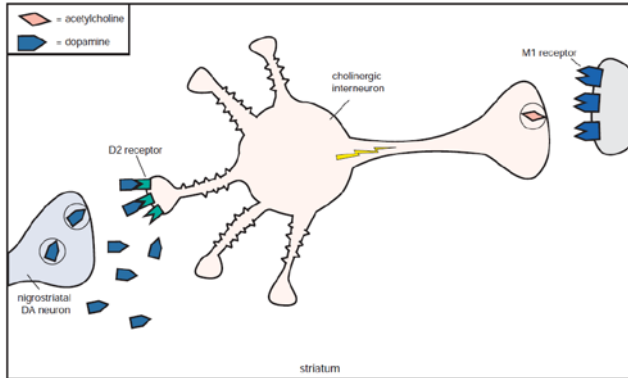
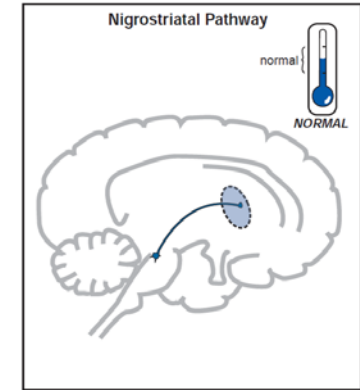
Involved in regulation of emotional behaviors and is believed to be the predominant pathway regulating positive symptoms of psychosis



hyperactivity of this pathway is believed to account for delusions and hallucination

NIGROSTRIATAL PATHWAY

Rational for
Anticholinergic drugs
during antipsychotic
administration



Projects from dopaminergic cell bodies in the brainstem substantia nigra via axons terminating in the basal ganglia or striatum.

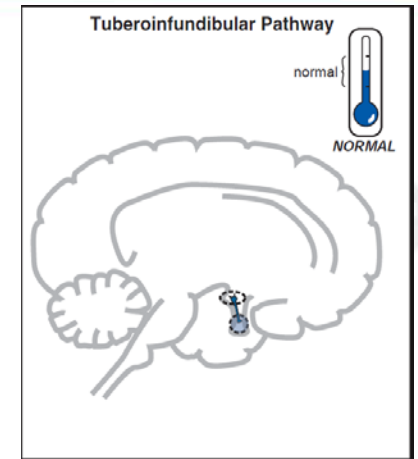
Nigrostriatal dopamine pathway is a part of the extrapyramidal nervous system, and controls motor movements.

Dopamine neurons have post synaptic connections with dendrites of acetylcholinergic neurons.

Normally Dopamine suppresses acetylcholinergic activity

Deficiencies in dopamine in this pathway cause movement disorders including Parkinson's disease, characterized by rigidity, akinesia/bradykinesia (i.e., lack of movement or slowing of movement), and tremor

TUBERO INFUNDIBULAR PATHWAY



These Neurons project from Hypothalamus to Pituitary.



Normally these neurons are active and inhibit prolactin release



During treatment with antipsychotic medication



Dopamine levels decreases

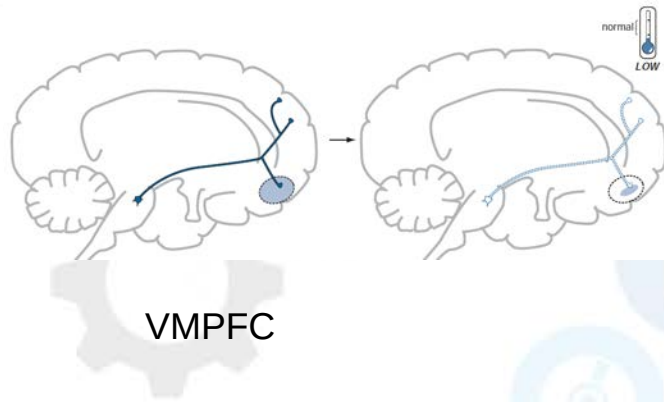


Thereby increasing prolactin

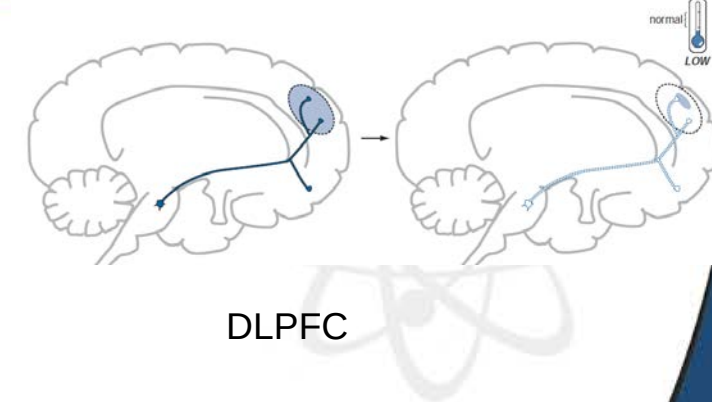


Results in galactorrhea, amenorrhea, menstrual irregularity

Dopamine inversely related
To prolactin



MESOCORTICAL PATHWAY



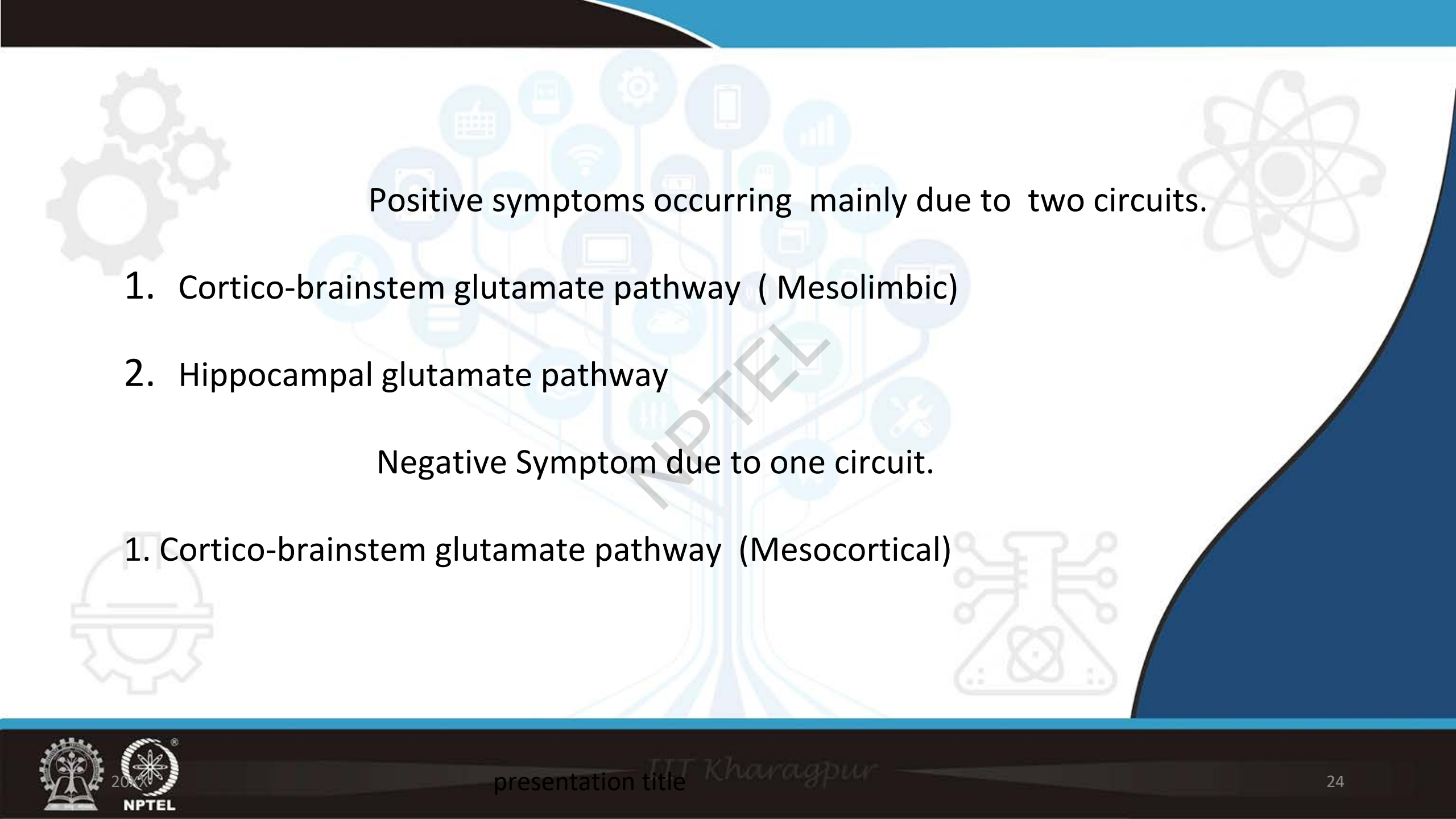
Pathway from cell bodies in the ventral tegmental area, but projecting to areas of the prefrontal cortex, is known as the Mesocortical dopamine pathway.

(DLPFC) regulates cognition and executive functions

VMPFC regulates Emotions and Affect.

cognitive and some negative symptoms of schizophrenia may be due to a deficit of dopamine activity in mesocortical projections to dorsolateral prefrontal cortex.

Affective and other negative symptoms of schizophrenia may be due to a deficit of dopamine activity in mesocortical projections to ventromedial prefrontal cortex



Positive symptoms occurring mainly due to two circuits.

1. Cortico-brainstem glutamate pathway (Mesolimbic)
2. Hippocampal glutamate pathway

Negative Symptom due to one circuit.

1. Cortico-brainstem glutamate pathway (Mesocortical)

POSITIVE SYMPTOMS : CORTICO BRAINSTEM GLUTAMATE PATHWAY

- The cortical brainstem glutamate projection communicates with the mesolimbic dopamine pathway in the ventral tegmental area (VTA) to regulate dopamine release in the nucleus accumbens.

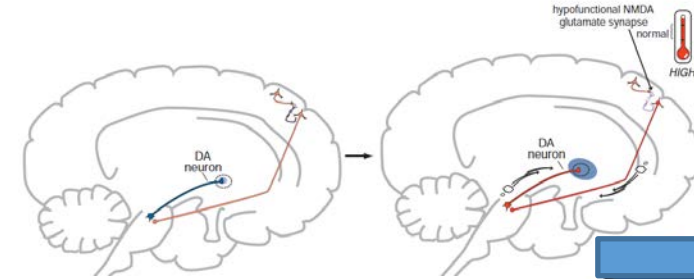
↓
If NMDA receptors on cortical GABA interneurons are hypoactive

↓
Then the cortical brainstem pathway to the VTA will be overactivated

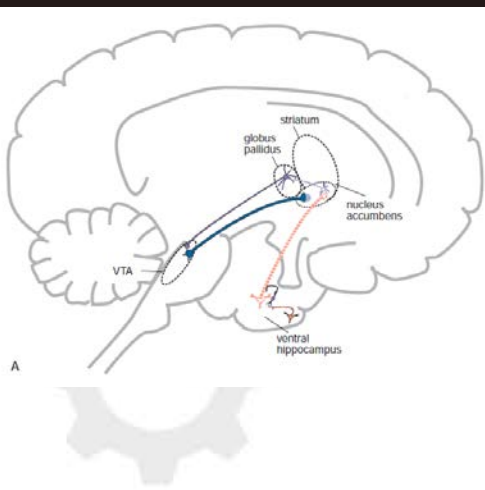
↓
Lead to excessive release of glutamate in the VTA.

↓
This will lead to excessive stimulation of the mesolimbic dopamine pathway

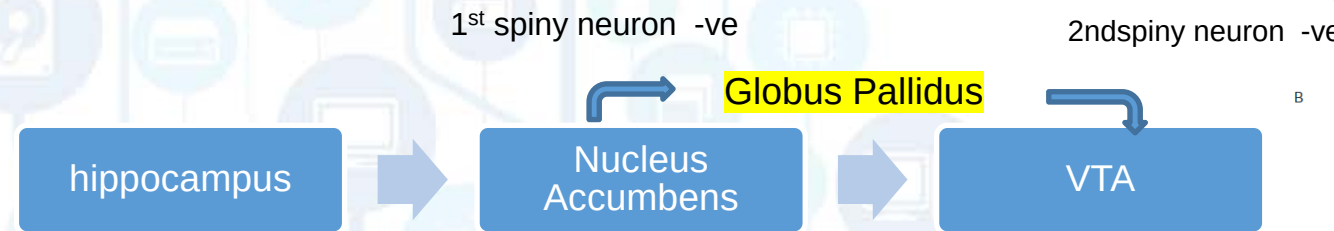
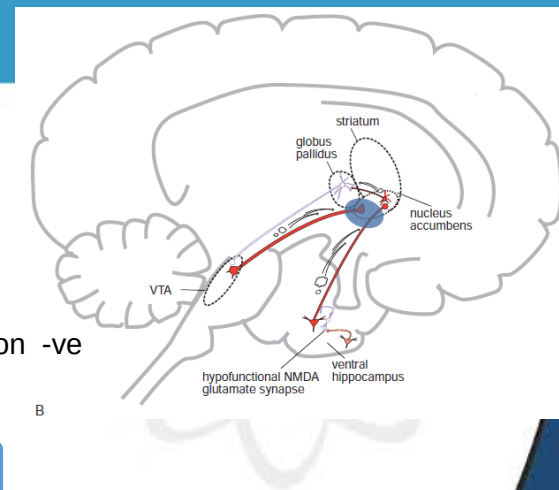
↓
thus excessive dopamine release in the Nucleus accumbens.



Since GABA has inhibitory action and if the GABA neuron become hypoactive the inhibition is released



POSITIVE SYMPTOMS: HIPPOCAMPUS GLUTAMATE PATHWAY



Circuit has to finish at VTA which starts from Hippocampus
It occurs through 4 stages:

- Ve + - Ve = ++ Neural firing

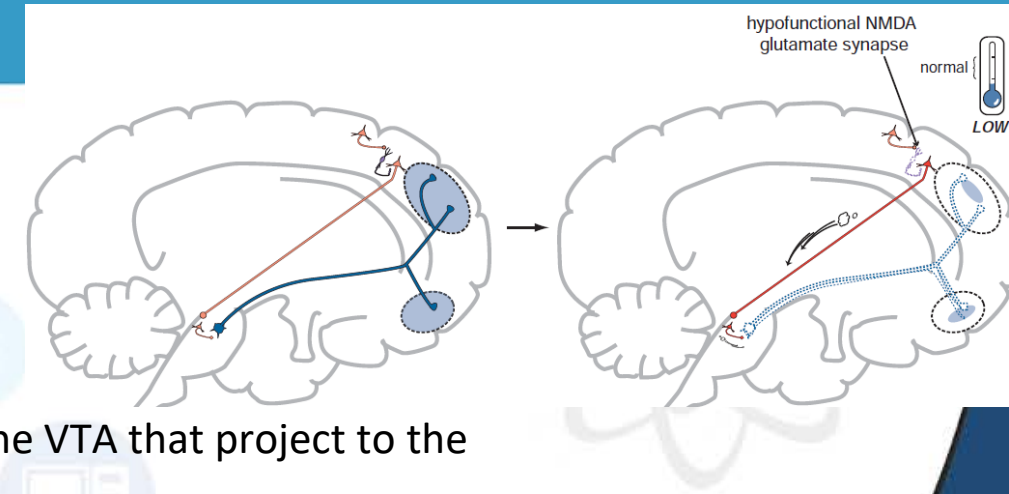
Dysconnected and defective hippocampal parvalbumin-containing GABA interneuron, going to the hippocampal glutamate neuron projecting to the nucleus accumbens.

Then that neuron projecting to two GABA spiny neurons

First GABA spiny neuron going from nucleus accumbens to globus pallidus

Second Gaba spiny neuron going from globus pallidus to VTA

NEGATIVE SYMPTOMS



Different cortico-brainstem glutamate neurons regulate dopamine neurons in the VTA that project to the prefrontal cortex.



Cortico-brainstem glutamate neurons which regulate mesocortical dopamine neurons in the VTA do not directly innervate

(cortico-brainstem glutamate neurons directly innervate mesolimbic dopamine neurons in the VTA)



Glutamate neurons regulate mesocortical dopamine neurons via indirectly innervating an inhibitory GABA interneuron



Activation of these particular glutamate neurons leads first to activation of GABA interneurons,

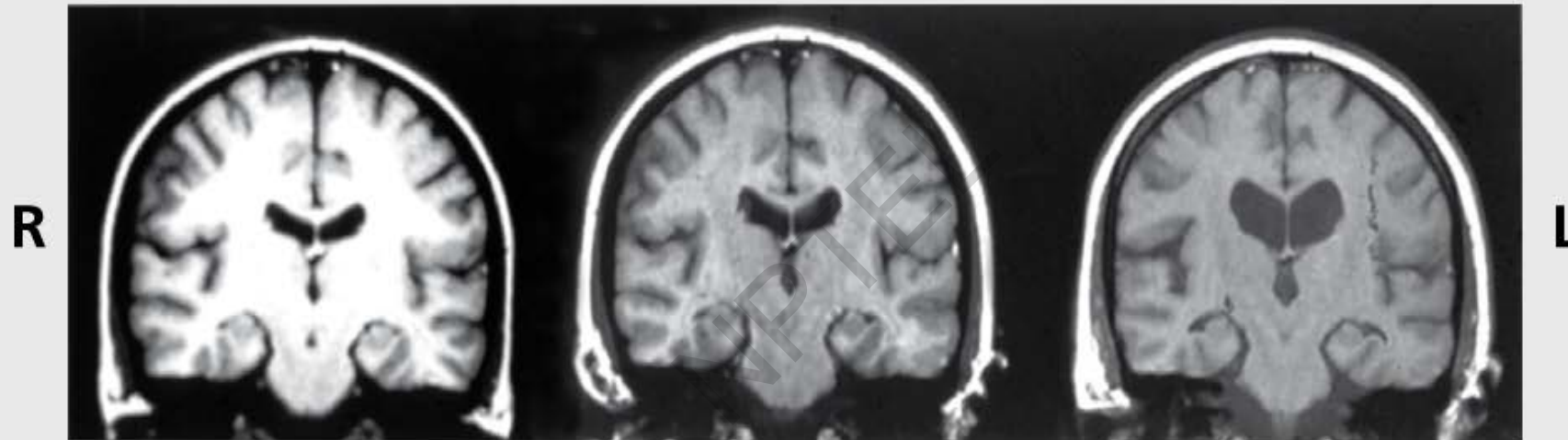


which then inhibit mesocortical dopamine neurons

Radiological findings

- Loss of brain volume, cerebral cortex , thalamus, basal ganglia which results into reduced density of axon , dendrites and synapses from excessive running of synapses in adolescence.
- MRI findings suggestive of decrease in size of amygdala hippocampus para-hippocampal gyri.
- Dilatation of cerebral ventricles and reduced volume of cortical grey matter

10-year MRI follow-up 34-year-old female with chronic schizophrenia



Feb. 1990
1st episode

Feb. 1995
5 years later

Jan. 2000
10 years later

ACUTE AND TRANSIENT PSYCHOTIC DISORDER OR BRIEF PSYCHOTIC DISORDER

French Call it “Bouffee
Delirante”

Diagnosis is appropriate when psychotic symptoms last at least 1 day but less than a month and are not associated with mood disorder , substance related disorder, or a psychotic disorder caused by general medical condition.

Onset – acute/abrupt
(abrupt-< 48 hrs ; Acute-within 2 weeks or less)

4 Types

1. Reactive 2. hysterical 3. stress 4. Psychogenic

F>M Age – 20-30 years

Polymorphic and unstable changing clinical picture (hallucinations , delusions) changing in type and intensity.

Varying emotional state

Precipitating factors may be life events , loss of family members or friends etc

Generally has a good prognosis

PERSISTENT DELUSIONAL DISORDER

Delusions constitute the only conspicuous feature or the only clinical feature. (Hallucinations can be present in rare cases).

When a person exhibits delusions of at least 1 month's duration (DSM)/3 months (ICD) that cannot be attributed to other psychiatric disorders. (DSM)

(Non bizarre situations which can occur in real life)

Mean age of onset 40 years

Prevalence: 0.2-0.3 %

Males > females

Factors with Good Prognosis:

(Before 30 years, female sex, short duration of illness, high socio-occupational and functional adjustment, presence of precipitating factors)

Various types

Persecutory
Somatic
Jealousy
Erotomaniac
Grandiose

Rx Antipsychotics

Shared Delusional Disorder

Folie Deux :

Described by French psychiatrist Lasegue and Falret in 1877

The disorder is characterised by transfer of delusions from one person to other person.

Both the person are closely associated for a long time and live together in relative isolation

Primary case- Person with delusion

Secondary case- Person who got transferred the delusion from primary case

Person in the secondary case is more often less intelligent , gullible, passive and lacks self esteem.

Folie simultanee- two persons become psychotic simultaneously

Folie a trois - 3 persons

Folie quatre - 4 persons

Folie a famille - family shares the delusional experience

Schizophreniform Disorder

Sudden in onset and benign course associated with mood symptoms (mania mostly) emotional turmoil and clouding of consciousness.

Symptoms must last for atleast 1 month but less than 6 months.

Prevalence

M:F- 5:1

Life time Prevalence - 0.1 %

Relatives of patients with Schizophreniform Disorders have history of mood disorders.

Etiology and pathophysiology same as Schizophrenia.

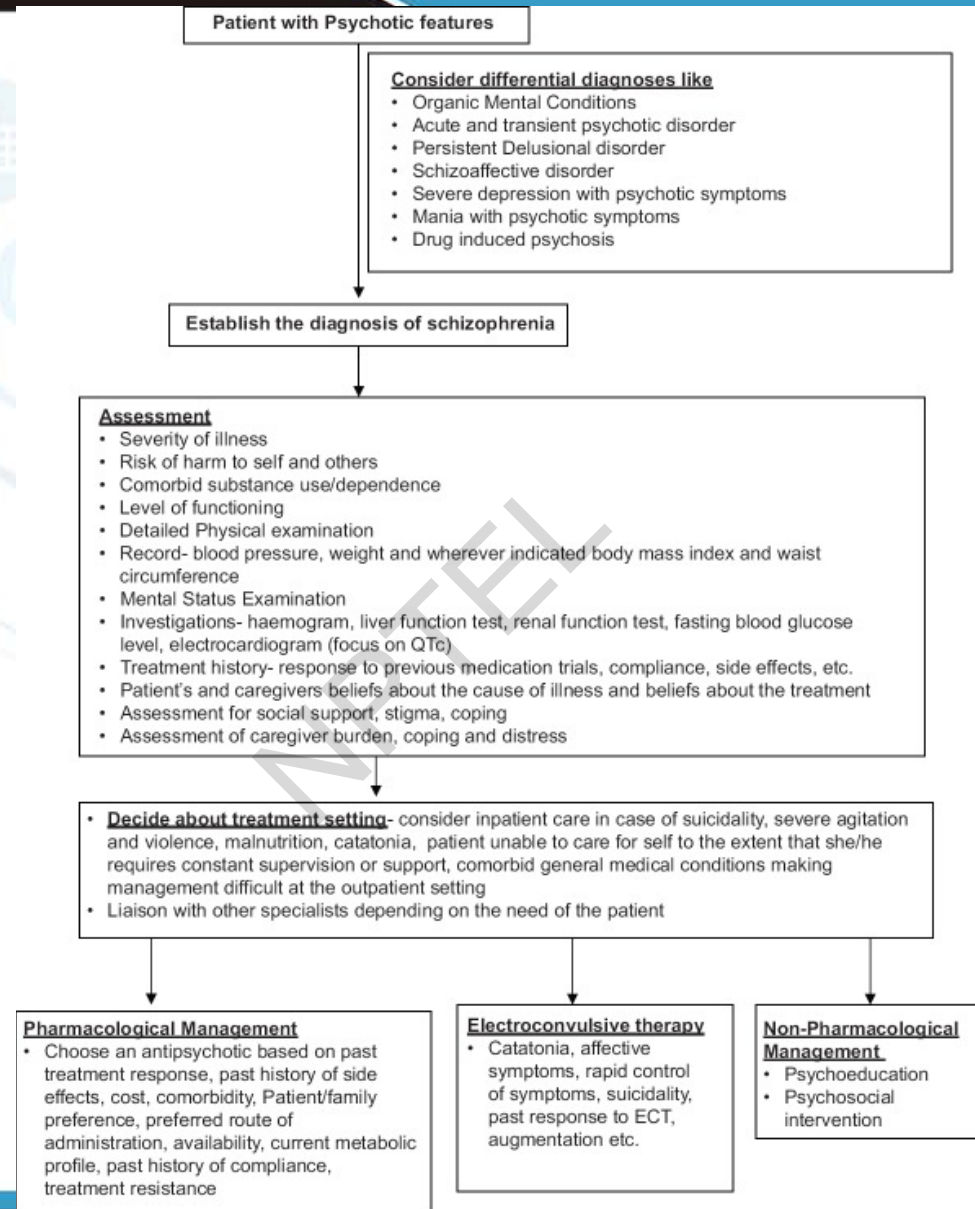
Treatment:

Antipsychotics Carbamazepine

- There is no investigation Available for diagnosis of schizophrenia or any psychotic disorder as it is in any medical disorders.

- Quantitative assessment is done by various scales

PANSS- Positive and Negative syndrome scale
BPRS- Brief Psychiatry rating Scale



CONCLUSIONS

1. In this lecture we have learned that in order to have uniformity between treating mental health professionals two classificatory systems were formed DSM & ICD
2. Description of various psychotic disorders in brief
3. Etiology, pathophysiology of Schizophrenia
4. Reason behind positive and negative symptoms and along with treatment regimen in brief (an outline)

REFERENCES

1. Comprehensive Text Book Of Psychiatry (Kaplan & Sadock)
2. Oxford Text Book Of Psychiatry
3. Tasman & leiberman Text book of Psychiatry

NPTEL



**THANK
YOU !**



NPTEL ONLINE CERTIFICATION COURSES

Course Name **Mental health and basics of Clinical Psychiatry**
Faculty Name **Dr Sumit Kumar**
Department Name **Psychiatry**
TATA MAIN HOSPITAL

Lecture 15 : Mood Disorders - 1

Topics Covered

- What is Mood & Affect
- Types of Mood Disorders
- Depression Etiology & pathophysiology
- Treatment Of Depression
- Atypical ,Melancholic Depression

Mood disorders aka Affective disorders

Mood

Mood can be defined as a pervasive and sustained emotion or feeling tone that influences a person's behaviour and colour's his or her perception of being in the world.

Affect Refers to the mental counterpart of internal bodily representation associated with emotions, actions that involve some degree of motivation, intensity and force or even personality dispositions.

Diagnosis of Depression

ICD 10

- Duration of at least two weeks is usually required for diagnosis for depressive episodes of all three grades of severity.
- Criterion A: Depressed mood, loss of interest and enjoyment, and reduced energy leading to increased fatigability and diminished activity

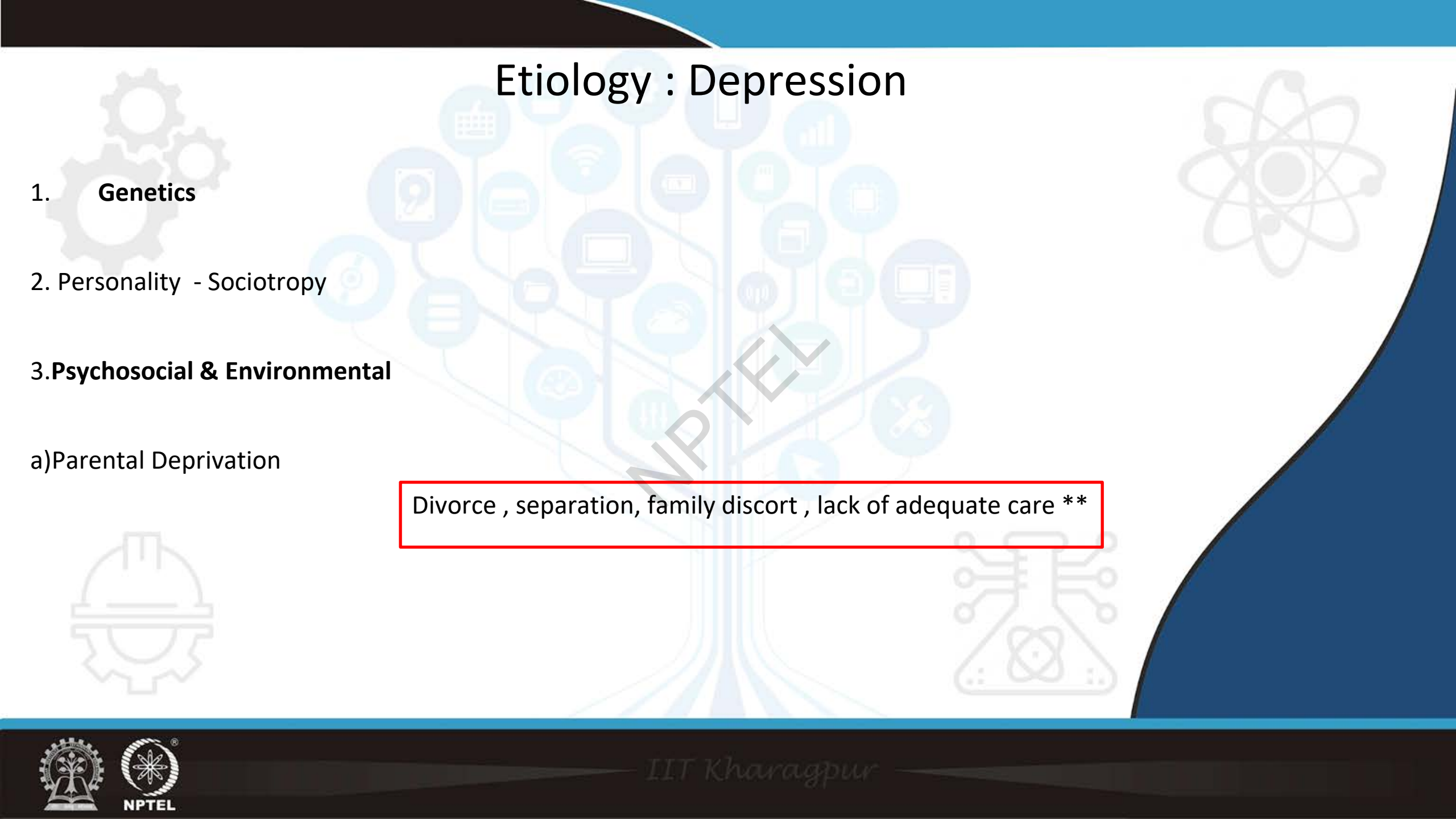
DSM 5

- Duration: Most of the day, nearly every day for at least two weeks.
- Five or more of following symptoms; at least one symptom is either depressed mood or loss of interest or pleasure:

- Criterion B: other common symptoms are:
- (1) Reduced concentration and attention
- (2) Reduced self-esteem and self-confidence
- (3) Ideas of guilt and unworthiness
- (4) Bleak and pessimistic views of the future
- (5) Ideas or acts of self-harm or suicide
- (6) Disturbed sleep
- (7) Diminished appetite

- (1) Depressed mood
- (2) Loss of interest
- (3) Significant weight loss* or gain or decrease or increase in appetite
- (4) Insomnia or hypersomnia
- (5) Psychomotor agitation or retardation
- (6) Fatigue or loss of energy
- (7) Feelings of worthlessness or excessive or inappropriate guilt
- (8) Diminished ability to think or concentrate or indecisiveness
- (9) Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or suicide attempt or a specific plan

Etiology : Depression



1. **Genetics**

2. Personality - Sociotropy

3. **Psychosocial & Environmental**

a) Parental Deprivation

Divorce , separation, family discort , lack of adequate care **

b) Childhood sexual abuse

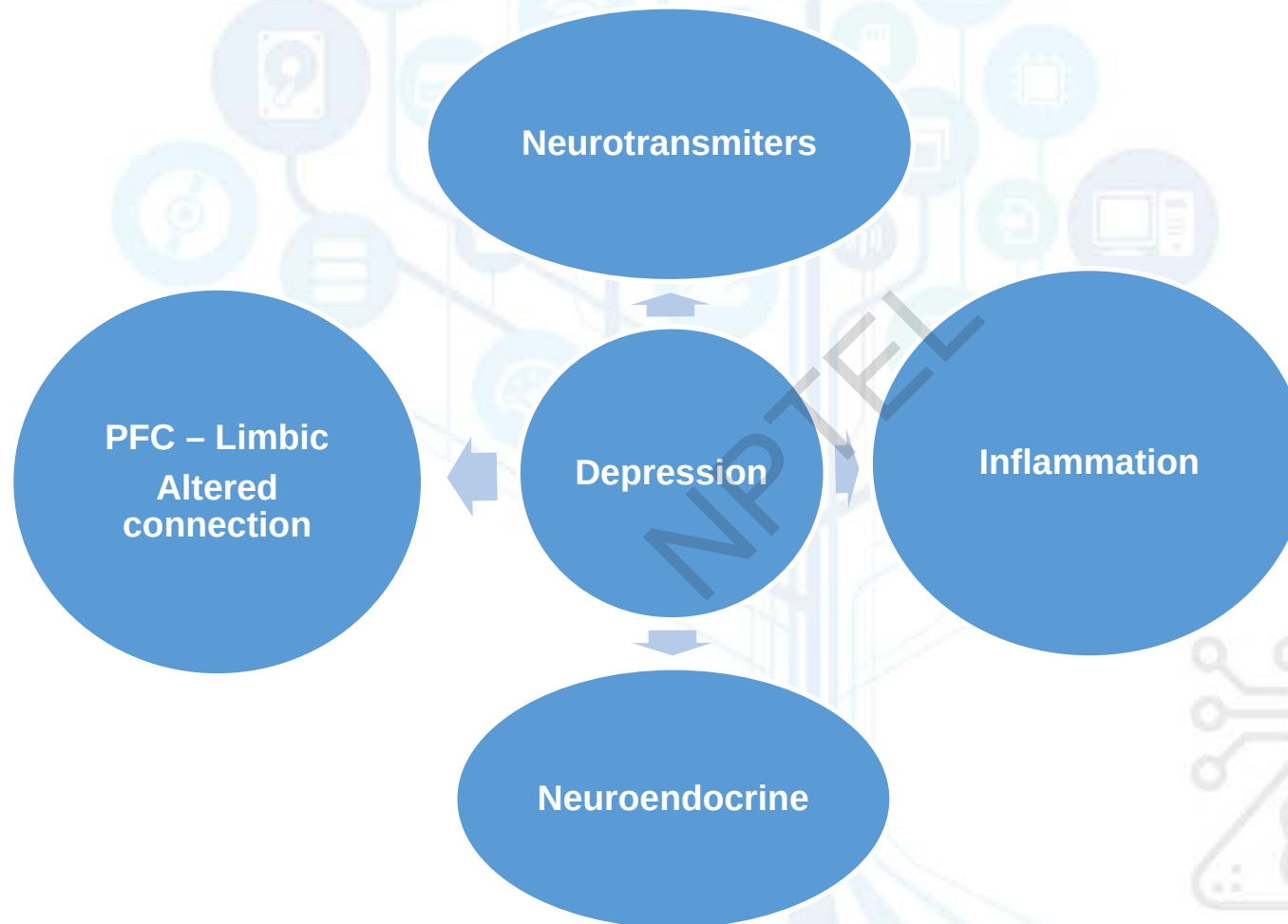
Physical, emotion, sexual abuse → 4 fold risk of Depression

c) Relationship with parent

Maternal post natal depression → Attachment problems & depression in child

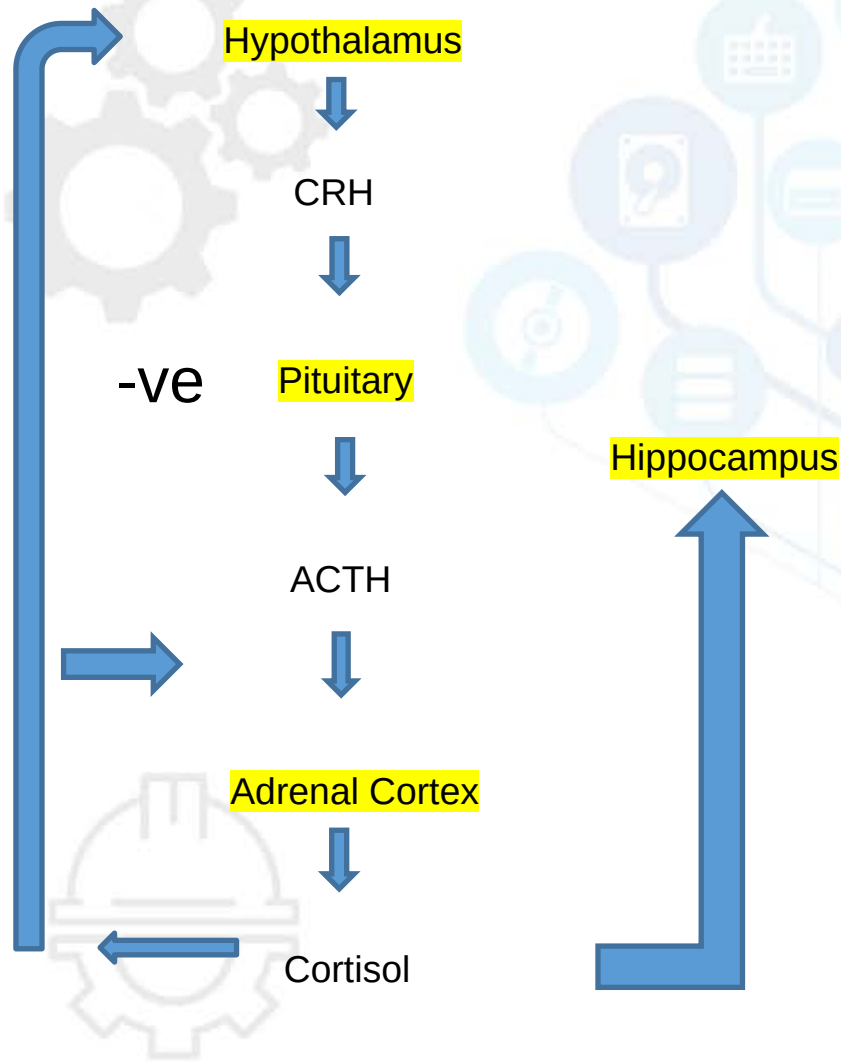
4. Life Events

Pathophysiology Of Depression



Neuroendocrine

During Normal Stress



During Chronic stress



No feedback Inhibition

Excess of cortisol leads to

- a) Decreased hippocampal neurogenesis
- b) Atrophy of Hippocampal dendrites.
- c) Shrinkage of Hippocampus.
- d) Disruption of Long term potentiation
- e) Impairment of memory performance
- f) Compensatory increase in dendritic arborisation of neurons in basolateral Amygdala.

Role of Inflammation in Depression

Why should a stimulus devoid of any pathogen induce an inflammatory response??



Why should this response promote the development of depression?



what mechanism is stress translated into inflammation?



Inflammasomes, which may represent a crucial immunological interface between stress and inflammation



Inflammasomes are cytosolic protein complexes that form in myeloid cells in response to pathogenic microorganisms and non-pathogenic or 'sterile' stressors.

Assembly of the inflammasome leads to activation of caspase 1, which then cleaves the precursor forms of IL-1 β and IL-18 into the active cytokines.



Sterile nature of psychosocial stress, initiates cascade of inflammasome activation in depression, triggered by endogenous damage-associated molecular patterns (DAMPs), including ATP, heat shock proteins (HSPs), uric acid, high mobility group box 1 (HMGB1) and a variety of molecules linked with oxidative stress.



Chronic mild-stress activates the NOD-, LRR- and pyrin domain-containing protein 3 (NLRP3) inflammasome, which is well-known to respond to DAMPs.



Blockade of NLRP3 reverses stress-induced increases in IL-1 β in the peripheral blood and brain,

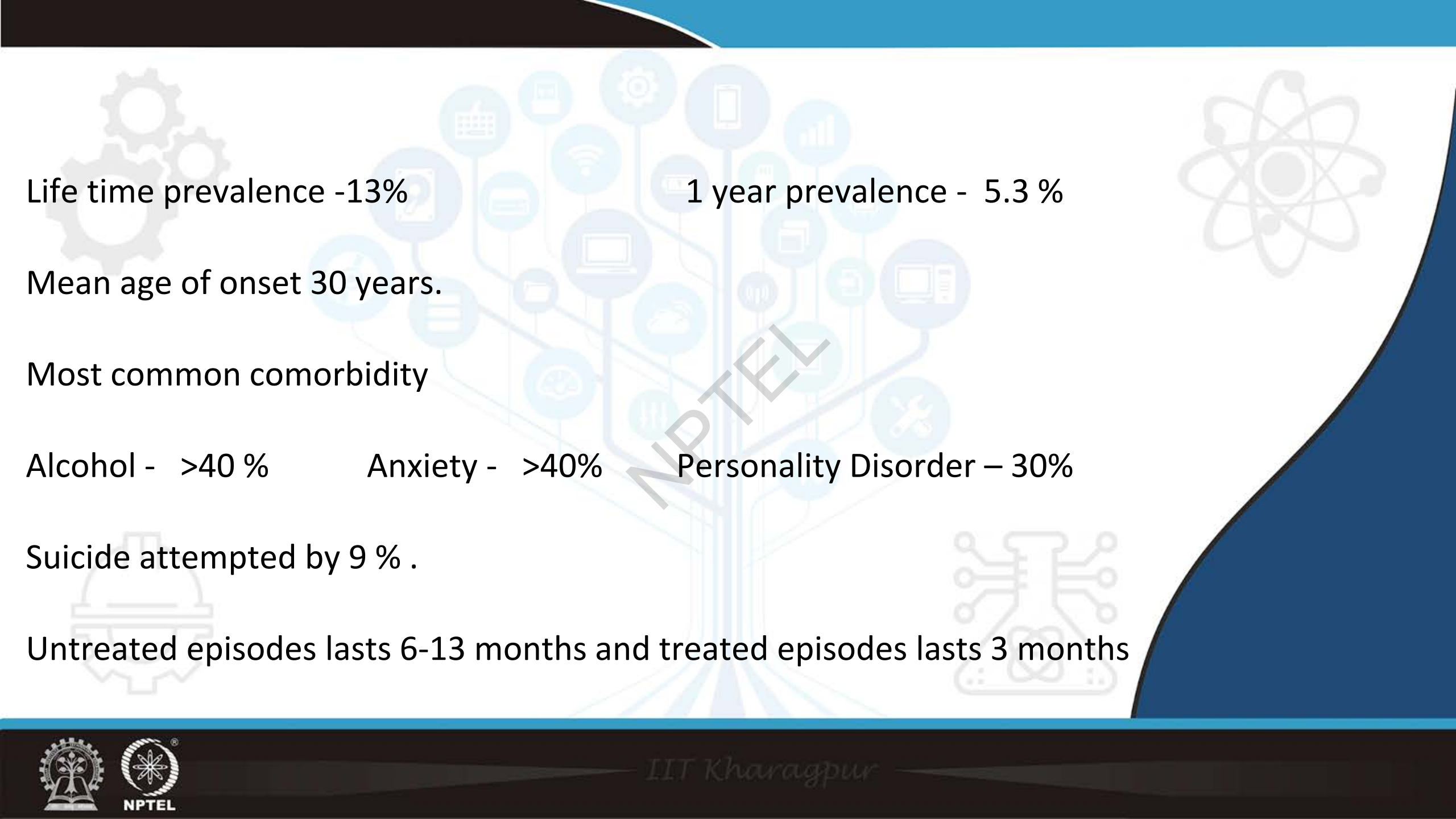
Transmitting inflammatory signal to brain

Increased expression of innate immune cytokines and Toll like receptors (TLRs) in post-mortem brain samples from suicide victims with depression



Evidence of microglial and astroglial activation in several brain regions including frontal cortex, anterior cingulate cortex (ACC) and thalamus in post-mortem studies of patients with depression .

- Neuroimaging study using positron emission tomography (PET) and a radiolabelled tracer for the translocator protein (TSPO) — which is overexpressed in activated microglia, macrophages and astrocytes — revealed increased immune activation in the brains of patients with major depressive disorder compared with control subjects



Life time prevalence -13%

1 year prevalence - 5.3 %

Mean age of onset 30 years.

Most common comorbidity

Alcohol - >40 %

Anxiety - >40%

Personality Disorder – 30%

Suicide attempted by 9 % .

Untreated episodes lasts 6-13 months and treated episodes lasts 3 months

Depression : Neurobiology/mechanism

Neurotransmitters

- Decreased serotonin
- Decreased norepinephrine
- Increased Acetylcholine
- Decreased Dopamine
- Decreased Gaba

Neuroendocrine

- Increased HPA activity is the hallmark in Depression.
- Activity of Brain derived neurotrophic growth factor is decreased.
- Hypercortisolism leads to decreased feedback inhibition from pituitary
- Non -suppression of cortisol secretion.
- Reduction in total sleep time
- Increased REM sleep leading to reduced REM latency

Immunological

- Decreased lymphocyte production
- Increased secretion of proinflammatory factors cytokines , interleukins(IL-6,TNF-alpha,IL-1beta
- Adhesion molecules

Anatomical Correlates/where is Depression seen??

4 structures implicated are:

1 Prefrontal cortex 2. Anterior cingulate cortex 3. Hippocampus 4. Amygdala

Acc
affective symptoms

-----Ventral portion shares extensive connections with Limbic cortex responsible for

Dorsal portion shares connections with prefrontal cortex and other cortical regions
Responsible for Emotional arousal

Hippocampus---- involved in memory and learning ,HPA axis regulation , Fear conditioning

Amygdala--- Processing novel stimuli of emotional significance and organizing cortical responses

PFC---- Hemispherical specialization:

Left sided involved with goal directed and appetitive behaviours

Right sided involved with inhibitory and avoidance pursuits.

Structural Imaging: CT scan & MRI

Abnormal hyperintensities in subcortical regions namely ,basal ganglia, peri- ventricular regions , thalamus.

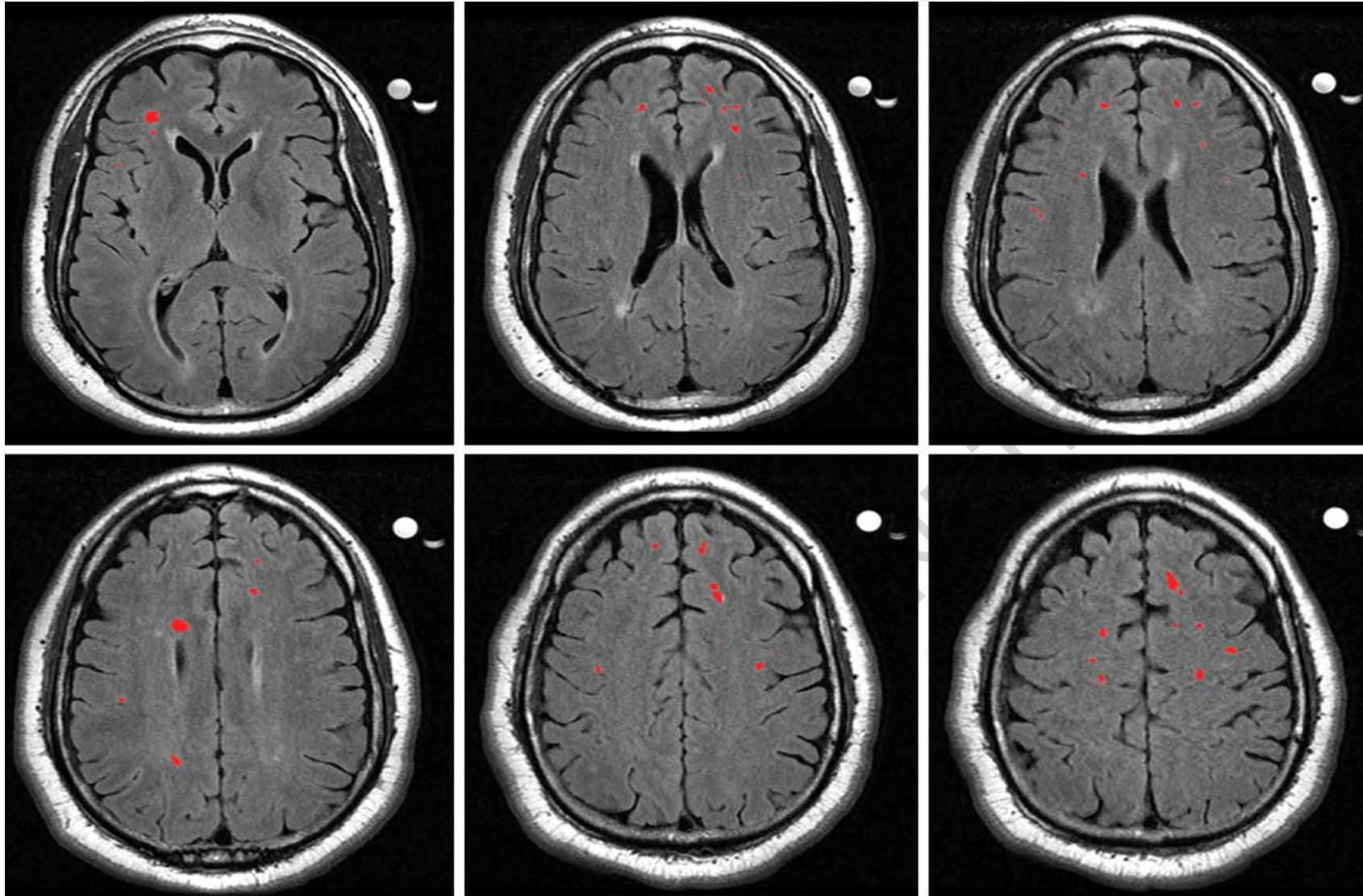
Sulcal widening , ventricular enlargement, cortical atrophy.

Functional Imaging

Decreased anterior brain metabolism which is more pronounced on the left side.

Increased glucose metabolism in limbic regions with recurrent episodes ad family history of mood disorder.

Increased glucose metabolism with intrusive ruminations



Clinical features

Loss of interest or pleasure with low mood

In ability to concentrate

Agonizing emotional pain as patients compliant that they cannot cry

2/3 rd cases contemplate suicide, 10-15 % cases commit suicide.

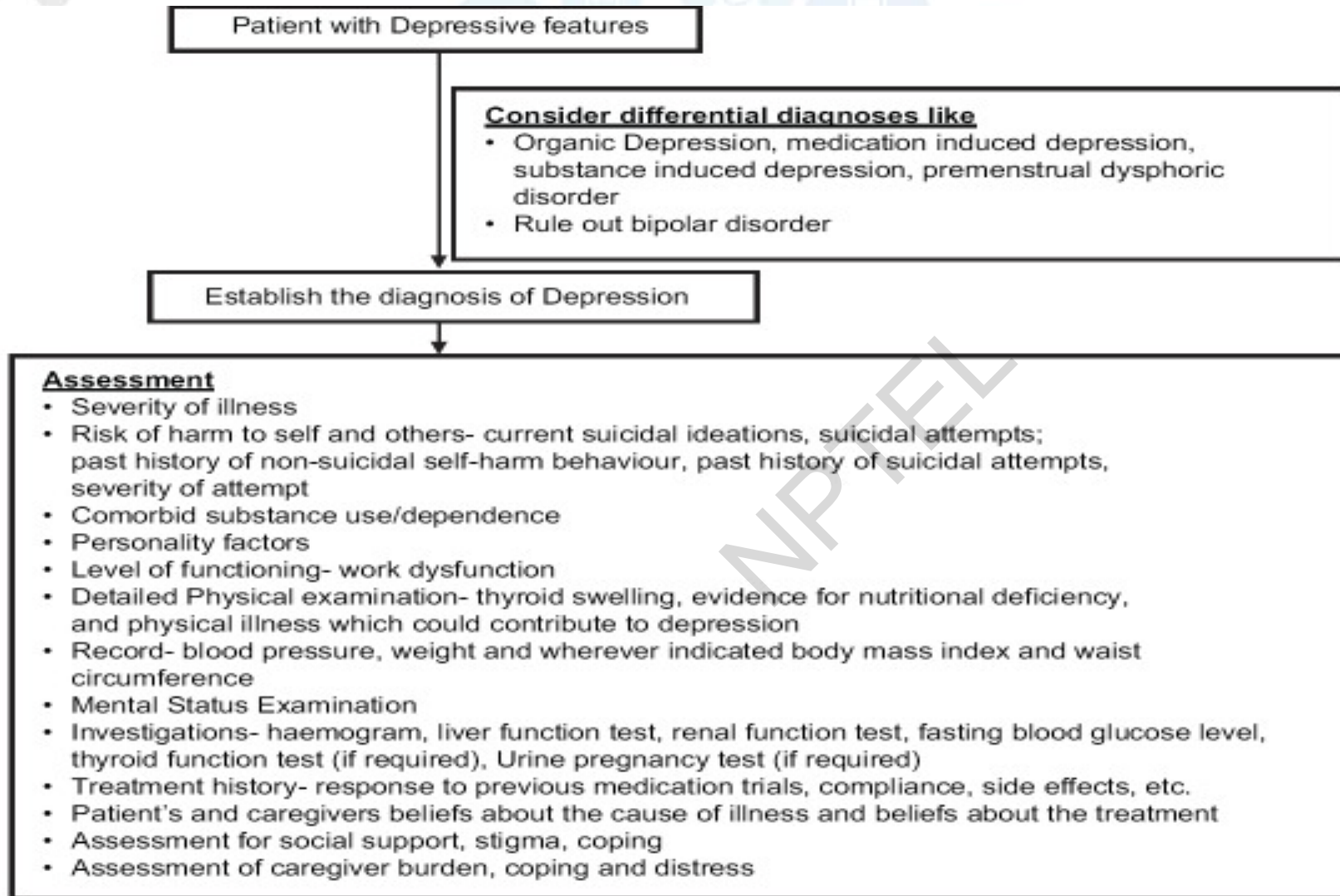
Reduced energy, less motivated at home & work

Terminal Insomnia (Early morning awakenings)

One school of thought proposes that stress accompanying the first episode results in long lasting changes in the brain genetic makeup.

It can alter the functional status of neurotransmitter and intraneuronal signalling systems.

Treatment





- **Decide about treatment setting**- consider inpatient care in case of suicidality, malnutrition, catatonia, comorbid general medical conditions making management difficult at the outpatient setting
- Liaison with other specialists depending on the need of the patient



Pharmacological Management

- Choose an antidepressant based on past treatment response, past history of side effects, cost, comorbidity, patient/family preference, availability



Electroconvulsive therapy

- Catatonia, suicidality, severe depression, past response to ECT, augmentation etc.



Non-Pharmacological Management

- Psychoeducation
- Psychotherapeutic intervention

Melancholic depression/Endogenous/Biological

Depression Characterised by:

1. Severe Anhedonia
2. Terminal Insomnia
3. Weight Loss
4. Profound feelings of guilt
5. Associated with autonomic nervous system changes
6. Endocrine dysfunction

Atypical Depression

Over eating & Over sleeping– Reverse vegetative symptoms aka *hysteroid dysphoria*.

Younger age

Severe Psychomotor slowing

Associated with : Panic disorder , Substance abuse/dependence, Somatization disorder

Dysthymia/Persistent Depressive

- Chronic, mildly depressed mood and diminished enjoyment, not severe enough to be considered a depressive illness.
- Insidious in onset low grade chronicity for atleast 2 years

Prevalence :

F>M

preferentially in 20's

Coexistent with substance abuse, anxiety (panic),borderline personality disorder.

- Clinical features :

Depressed mood (< 2yrs) Reduced/increased appetite, Insomnia/hypersomnia,
reduced energy/fatigue, Low self-esteem, Poor concentration, thoughts of hopelessness.

Treatment:

No Pharmacological intervention is required according to guidelines

Insight oriented Psychotherapy is treatment of choice for Dysthymia.

However combination treatment of pharmacological + Psychological may be effective.

Dysthymia progresses to develop

Major depression-20 % cases

BD I - 15 %cases

BD II - 5 % cases

Minor depressive disorder:

Episodic in nature and have euthymic periods in between

Recurrent brief depressive disorder:

Characterized by brief episodes of duration less than 2 weeks.

Double depression:

40 % patients with depression meet criteria for Dysthymia= Depression + Dysthymia

Cyclothymia

Cyclothymia in which an individual may experience oscillating high and low moods, without ever having a significant manic or depressive episode

These episodes of mild depression and mild elation are not sufficiently severe or prolonged to fulfill the criteria for bipolar affective disorder or recurrent depressive disorder for the **last 2 years**

Prevalence 3%-5% M:F - 3:2

An individual usually perceives these mood swings as being unrelated to life events

Depressive phase is commonly seen during which patient seeks treatment.

Patients frequently coexists with Borderline personality disorder

Family members of cyclothymic disorder often have substance related history.

Unpredictable nature of mood produces great stress.

Patients with adaptive coping strategies have good outcome than patients with poor coping strategies.

Rx

Mood stabilisers and antipsychotics forms the mainstay of treatment pharmacologically along with benzodiazepines for counteracting agitation

Psychotherapy directed towards increasing patients awareness of their condition helping them develop coping mechanism for mood swings

Recurrent Depressive Disorder

Both DSM and ICD-10 define **recurrent major depressive disorder** if there is more than one episode of depression.

Diagnosis can be given to a patient with depression if there has been at least one previous major depressive episode separated by the current episode by at least **two weeks. (ICD)**

REFERENCES

1. Comprehensive Text Book Of Psychiatry (Kaplan & Sadock)
2. Oxford Text Book OF Psychiatry
3. Tasman & Leiber mann (Text Book Of Psychiatry)

CONCLUSIONS

-In this lecture we have learned regarding what is mood and differentiated with affect
Concepts regarding depression its etiology and pathogenesis ,what are the factors leading to depression.

Treatment of Depression

Various other presentation of depression in other age groups like melancholic depression and atypical depression.



**THANK
YOU !**