

BASIC PSYCHIATRY SEQUENCE IN NEUROSCIENCE BLOCK, FALL 2018

GROUPS consist of 8-9 students and 2 group leaders.

You meet EIGHT times during the Neuroscience Block and THREE times during the DEMS (Digestive, Endocrine, and Metabolism Systems Block). Just as in CVPR, you will interview volunteer patients (many from AMC), practice the 30-minute interview, utilize psychiatric screens, and participate in discussions.

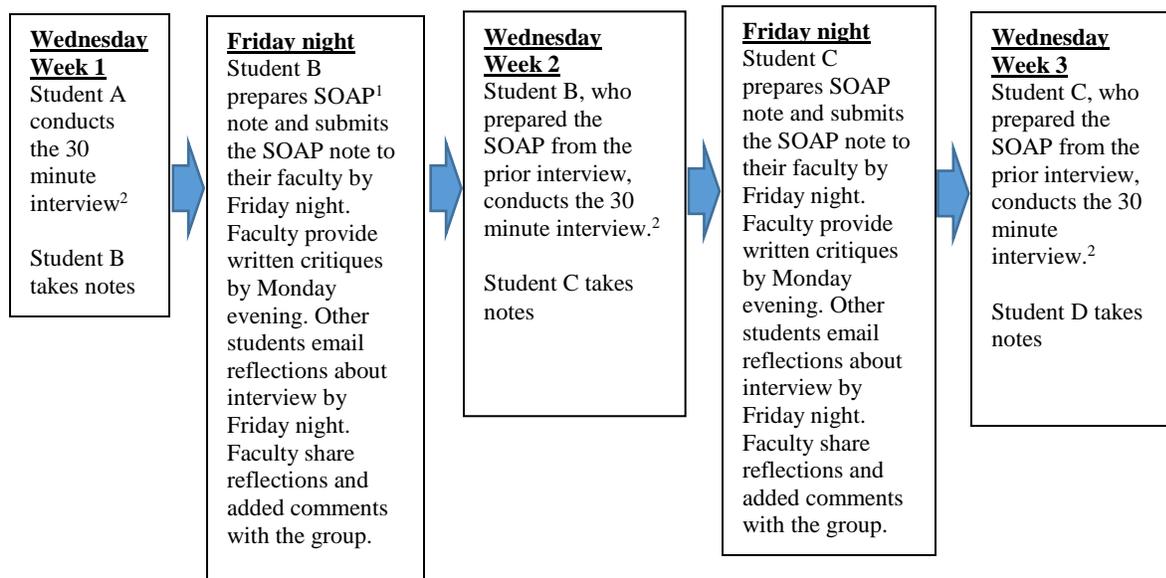
ORGANIZATION

- The syllabus will point you to your group leader and room number. Mini lectures 10:00-10:25 and your group meets 10:30-11:50.
- 25-minute “MINI” lectures are not complete reviews but are meant to introduce you to the symptoms and problems patient volunteers may face now or faced in the past.
- Handouts are required reading—For those interested, an electronic copy of DSM-5 is also available through the HS Library (<http://dsm.psychiatryonline.org/doi/book/10.1176/appi.books.9780890425596> - or go to HSL website at <http://hslibrary.ucdenver.edu/> and under “General Resources” click “E-books”, then under “D” see “Diagnostic and statistical manual of mental disorders: DSM-5”). We will post **announcements** each week on Canvas about upcoming reading assignments, handout(s) and interviews. Exam questions may be derived from the lecture, PowerPoint presentations, handout materials or lecture-specific required reading.
- Someone from your group will come to Room 1100 (**no later than 10:50 am**) in the Education 1 Building. Angela will introduce you to your patient and you will take the person back to your classroom.
- **Patient shortage:** Extra interviewees are recruited for each session, but at times several volunteers do not show. When this happens, some agree to do a second interview. If so, you will receive your patient in time for a 30-minute interview.

REVIEW OF GROUP PROCEDURES:

Student A is assigned to conduct the 30-minute interview for interview 1.

Student B is assigned to take written notes during interview, write a SOAP¹ note and submit it to faculty co-leaders by that Friday night. Faculty provide this student written feedback/critiques of the SOAP note (by Monday evening prior to next small group) and may request that the student provide a revision. **Other students** provide comments on the interview or a reflection about the case by Friday night to the faculty co-leaders. Faculty share student reflections with the group (group email) with faculty comments added. At interview 2 student B conducts interview, while student C takes notes and prepares SOAP, etc.



Footnotes:

¹ During the Neuroscience block we are now interested in students writing and presenting a complete SOAP note. Please include differential diagnoses with support from the subjective and objective portions of the interview for those diagnoses, a problem list, and a beginning plan.

² Some groups may wish to have the interviewing student remain after the group for a brief period to provide personalized feedback on interviewing. Feedback is essential to fostering learning, but some feedback on strengths and weaknesses of their interview may best be provided in a private setting. Some groups may decide to discuss this within the group setting.

For students who require more extensive revisions of their written work (SOAP), the faculty may invite them to provide additional SOAP notes over the course of the small group.

After your last group session, students complete anonymous feedback about their group experience. Group leaders complete formative feedback about student performance. (See assessment forms in syllabus.)

Reflections: We want you to get in the habit of reading relevant material after seeing patients. What might you want to know more about – could you do a quick review (e.g., UpToDate or in PubMed) and submit a relevant abstract or a summary of what you found? We want you to also be thoughtful about the volunteer’s you see and their experiences – what is it like to live with depression? What is their experience with the medical system? What is their experience with their family, co-workers, significant others? How might putting yourself in their shoes impact how you might wish to practice in the future? Think about life patterns – how might you predict this would impact your work with this patient if you were to see them longitudinally? What questions seem unanswered – how might you try to address this in a follow up appointment? How might you have approached asking about a sensitive topic? Considering the interview, what went well and what could have gone better? Why?

OVERALL LEARNING OBJECTIVES FOR THE BASIC PSYCHIATRY SEQUENCE

Be able to:

- utilize appropriate diagnostic screens for the weekly patients, many of which are in the *CU Assessment of Common Psychiatric Problems* (blue booklet, also referred to as “CU log”, also available on CANVAS)
- describe the diagnostic criteria for the type of problems you will face that week
- to begin utilizing the 30 minute 3-part interview in the CU log
- actively participate in the post interview discussion
- generate the appropriate written documentation.

Keys to a successful group:

- Groups are successful only if you show up.
- A commitment to express your ideas in collegial ways. An effective group depends on **your contribution so please, please speak up.**
- You and your leaders will evaluate how your group is functioning. This includes whether your group has slipped into a “hub and spoke” teaching mode with your leaders assuming their traditional roles as the source of all knowledge, and students becoming passive listeners.
- Groups are required

Suggested group schedule

- 10:30-10:50 - SOAP note presentation. Discuss prior week’s interview and student questions/reflections
- By 10:50 – Pick up volunteer patient
- 10:50-11:50 30-minute interview followed by group discussion

INTERVIEWS

Week 1: Wed. 8/15/18 Post-Traumatic Stress Disorder: The changed brain

Mini-lecture: Kevin Vest, MD

Suggested additional reading: the VA/DoD Clinical Practice Guideline for the Management of Post-Traumatic Stress Guideline Summary.

Group: Interview patient with **PTSD**, use appropriate screens.

Week 2: Wed. 8/22/18 Developmental Disorders

Lecture: Audrey Blakeley-Smith, PhD – 9:00-10:30 am

- Normal and abnormal psycho-social development

Group: Interview **autistic person and/or their family**. Use appropriate screens.

Week 3: Wed. 8/29/18 Delirium/Dementia/TBI

Mini-lecture: Hal Wortzel, MD

- Behavioral Neurology and the MSE

Group: Interview patient (**may be a family member**) with a **TBI and/or memory impairment**. Utilize appropriate screens.

Week 4: Wed. 9/5/18 Somatic Complaints and Pain

Mini-lecture: Thida Thant, MD

- Idiopathic somatic complaints: psychosocial distress, Somatic Symptom Disorder & the differential diagnosis of the somatic complaint

Group: Interview **patient with chronic pain**. Utilize appropriate screens.

Week 5: Wed. 9/12/18 Intro to Psychiatric Disorders

Mini-lecture: Abraham Nussbaum, MD

Group: Interview **patient with schizophrenia or bipolar disorder**. Utilize appropriate screens.

Week 6: Wed. 9/19/18 Anxiety Disorders

Mini-lecture: Robert Davies, MD

Group: Interview **patient with an anxiety disorder**. Utilize appropriate screens.

Week 7: Wed. 9/26/18 8:35-10:20 am, Psychotic Disorders I and II

Lecture: Amanda Law, PhD

Group: Interview **patient with schizophrenia or bipolar disorder**. Utilize appropriate screens.

Week 8: Wed. 10/3/18 Substance Use Disorders

Mini-lecture: Joseph Sakai, MD

Group: Interview **AA volunteer**. Utilize appropriate screens, including CAGE.

DEMS BLOCK:

Week 9: Wed, 10/24/18 10:00-10:50 am:

Lecture: *Illness In Physicians* Doris Gundersen, MD

Group: 11:00-11:50 am – Interview physician patients from CPHP (Colorado Physician Health Program). Utilize appropriate screens.

Week 10: Wed, 11/14/18 10:00-10:50 am:

Suggested additional reading: Practice Guideline for the Treatment of Patients with Eating Disorders, 2010

Lecture: *Eating Disorders* Kenneth Weiner, MD

Group: 11:00-11:50 am – Interview patients from Dr. Weiner’s Eating Disorders Clinic. Utilize appropriate screens.

Week 11: Wed, 12/6/17 10:00-10:30 am:

Lecture: *Endocrine-related Depression* Austin Butterfield, MD

Group: 10:35-11:50 am – Final small group, no interview. Review AA reflections, open discussion about course and small groups.

EVALUATIONS

You will complete a course evaluation and group leader evaluations at the end of these 11 sessions. Your leaders will not see your evaluations until they have completed their evaluation of you. Constructive criticism and suggestions are very important. We thoroughly review your assessments and institute your suggestions if we can. Therefore, future STUDENTS RECEIVE THE BENEFIT OF YOUR EXPERIENCE just as you received the benefits of students who took Basic Psychiatry in the past.

ASSESSMENT

- You received a formative psychiatry assessment at the end of CVPR and will receive a final psychiatry assessment at the end of the metabolism block.
- Your final cognitive assessment will consist of the psychiatry questions from each of your block exams.
- Your final group assessment is based on your **group participation, patient interviews, and your written work.** (See “Fall 2018 Feedback of Student Performance”)

Professionalism:

Academic Honesty Statement

Students are expected to adhere to the Honor Code of the University of Colorado School of Medicine which states that students must not lie, cheat, steal, take unfair advantage of others, nor tolerate students who engage in these behaviors. Please check the website for information on the Medical Student Honor Code.

<http://www.ucdenver.edu/academics/colleges/medicalschooleducation/studentaffairs/AcademicLife/HonorCouncil/Pages/default.aspx>

Students are also expected to:

Attend all small groups and arrive on time.

Contact the appropriate faculty for all voluntary and involuntary absences (see absences below).

Complete all small group requirements (SOAP note, interviews, reflections, group participation).

Exhibit professional behaviors in the small group interviews and wear professional dress when interviewing.

Absences:

As stated in the Medical School White Book:

“Some aspects of a student’s education experience at CUSOM require student participation. Some instructional methods, such as small group discussions, group labs or dissections, or topics, such as interprofessional teamwork, require all students to participate in order for the content (e.g., teamwork, physical exam skills) to be learned. In other words, required student attendance contributes not only to the learner him or herself, but also to creating a learning environment that enables his or her peers’ learning. As a full member of the CUSOM learning community, students are expected to participate in these types of required activities.”

Students may request that an absence be excused by contacting (1) the Associate Dean of the Essentials Core and (2) Dr. Sakai (joseph.sakai@ucdenver.edu). Once an absence is approved, it is the responsibility of the student to inform their small group faculty.

Please see the following link for details and the relevant excerpts (below):

<http://www.ucdenver.edu/academics/colleges/medicalschoo/education/studentaffairs/studentresources/Documents/StudentHandbook.pdf>

“Possible reasons for requesting an absence include, but are not limited to a healthcare appointment (that could not otherwise be scheduled outside of a required session), religious observance, attendance at the wedding of a close relative, or participation in an academic function (e.g. academic conference). Requests must be presented well in advance, in writing, and reasonable documentation is required.”

“Absences due to an involuntary situation include but are not limited to personal illness or family emergency.”

FALL 2018 FEEDBACK OF GROUP LEADER PERFORMANCE

THIS FORM WILL BE COMPLETED BY THE STUDENTS ELECTRONICALLY UPON COMPLETION OF THE FOUR PSYCHIATRY SESSIONS IN THE CVPR BLOCK.

1. To what extent have you been able to express your ideas in a collegial way?
 Not at all A little Somewhat Mostly Always

2. To what extent have you personally been able to promote the work of the group?
 Not at all A little Somewhat Mostly Always

3. What have you done well?

4. Please comment on any areas you would like to improve.

5. To what extent did you receive useful feedback?
 Not at all A little Somewhat Mostly Always

6. What would improve the feedback you received?

7. What was the overall quality of your small group experience?
 Poor Fair Good Very good Excellent

FALL 2018 FEEDBACK OF STUDENT PERFORMANCE

THIS WAS COMPLETED BY THE GROUP LEADERS ELECTRONICALLY UPON COMPLETION OF THE FOUR PSYCHIATRY SESSIONS IN THE CVPR BLOCK. SPRING PERFORMANCE FEEDBACK IS FOR STUDENTS ONLY AND WILL NOT BE PART OF THE PERMANENT STUDENT FILE. THE ASSESSMENT AT THE END OF THE BASIC PSYCHIATRY SEQUENCE WILL BECOME PART OF THE STUDENT FILE.

- 1. Please rate the student's commitment to openly expressing ideas in collegial ways and promoting the work of the group:**

Poor	Fair	Good	Very Good	Outstanding
Inattentive, does not participate. Comments are terse.		Attentive & collegial. Comments add to discussion but are often reiterations of what is already known or has already been said.		Effectively facilitates group to expand knowledge and understanding.

- 2. Please rate the quality of the student's interaction with patients:**

Poor	Fair	Good	Very Good	Outstanding
Little or no rapport with patients. Doesn't track/listen to patients, Q & A interview, overlooks key domains.		Engages, tracks & listens to patients; summarizes to organize interview. Asks relevant questions and elicits MSE information.	Clarifies patient responses while maintaining good rapport.	Able to establish rapport and gather information at the level of a third or fourth year student.

- 3. Please rate the student's fund of knowledge, clinical reasoning, and commitment to independent learning, as demonstrated in the group discussions and written work:**

Poor	Fair	Good	Very Good	Outstanding
Little participation; does not come prepared with questions. Demonstrates little desire to expand knowledge base.		Actively participates in discussions, but adds little new information/viewpoints. Questions raised and written work tend to reflect more basic level understanding.		Consistently raises perspectives/knowledge that lead to the increased understanding of the whole group. Questions raised reflect a deeper understanding in the clinical presentation.

- 4. Please rate the student's level of professionalism:**

Poor	Fair	Good
Comes late, or unprepared, or misses sessions. Appears not interested in patients.	Often not prepared.	Arrives on time, prepared, interested and appropriate

- 5. COMMENT ON STUDENT STRENGTHS AND POSSIBLE AREAS FOR IMPROVEMENT:**

What is your assessment of this student's overall performance in your group (circle one)?
Poor Fair Good Very Good Outstanding

THE MENTAL STATUS EXAMINATION (MSE)

Reaching a psychiatric diagnosis depends on the assessment of the patient's longitudinal history and evaluation of their current state. The mental status examination is just that, an evaluation of the patient's current feeling, thinking and behavior and analogous to performing the physical examination. And, when combined with the patient's history, the MSE is necessary to reach a presumptive diagnosis. Both significant positive and negative findings are noted. Clinicians assess much of the MSE during history taking; thus, formal testing in all domains is not always necessary but should be commented on nonetheless. As you proceed with history taking, you are assessing whether the patient is a reliable informant which depends on the nature of their illness (Psychotic? Demented? Delirious?), the setting you see the patient in (jail?), and their possible motivations. Remember, corroboration of the patient's history with family or friends and old-records are critical to avoid pitfalls in the diagnostic process.

PRESENTATION

Appearance: Dress and grooming? Anything unique?

Level of Consciousness Is the patient arousable, attentive, or distractible? Part of the cognitive exam, but assessed early since much of the MSE depends on an alert patient.

Attitude toward the interviewer and examination. Cooperative and reliable? Appropriate for the situation? Does it change during the interview? Describe when.

Motor Behavior Slowed? Gait? Involuntary or abnormal movements, tremors, tics, mannerisms, lip smacking or akathisia?

Speech Spontaneous, fluid, pressured, rapid or slowed?

EMOTIONAL STATE

Mood: How the patient reports feeling in their own words. Some patients have difficulty identifying how they feel. Ask directly. "How do you feel most days?" Answers such as "not bad", "hard to say", "rough", "upset", need further clarification. Some clinicians find it helpful to have patients quantify mood (or interest in normal activities) on 1-10 scales. Mood and/or interest are key symptoms of depression. A patient who doesn't appear depressed becomes more worrisome if they report feeling a "3", when 1= very bad and 10= very good or when it becomes apparent that they have lost interest in normal activities.

Affect: The appearance of mood based on your observations during the interview (and possibly on feelings they evoke in you). Is their affect appropriate to how they say they feel? Or do they appear depressed, or angry? Is their affect labile, reactive, dramatic, and intense, constricted, flat, non-reactive or remote?

THINKING: form and content

FORM/PROCESSES

Is the patient coherent and their thinking organized, easy to follow, logical and goal directed? When asked a question, is the patient easy to follow? Or, is there evidence for a thought disorder with weak or absent connections between responses and ideas which can be seen in patients who are actively psychotic?

Are associations loose? (usually schizophrenia): "You have blue eyes, General Custer had blue eyes. You must be General Custer". Or, does the patient have **flight of ideas** [hypo/or true mania]: a flow of rapid speech jumping from topic to topic, with discernible associations or word play, but in severe cases it is so fast the patient is unintelligible. When asked a question does the patient become **circumstantial** and introduce unnecessary details, with difficulty in arriving at an end point; **tangential** and answer in an oblique and irrelevant way; or

demonstrate **thought blocking** and suddenly stop and can't recover what was said (may be seen in people attending to hallucinations)?

Really ill patients may make up words (**neologisms**), mix words in a meaningless way (**word salad**), or **clang**, connect words based on their sound rather than concepts, for example by rhyming or punning. Justin Furstenfeld's "Imagine the worst. Systematic, sympathetic, quite pathetic, apologetic, paramedic, your heart is prosthetic" might be such an example.

CONTENT

What are the patient's preoccupations? Fixated on a single idea such as death, guilt, suicide, revenge? Are they delusional or hallucinating? Is there a paucity of thought or too many thoughts all jumbled together?

Hallucinations (no external stimulus) All senses can be involved. Types include auditory, visual, gustatory, tactile and olfactory. They are not always indications of psychotic illness. For example hypnagogic (i.e., the drowsy state preceding sleep) and hypnopompic (i.e., the semiconscious state preceding awakening) hallucinations can be normal or be associated with narcolepsy. Ask, "Do you hear whispers or voices when no one is around?" "Do they come from inside or outside your head?" "Are they talking about you?" "Who are they?" "Can you see things that no one else can see?" "Do you have other unexplained sensations such as smells, sounds, or feelings?"

Command hallucinations? "Do the voices tell you to do something?" "What?" "Do you obey their instructions or ignore them?"

Illusions – misinterpretation of external stimulus e.g. a crack in the ceiling becomes a dangerous snake. Seen mostly in patients who are delirious ("brain failure" due to drugs, metabolic disorders, infections, etc)

Delusions are fixed, false beliefs with no rational basis in reality and unacceptable in the patient's culture. Ask some of the following questions. "Do you have any thoughts that other people might think are strange?" "Do you feel you have any special powers or abilities?" "Does the television or radio talk about you or give you special messages?" Delusions can be grandiose, religious, persecutory, ideas of influence (someone controls their thoughts), erotomanic (someone famous is in love with them), jealousy (everyone wants what they have), thought insertion (someone put thoughts into their mind), and ideas of reference (everything refers to them, the TV, newspapers).

Obsessions are unbidden, intrusive, repetitive, unacceptable, anxiety producing thoughts. These can be accompanied by **compulsions**, usually irrational behaviors (such as counting, repetitive hand washing) the patient feels compelled to perform which provides a temporary sense of relief.

COGNITION

Evaluation of cortical functions including level of consciousness, memory, orientation, thinking such as the ability to abstract and judgment. You have assessed much of this already during the interview. (This is not the **mini-mental state examination (MMSE)** or **Folstein test** which is a brief 30-point questionnaire used to screen for cognitive impairment).

Observation of **level of consciousness** occurs during history taking and is rated as (1) coma & unresponsiveness; (2) stuporous & response to pain; (3) lethargic and drowsy; (4) alert and fully aware. Waxing and waning levels are seen in delirium.

Orientation really tests memory of **Time, Place, Person and Situation**. You can start by asking if the patient recalls your name. If so, that is enough. Otherwise, ask about day, date, time, then location. Patients disoriented to person, but not time or place are likely either malingering or suffer from a dissociative disorder.

Concentration and attention: The ability to sustain a task over time takes a reasonable degree of attention and concentration. You may read a series of letters to the patient and ask them to clap when a letter, for instance E, comes up. Or do "serial 7s": have the patient subtract 7 from 100 and continue subtracting 7 from each answer. Or, have the patient spell the word "world" forward and backward. Or, just have them count backwards from 50. Patients may forget the task, perseverate or lose their place.

[Extra: Visuospatial ability: Have the patient draw interlocking pentagons in order to determine constructional apraxia.]

Memory. Information is registered, stored and later retrieved. Thus, you can assess all three: immediate, recent and remote memory functioning. Can also be adversely affected by performance anxiety or cultural differences.

Registration, which depends on intact attention, has probably been already assessed during history taking. However, the ability to repeat information, such as a series of numbers, forward and backward, is a useful probe for **immediate memory**. It can also be tested by having the patient repeat (immediate memory) and then recall three items in 5 minutes (recent memory). The items should not be related (car, tires, steering wheel) and not in the room (table, chair, doctor). The immediate repetition is a test of registration, the recall a test of storage and recent, short-term memory.

Long-term memory can be divided into procedural (ability to perform a learned set of skills automatically, such as ride a bike, type or drive a car) and declarative memory. **Declarative memory** refers to remembering data or facts, is not temporary, and can be tested by asking patients past personal details such as medical history, wedding dates, all of which needs to be confirmed. Asking to list past presidents is another way to do this.

Abstract thought is the ability to deal with concepts and understand words beyond their literal, concrete meaning and develops, when it does, in early adolescence. Problems with abstract thinking can be seen in people with low IQs; in those with less than an 8th grade education; in people from a different culture; and be lost in those who are developing dementia and in some patients with schizophrenia.

One way to assess abstraction is by determining similarities between different objects, for example, an apple and an orange (abstract response is "fruit"; concrete is "round"), a fly and a tree (abstract, "alive, part of nature, grow"; concrete, "nothing", idiosyncratic "they both have veins"). The latter, an idiosyncratic response, can be seen in psychosis or be creative or both.

Explain that proverbs are sayings that have broader meaning. (If from a different culture, ask patients

to tell you a saying or proverb and explain it to you). Ask how they would explain these sayings to a child. Start with simple ones such as "you can't tell a book by its cover" (concrete "of course not, you have to read it first"). Proverbs of increased difficulty are "a stitch in time...", "don't cry over spilled milk", "a rolling stone gathers no moss" "People in glass houses shouldn't throw stones", "even monkeys fall from trees" or "there is many a slip between the cup and the lip". Some patients may have particular difficulty with "the tongue is the enemy of the neck".

Insight and judgment requires conceptual thinking and abstracting ability, and are often situation specific. There is no necessary correlation between intelligence, insight and judgment. In the medical setting, insight requires recognition that they have a problem and arrive at reasonable adaptive solutions. Ask the patient if they understand their current situation and why you are speaking with them.

Judgment is traditionally assessed by asking "what would you do if you smelled smoke in a crowded movie theater?" or "what would you do if you found a stamped addressed envelope on the street?" But, you have already learned through history taking about the patient's ability to make generally reasonable decisions in a variety of situations.

MSE GRID	Delirium	Dementia	Depression	Bipolar disorder w/ mania or hypo-mania	Generalized anxiety disorder	Schizophrenia
onset	Hours to days	Usually insidious	Follow grief. Early life loss ups risk. Prevalence 5-20%, F>M	Can be sudden. 1 st manic episode in 20s. May be in kids	often early 20s	Often, ↓pre-morbid function. Childhood or men early 20s, women late 20s
Level of consciousness	Key finding: waxes and wanes	Alert.	Alert but may be agitated or slowed	Complicated by drug/etoh use & lack of sleep	Normal	Normal
Mood	Perplexed	May be fine	↓↓ interest or mood. May also have ↑anxiety	Great↑↑ “in the groove”	anxious	Neg. sx: flat, asocial, low motivation Pos sx: H/D, odd behavior
Affect	Anxious and frightened	Pleasant, placid	Normal or flat, depressed. Anxiety is common	Engaging but Easily irritated	Worried/constricted	Mixed pos and neg sx. Blunted, flat, agitated, suspicious, hostile, odd, aggressive
Form & content of thinking	Disorganized, attention, +-fearful	Poverty of thought. May be paranoid	Preoccupied with guilt, being bad, sad, hopeless, despair.	Grandiose, special, rapid thoughts & flight of ideas in mania.	Catastrophizes, ↑↑ worry: job, health, social, \$. Doesn't miss an opportunity to be anxious.	Loose associations, idiosyncratic, religious, paranoid, ideas of reference
Hallucinations and delusions	Often visual illusions or hallucinations	Absent unless severe.	Present if psychotic	Present when psychotic	May be almost delusional about worries.	Positive sx: H/Ds. Thought insertion, withdrawal, voices, command hallucinations
Memory	Poor, disoriented to time, place, person	Poor but may deny problems	May c/o problems but fine on <u>gross</u> testing if cooperates	Fine if they cooperate	Normal but pre-occupied	normal to gross testing if cooperative
Abstract thinking	Problems if can't attend to questions.	Loss of abilities to abstract. Concrete.	If forced, will abstract	Fine. May Pptate flight of ideas	normal	May become concrete despite prior functioning or education
Insight, judgment	Knows something is wrong	Poor w/progression	OK but hopelessness affects	May have insight. Poor In mania.	Fine except when it comes to worries	Mostly poor but may have insight
Suicide risk	High – usually impulsive	High in newly diagnosed	High, 15%	High, 10-15%	High with co-morbid depression	High @ illness onset
Etiology	Metabolic, drugs, ETOH. Primarily Brain stem	Various e.g. vascular, AD, etc	Genetic factors. Endocrine and amine neuro-transmission, deficiencies in NE & 5HT, hippocampal cell death	Genetic factors. May be induced by ADs, stimulants, phototherapy	Inherited & environmental. Cognitive distortions; misperceives most situations as worrisome & potentially dangerous	Genetic w/ perinatal insult. Cannabis use in susceptible people. Neuro-developmental disorder. ↑ ventricles, ↓limbic volume, altered prefrontal cortex . ↑↑active DA pathways. GABA, glutamate also implicated