



VANDERBILT  
School of Nursing

# Transplant Psychiatry

## *Depression, Delirium, and Dementia*

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Transplant Symposium 2025

# Disclosures

- We have no conflicts of interests to disclose





# Introduction

**Sarah Carpenter**, MSN, PMHNP-BC

**Katie Davidson**, MSN, PMHNP-BC

- Psychiatric Nurse Practitioners, Board Certified
- Clinical experience with the Transplant Psychiatry team at VUMC
- Current Faculty at Vanderbilt University School of Nursing

## Today's Agenda

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- Overview of Transplant Psychiatry
- Assessment of Depression, Delirium, and Dementia
- Treatment Recommendations and Implications for practice
- Case Study
- Q&A

# Transplant Psychiatry



**The Transplant Psychiatry Team** is a group within the Vanderbilt Transplant Center that focuses on the mental health care of patients before, during, and after organ transplantation.

## Key Roles

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- Psychiatric Evaluation for Candidacy
- Support Pre-transplant
- Post-transplant Care
- Substance Use Monitoring and Treatment
- Collaborative Care



## Today's Focus

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- Depression
- Delirium
- Dementia

# Case Study



## Patient J.R., 62 yo Male

**Medical History:** End-stage liver disease due to hepatitis C; underwent orthotopic liver transplant 10 days ago

**Social History:** Recently divorced, no children, sister is primary caregiver

**Post-Operative Course:** Initially stable post-transplant; no major complications

By post-op day 7, nursing staff noticed Mr. JR. had become increasingly withdrawn. He stopped initiating conversations, slept most of the day, and required prompting to eat or participate in physiotherapy. He often stared at the ceiling for long periods and gave short, slow responses when spoken to. His affect was noted to be flat, he was disengaged, and reported low energy. Sister intermittently present due to unforeseen family obligations.



Psychiatry noted:

- Was **alert but inattentive**
- Had **fluctuating levels of awareness** across the day
- Displayed **slowed psychomotor activity**
- Was **oriented** to person and place but intermittently confused about time
- Denied suicidal ideation or hopelessness but seems **discouraged**
- No prior psychiatric history



# Major Depressive Disorder

**Rule outs;** Depression due to medical illness, unspecified depression, adjustment disorder, hypoactive delirium, bipolar disorder.

## DSM-V Criteria:

- Symptoms must present for at least 2 weeks and causing impairment in functioning.
- Must have depressed mood OR loss of interest
- And at least 5 of the following symptoms;
  - Weight loss or gain
  - Insomnia or sleeping too much
  - Fatigue/loss of energy
  - Agitation or psychomotor retardation
  - Worthlessness/guilt
  - Problems with concentration/decision making
  - Thoughts of death.

# Depression



## Specifications for Transplant Population:

**Pre-Transplant Factors:** Multiple hospital visits/appointments, loss of autonomy, fear of death, decreased quality of life due to medical conditions

**Post Transplant Factors:** Unmet expectations, multiple medications, fear of rejection, setbacks, survivor's guilt, side effects from steroids and immunosuppressants

**Why is identification and treatment important?** Improve quality of Life , increase medication adherence, improve post-transplant outcomes and survival rates

## Transplant Patients with MDD

-Depression; 20-25% kidney transplant patients, 30% lung transplant patients, 30% heart transplant patients.

-Increased risk for decreased QOL, medication adherence, graft loss.

-Higher risk of mortality post transplant

-Other consequences include; less physically active, compromised immune function if less engaged in household cleaning/diet, and decreased engagement with the team.



# Depression Assessment

- **Is this situational and expected? Or are symptoms persisting and causing impairment in functioning?**
- Can look similar to symptoms of organ failure (fatigue, difficulty concentrating, low appetite, poor sleep, etc.)
- Past psychiatric history?
- Ongoing complications?
- Hopelessness? Helplessness? Apathy?

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## Other Considerations

- ✓ Thyroid Panel
- ✓ Immunosuppressants and steroids
- ✓ Delirium
- ✓ Substance use
- ✓ Pain
- ✓ Vitamin Deficiencies

### Assessment Tools:

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- Clinical interview
- Collateral info from family/team
- PHQ-9 (quick screening tool that can be used in clinic), Geriatric Depression Scale

# Treatment



**Pharmacology**



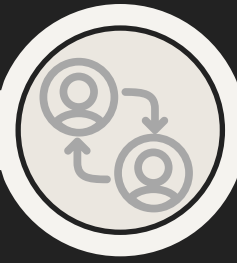
**Individual  
therapy**



**Mindfulness/  
meditation**



**Support  
Groups**



**Social Work  
Referral**

# Delirium



**Rule outs:** Depression, Major Neurocognitive Disorder, Catatonia, Psychosis (Thought Disorder), Mania (Bipolar or Medication Induced), Acute Stress Disorder

## DSM-V Criteria:

- A disturbance in attention accompanied by reduced awareness of the environment.
- Develops over a short period of time, represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.
- An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability, or perception).
- Evidence that the disturbance is a direct physiological consequence of another medical condition, substance intoxication or withdrawal (i.e., due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.
- Specifiers: hyperactive (mood lability, agitation, and/or refusal to cooperate with medical care) vs. hypoactive (sluggishness and lethargy that approaches stupor).

American Psychiatric Association, 2013



# Delirium Associated Features

## Sleep-wake Cycle Disturbances

- Daytime sleepiness
- Nighttime agitation
- Difficulty falling asleep

## Emotional Disturbances

- Anxiety
- Fear
- Depression
- Irritability
- Anger
- Euphoria
- Apathy
- Lability

# Delirium



## Risk Factors For Developing Delirium

**Physical/Biological:** infection, metabolic disturbances, brain disorders, systemic organ failure, drug/toxin, polypharmacy, older adults, dehydration, malnutrition

**Environmental:** disturbance in sleep/wake cycle, prolonged hospitalization/ICU, sensory impairment, immobility (restraints), bladder catheters

**Why is it important?** minimize risk of unnecessary medications, medical trauma, prolonging/worsening delirious state

## Transplant Patients with Delirium

- Prolonged hospital stays
- Polypharmacy (immunosuppressant medications)
- Organ failure
- Metabolic disturbances (hepatic encephalopathy)
- 4.7 - 47%



# Delirium Assessment

- What was the patient's baseline level of functioning?
- Past psychiatric history?
- Recent medical illness?
- Onset, duration, course, orientation?
- Attention impairment? Sleep/wake disturbances?

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## Medical Work-up

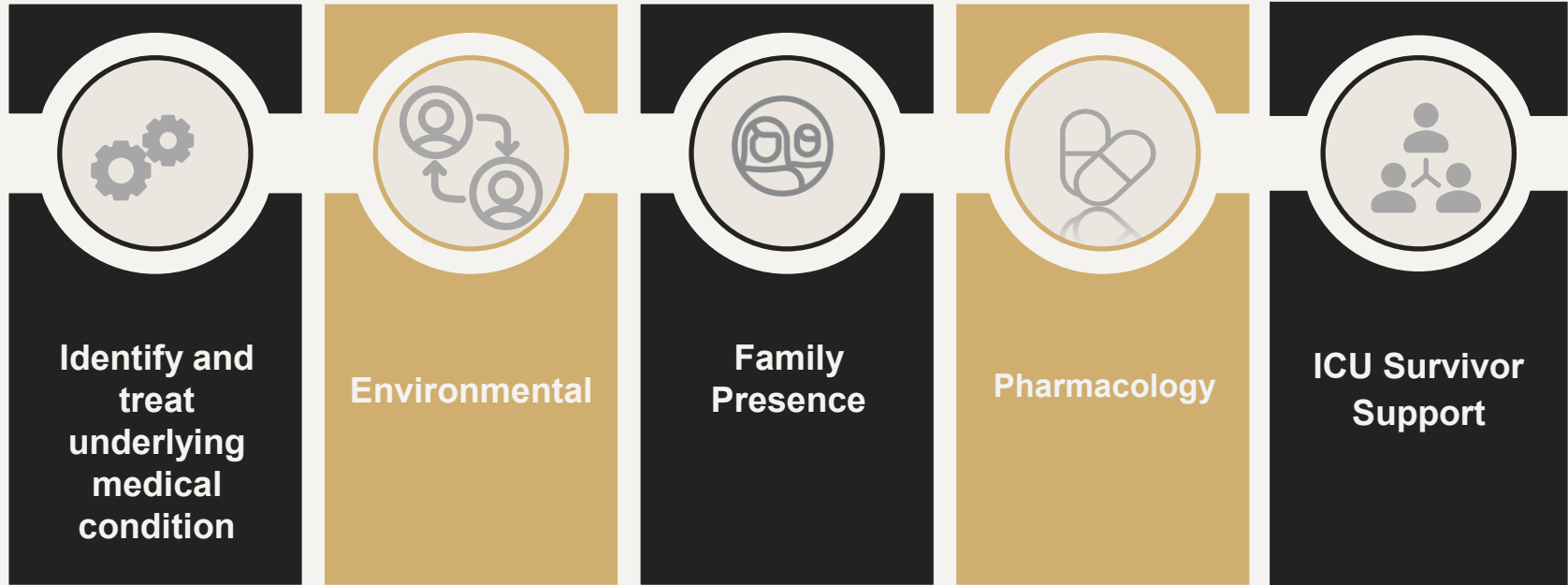
- ✓ CBC
- ✓ BMP
- ✓ Liver function tests
- ✓ Urinalysis and culture, urine drug screen
- ✓ Vitamin B12, folate, vit D
- ✓ Thyroid panel
- ✓ Head CT, EEG, chest X-ray, lumbar puncture

American Psychiatric Association, 2013; Aziz, 2022; Collier, 2025, Meyen, 2022

## Assessment Tools:

- Clinical interview
- Collateral from family/team
- Confusion Assessment Measurement (CAM)
- Attention tests

# Treatment





# Dementia: Major Neurocognitive Disorder

**Rule outs;** Delirium, mild neurocognitive disorder, depression, learning disorder or other neurocognitive disorder,

## DSM-V Criteria:

- Evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains (complex attention, executive function, learning and memory, language, perceptual-motor, or social cognition) based on:
  - Concern of the individual, a knowledgeable informant, or the clinician that there has been a significant decline in cognitive function; and
  - A substantial impairment in cognitive performance, preferably documented by standardized neuropsychological testing or, in its absence, another quantified clinical assessment.
- The cognitive deficits interfere with independence in everyday activities (i.e., at a minimum, requiring assistance with complex instrumental activities of daily living such as paying bills or managing medications).
- The cognitive deficits do not occur exclusively in the context of a delirium.
- The cognitive deficits are not better explained by another mental disorder (e.g., major depressive disorder, schizophrenia).

**Without behavioral disturbance:** If the cognitive disturbance is not accompanied by any clinically significant behavioral disturbance. **With behavioral disturbance** (*specify disturbance*): If the cognitive disturbance is accompanied by a clinically significant behavioral disturbance (e.g., psychotic symptoms, mood disturbance, agitation, apathy, or other behavioral symptoms). American Psychiatric Association, 2013

# Dementia



## Risk Factors for Transplant Population:

Pre-Transplant Factors: older age, older age + diabetes, duration and severity of illness prior to transplant, increased time on dialysis, comorbid cardiovascular/metabolic conditions, frailty, family history, substance use disorders.

Post Transplant Factors: Delirium increases risk for development of dementia, comorbid illnesses, length of hospital stay, neurotoxic effects of medications

Why is identification and treatment important? Early identification can improve outcomes, loss of executive functioning can result in disadvantageous outcomes, caregiver strain, anticipation of potential complications

## Transplant Patients with Dementia

- Higher risk of graft loss
- Increased risk mortality
- Med non-adherence
- Caregiver strain/burnout
- Potential complications (delirium, falls, frailty, depression, malnutrition, impairment in ADLs).



# Dementia Assessment

- What was their pre-transplant cognitive functioning like?
- How long have symptoms been present?
- Are symptoms causing impairment in functioning?

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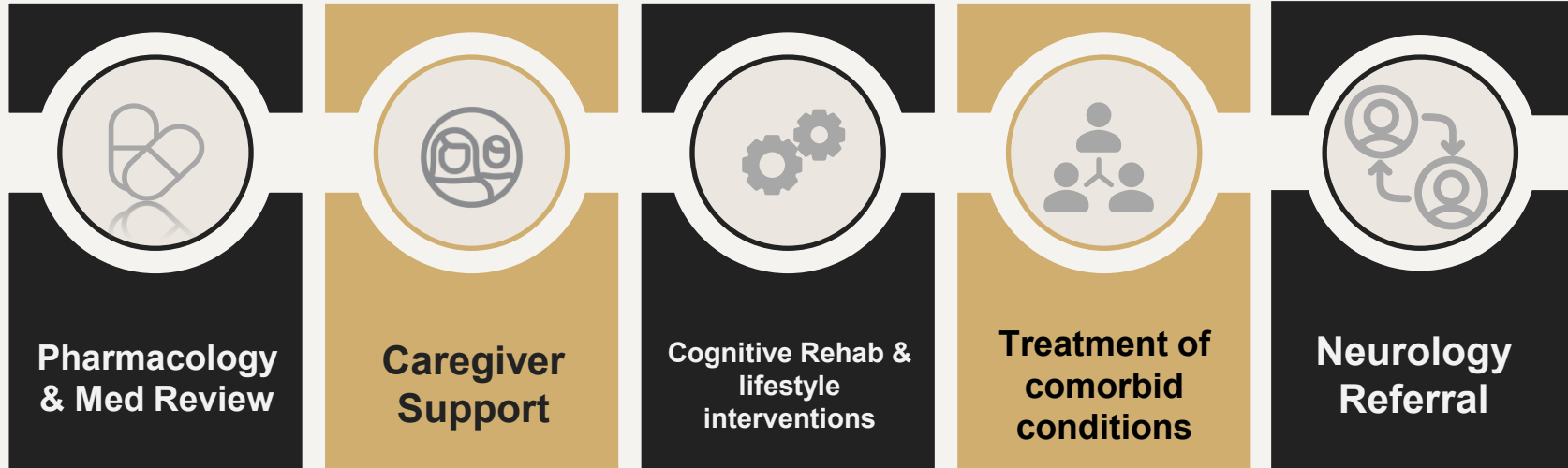
## Other Considerations

- ✓ Infection
- ✓ Medication toxicity
- ✓ Psychiatric illness
- ✓ Medical cause; stroke
- ✓ **Pseudodementia (Depression)**
- ✓ Delirium

## Assessment Tools:

- Clinical interview
- Collateral info from family/team
- Head CT/MRI
- SLUMs/Mini Mental Status Exam, MOCA
- Neurocognitive evaluation

# Treatment



# Case Study



## Patient J.R.

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**Post-Operative Course:** Initially stable post-transplant; no major complications

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## Hypoactive Delirium:

- Sudden onset and fluctuating course
- Inattention and disorganized thinking
- Hypoactive motor symptoms (not common in depression)
- Presence of multiple delirium risk factors: recent major surgery, immunosuppressants, opioid use, ICU stay

# Case Study Continued



## Management:

- Reviewed medications: minimized opioids and adjusted tacrolimus levels
- Ensured adequate hydration and electrolyte balance
- Initiated non-pharmacological delirium management: reorientation strategies, improved sleep-wake cycles, mobilization
- Family educated on differences between delirium and depression

## Outcome:

Within 3–4 days, J.R.'s mental status improved significantly. He became more interactive, oriented, and began engaging in rehabilitation. Full resolution of symptoms was noted by post-op day 14.

**Hypoactive delirium** is often **under-recognized** and may be misdiagnosed as **depression**, especially in post-operative or ICU patients. Timely recognition and management are critical to prevent complications and support recovery.

## Differentiating Among the 3 Ds

|                                       | Depression                                                                                                                                                                           | Dementia                                                                                                                                                              | Delirium                                                                                                                                                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Symptoms</b>                       | <ul style="list-style-type: none"> <li>• Apathy</li> <li>• Anhedonia</li> <li>• Depressed mood</li> <li>• Poor energy</li> <li>• Somatic concerns, fatigue, malaise</li> </ul>       | <ul style="list-style-type: none"> <li>• Irreversible cognitive changes that interfere with ADLs</li> </ul>                                                           | <ul style="list-style-type: none"> <li>• Acute waxing and waning sensorium</li> <li>• Inattention</li> </ul>                                                                                                                |
| <b>Time Course</b>                    | <ul style="list-style-type: none"> <li>• At least two weeks</li> </ul>                                                                                                               | <ul style="list-style-type: none"> <li>• Months to years</li> </ul>                                                                                                   | <ul style="list-style-type: none"> <li>• Days to weeks</li> </ul>                                                                                                                                                           |
| <b>Screening</b>                      | <ul style="list-style-type: none"> <li>• Geriatric Depression Scale</li> </ul>                                                                                                       | <ul style="list-style-type: none"> <li>• MoCA</li> <li>• MMSE</li> <li>• SLUMS</li> </ul>                                                                             | <ul style="list-style-type: none"> <li>• CAM</li> </ul>                                                                                                                                                                     |
| <b>Recommended Labs</b>               | <ul style="list-style-type: none"> <li>• CBC</li> <li>• Comprehensive metabolic panel (CMP)</li> <li>• Folate</li> <li>• RPR</li> <li>• TSH</li> <li>• Vit B<sub>12</sub></li> </ul> | <ul style="list-style-type: none"> <li>• CBC</li> <li>• CMP</li> <li>• Folate</li> <li>• RPR</li> <li>• TSH</li> <li>• Vit B<sub>12</sub></li> <li>• Vit D</li> </ul> | <ul style="list-style-type: none"> <li>• Blood alcohol level</li> <li>• CBC</li> <li>• CMP</li> <li>• Folate</li> <li>• TSH</li> <li>• Urinalysis</li> <li>• Urine drug screen</li> <li>• Vitamin B<sub>12</sub></li> </ul> |
| <b>Neuroimaging</b>                   | <ul style="list-style-type: none"> <li>• Brain MRI if concern for vascular depression</li> </ul>                                                                                     | <ul style="list-style-type: none"> <li>• Brain MRI</li> </ul>                                                                                                         | <ul style="list-style-type: none"> <li>• CT head if focal neurological symptoms</li> </ul>                                                                                                                                  |
| <b>Common Pharmacologic Treatment</b> | <ul style="list-style-type: none"> <li>• Antidepressants</li> </ul>                                                                                                                  | <ul style="list-style-type: none"> <li>• Cholinesterase inhibitors</li> <li>• Melatonin or ramelteon</li> <li>• Memantine</li> </ul>                                  | <ul style="list-style-type: none"> <li>• Antipsychotics for agitation</li> <li>• Melatonin or ramelteon</li> </ul>                                                                                                          |
| <b>Nonpharmacologic Treatment</b>     | <ul style="list-style-type: none"> <li>• Cognitive behavioral therapy</li> <li>• ECT</li> <li>• Interpersonal therapy</li> <li>• Problem solving therapy</li> <li>• TMS</li> </ul>   | <ul style="list-style-type: none"> <li>• Caregiver support</li> <li>• Problem-solving therapy</li> <li>• Psychosocial interventions</li> </ul>                        | <ul style="list-style-type: none"> <li>• Frequent reorientation</li> <li>• Maintaining sleep-wake cycle</li> </ul>                                                                                                          |



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"The art of clinical diagnosis lies in the ability to ask  
the right questions."

~ Harriet B. Braiker



# References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>

Aziz, R. (2022, July 1). *Assessing and Treating Delirium in Older Adults*. The Carlat Report.

Chu, N. M., Segev, D. L., & McAdams-DeMarco, M. A. (2021). Delirium Among Adults Undergoing Solid Organ Transplantation. *Current transplantation reports*, 8(2), 118–126. <https://doi.org/10.1007/s40472-021-00326-1>

Collier, S. (2025, January 23). *Distinguishing the three Ds (delirium, dementia, depression)*. Carlat Psychiatry Webinars.

Francis, J., & Young B. (2025). Diagnosis of delirium and confusional states. *UpToDate*.

McAdams-DeMarco et al. (2017). Dementia and Alzheimer's Disease among Older Kidney Transplant Recipients. *Journal of the American Society of Nephrology : JASN*, 28(5), 1575–1583.

Meyen, R. (2022, July 1). *The 3 Ds of geriatric psychiatry: Depression, delirium, and dementia*. The Carlat Report.



**Questions?**