



Improving Awareness & Patient Outcomes

# Depression and Anxiety in End-Stage Kidney Disease



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# Objectives

- Understand the burden and impact of depression and anxiety in End-Stage Kidney Disease (ESKD)
- Elucidate the factors associated with depression and anxiety in ESKD patients
- Evaluate the outcomes of depression and anxiety in ESKD patients
- Discuss the role of nephrologists and the healthcare team in managing depression and anxiety in ESKD patients

# End-Stage Kidney Disease (ESKD) in the United States

## Final stage of chronic kidney disease (CKD)<sup>1</sup>

### Etiology<sup>2</sup>

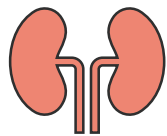
- Type 1 or 2 diabetes
- Hypertension
- Glomerulonephritis
- Interstitial nephritis
- Polycystic kidney disease

### Diagnosis<sup>1</sup>

- Requirement of Kidney replacement therapy (KRT) or transplant for > 3 months
- eGFR < 15 ml/min/1.73 m<sup>2</sup>
- Uremic symptoms

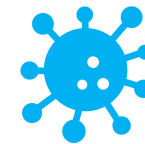
### Prevalence<sup>3</sup>

- ~786,000 patients with ESKD in the U.S. in 2020
- 71% on dialysis
- 29% with kidney transplant



### Transplant<sup>3</sup>

- **2020:** > 22,000 transplants completed
- **2021:** > 90,000 patients on waitlist
- Median waitlist time ~ **4-5 years**

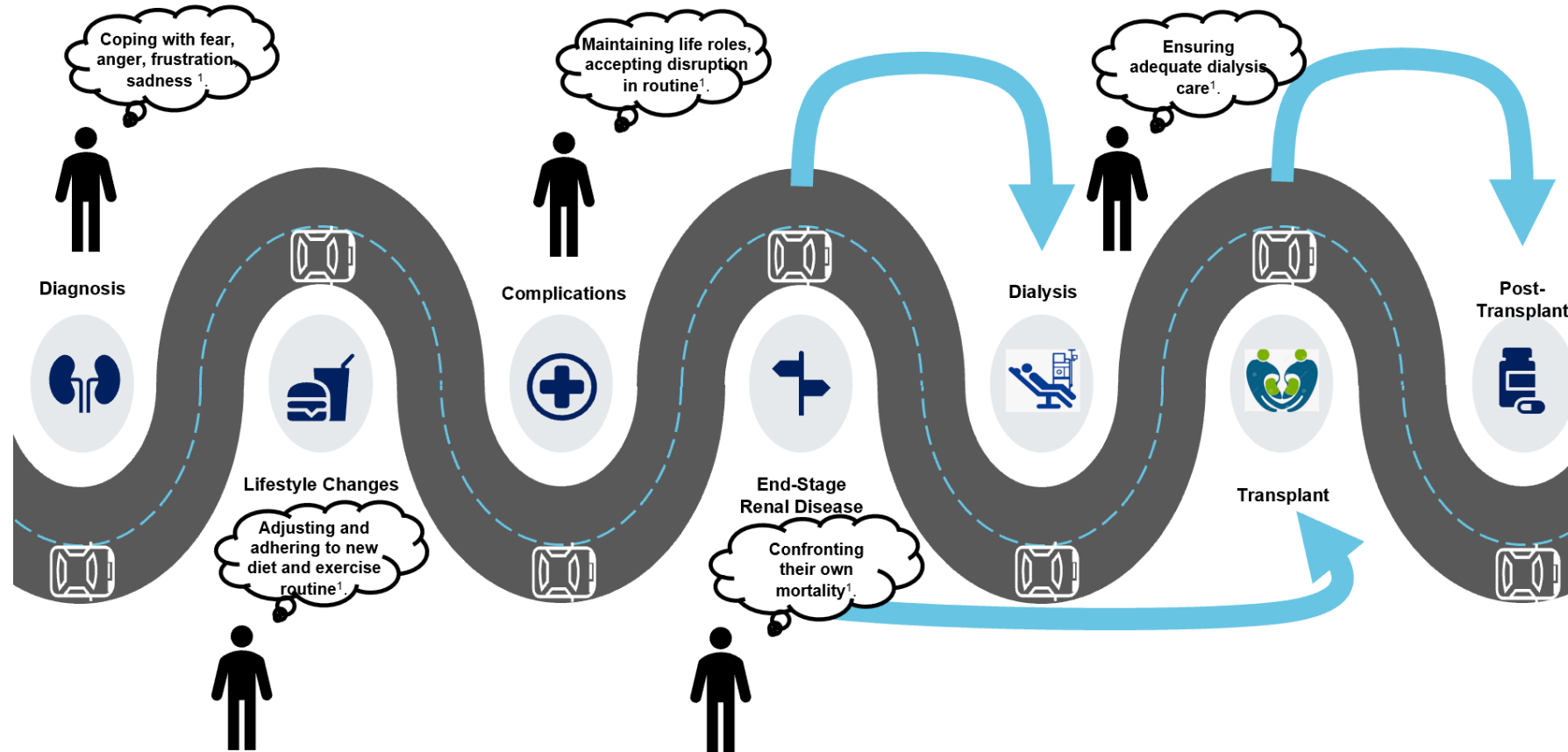


### Impact of COVID-19<sup>4</sup>

**Leading cause of death in 7.6% of patients receiving in-hospital dialysis in 2020**

1. Ver Halen N, et al Curr Psychiatry Rep. 2012  
2. <https://www.mayoclinic.org/diseases-conditions/end-stage-renal-disease/symptoms-causes/syc-20354532>  
3. <https://www.niddk.nih.gov/health-information/health-statistics/kidney-disease#:~:text=Nearly%20786%2C000%20people%20in%20the,3%20Black%20people%20develop%20ESKD>  
4. <https://usrds-adr.niddk.nih.gov/2022/end-stage-renal-disease/1-incidence-prevalence-patient-characteristics-and-treatment-modalities>

# CKD Patient Journey: The Psychological Burden



1. McCarley P. *Nephrol Nurs J.* 2009;36:409-413.

# Prevalence and challenges of depression and anxiety in ESKD

- Psychiatric illnesses common in ESKD patients receiving dialysis<sup>1</sup>
- Threat to autonomy<sup>5</sup>
  - Intense medication/diet regimen
  - Burden of illness
  - Decline in functional status
  - Daily demands of illness and symptoms
- Depression and anxiety are common, and often overlooked and underdiagnosed in ESKD<sup>2,3</sup>
- Both associated with lower quality of life<sup>1</sup>

## Depression

- Interview-based: 22.8%<sup>1</sup>
- Screening questionnaire: 39.3%<sup>1</sup>

## Anxiety

- Dialysis patients: 12% - 52%<sup>2</sup>
- Generalized anxiety disorder: 30%-45%<sup>1</sup>

**Depression is the most common psychiatric illness in ESKD  
~ 3-4 times more common than general population<sup>1,4</sup>**

1. Kimmel PL, et al CJASN 2019

2. King-Wing Ma T, et al. Nephrology 2016

3. Cohen SD et al. CJASN 2016

4. Shirazian S, et al Kidney Int Rep. 2017

5. Ver Halen N, et al Curr Psychiatry Rep. 2012

# Depression – epidemiology and diagnosis

## DSM V Diagnosis<sup>1</sup>

- Mood + somatic symptoms for at least 2 weeks<sup>1</sup>
- Symptoms must include either:  
depressed mood or loss of interest/pleasure
- Symptoms not due to another medical condition

## Validated Screening Tools<sup>1</sup>

- Beck Depression Inventory (BDI)
- Patient Health Questionnaire-9 (PHQ-9)
- Center for Epidemiologic Studies Depression Scale (CES-D)

- Screening for depression during early phase of dialysis has been suggested<sup>1</sup>
- Dialysis patients diagnosed with depression are best managed by a multidisciplinary team<sup>1</sup>

1. King-Wing Ma T, et al. Nephrology. 2016

# Anxiety – epidemiology and diagnosis

## DSM V Diagnosis<sup>1</sup>

- Chronic persistent worry for at least 6 months, with at least 3 of the following 6 symptoms<sup>1</sup>:
  - Restlessness
  - Feeling “on-edge”
  - Fatigue
  - Difficulty concentrating
  - Irritability
  - Muscle tension and sleep disturbance
- Defined as anticipation of a future threat<sup>1</sup>

## Types of Anxiety Disorders<sup>1</sup>

- Generalized anxiety disorder (GAD)
- Specific phobia
- Social anxiety disorder (social phobia)
- Panic disorder
- Agoraphobia

- ESKD intrudes into many facets of life<sup>1</sup>
- Daily demands substantially impact psyche<sup>1</sup>
- Dialysis patients with anxiety have improved quality of life (QoL) compared to those with depression, but lower QoL when compared to those without psychiatric disorders<sup>1</sup>

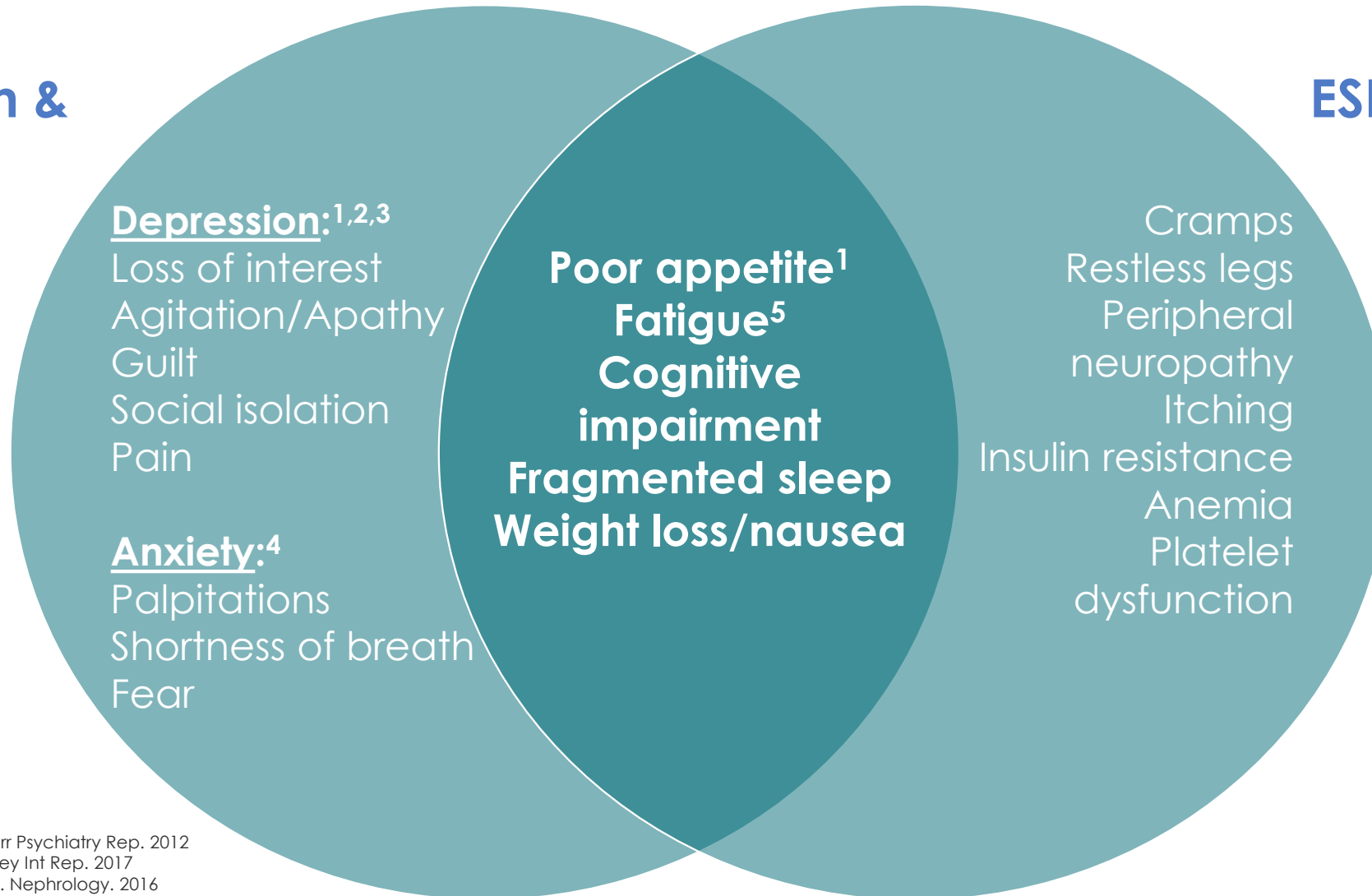
1. Cohen SD et al. CJASN. 2016



# Symptom overlap

## Depression & Anxiety

## ESKD & Uremia<sup>5</sup>



1. Ver Halen N, et al Curr Psychiatry Rep. 2012
2. Shirazian S, et al Kidney Int Rep. 2017
3. King-Wing Ma T, et al. Nephrology. 2016
4. Cohen SD et al. CJASN. 2016
5. Meyer TW, et al. N Engl J Med. 2007

# Factors associated with depression and anxiety in ESKD

- Single-center study in patients receiving maintenance hemodialysis, naïve to antidepressant/anxiolytic medications for at least 3 months<sup>1</sup>
- Depression and anxiety assessed using the BDI and BAI self-administered questionnaires<sup>1</sup>

## Depression<sup>1</sup>

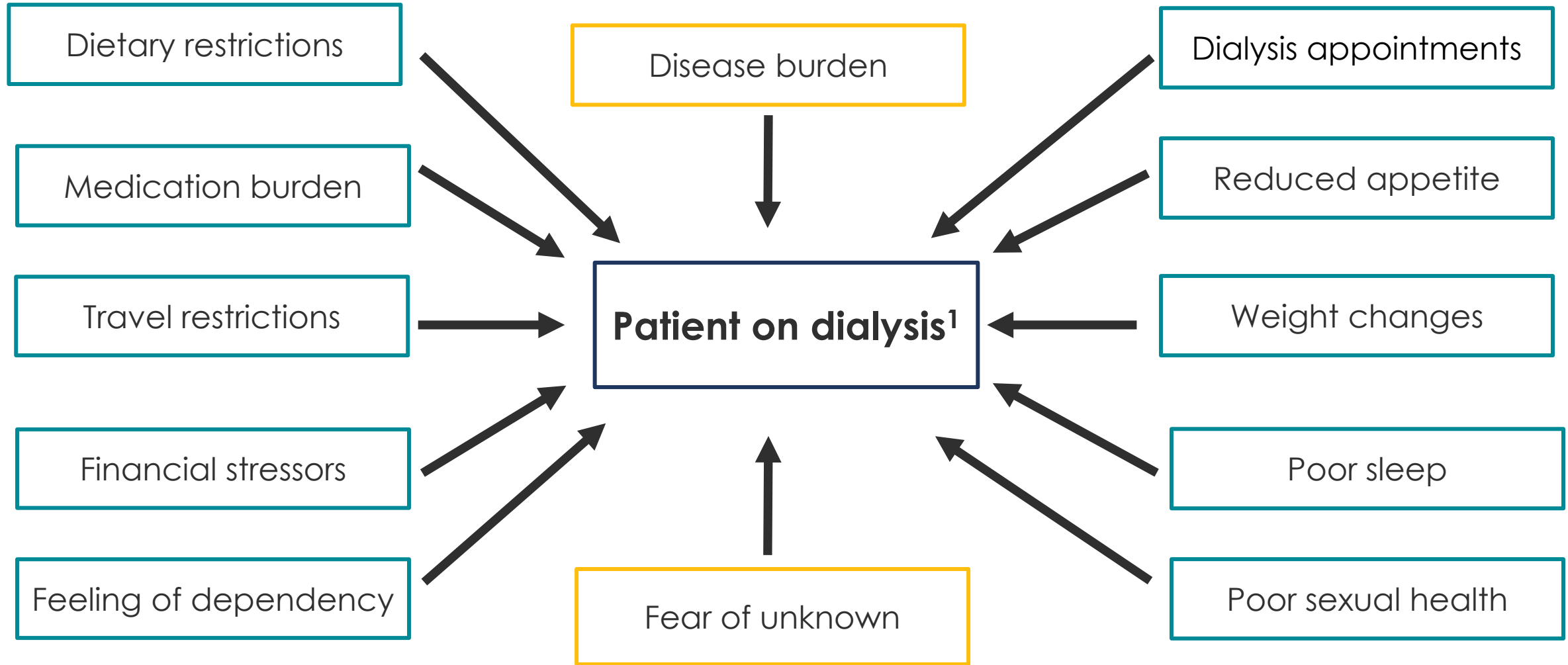
- Charlson Comorbidity Index (CCI)
- Lower educational status
- Number of oral medications

## Anxiety<sup>1</sup>

- Longer dialysis duration
- Number of oral medications

1. Ye W, et al. BMC Nephrology. 2022

# Stressors for patients on dialysis



1. Kimmel PL, et al. Kidney Int. 2001

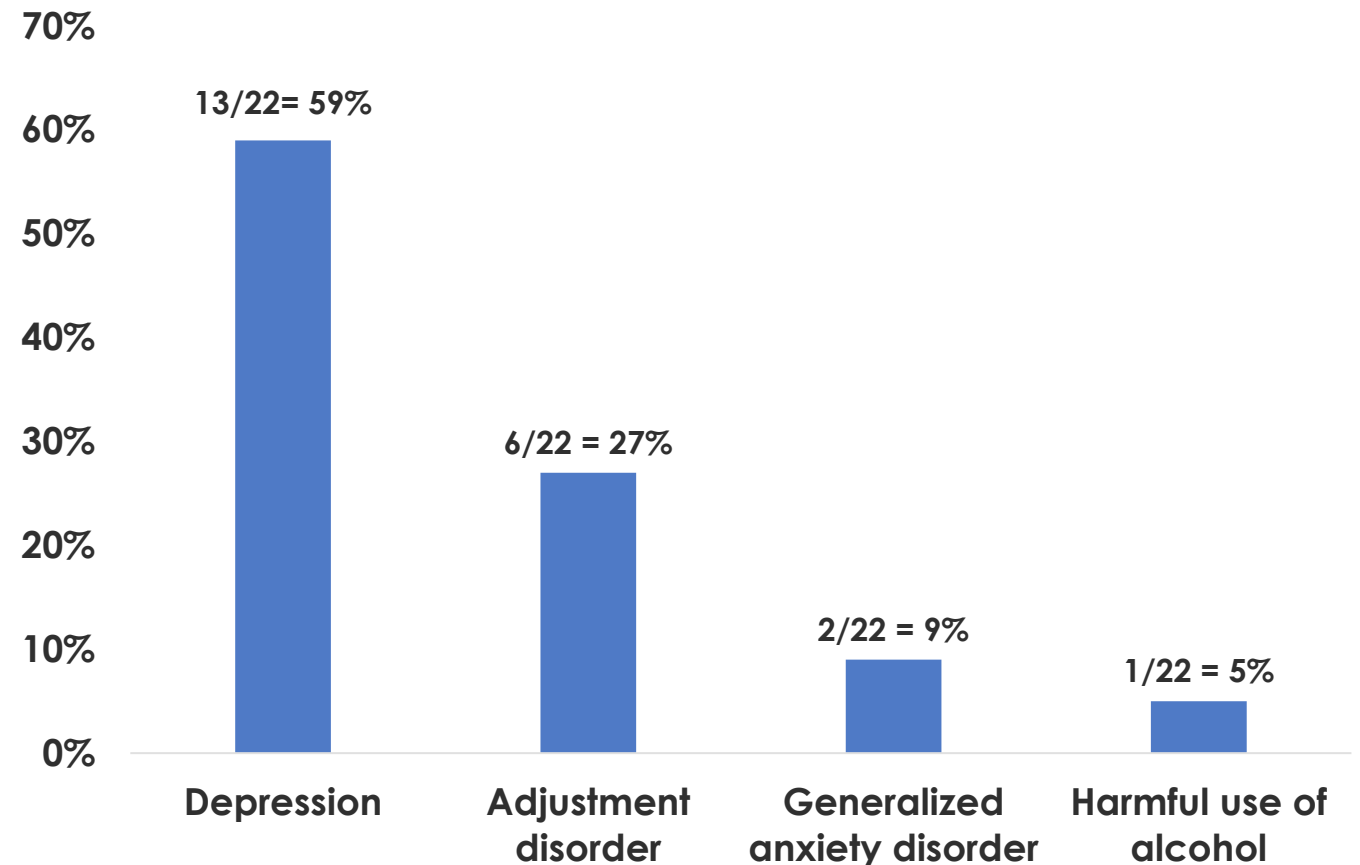
# Psychiatric comorbidities in patients on dialysis

49 consecutive patients started on dialysis<sup>1</sup>  
Age = 15 – 64 years



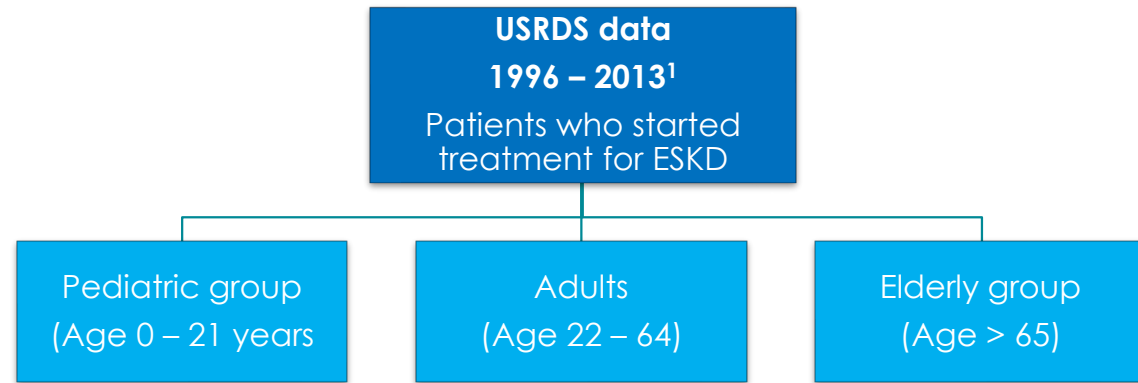
45% of the patients had a psychiatric comorbidity<sup>1</sup>

## Types of psychiatric comorbidities<sup>1</sup>

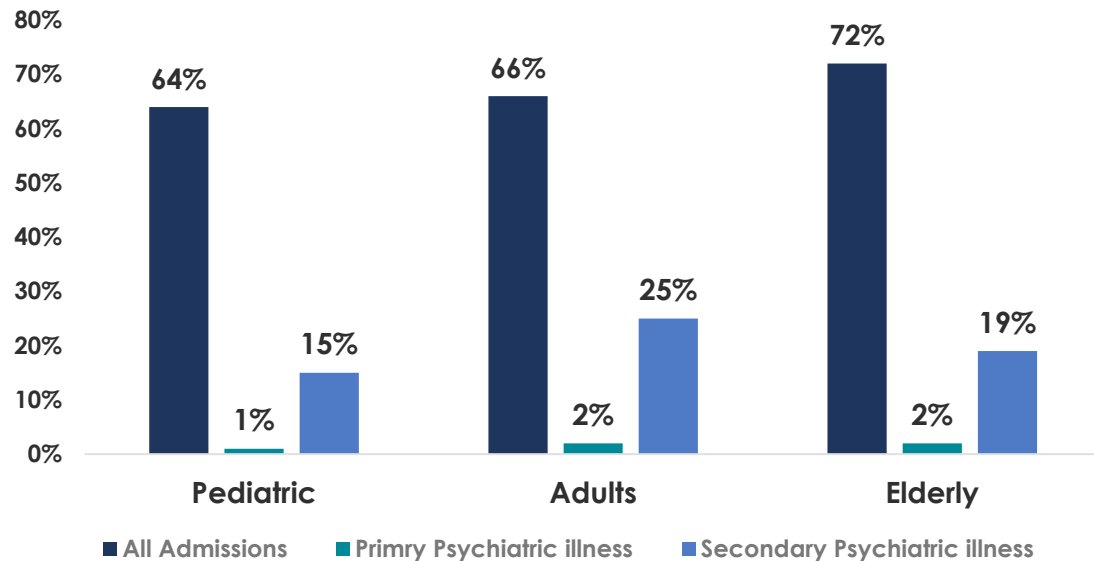


1. Goyal E, et al. Ind Psychiatry J. 2018

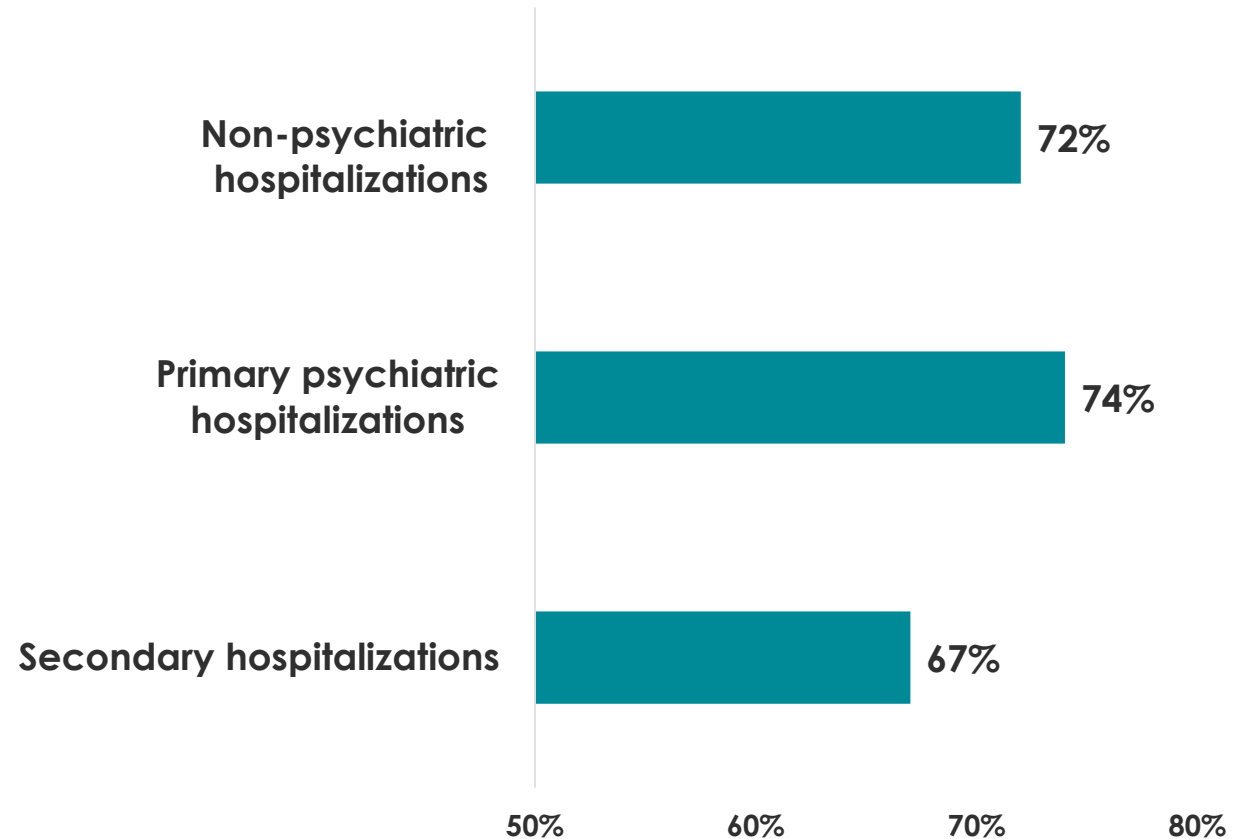
# Psychiatric admissions within one year of dialysis initiation associated with higher mortality



## Hospitalizations after initiation of dialysis<sup>1</sup>

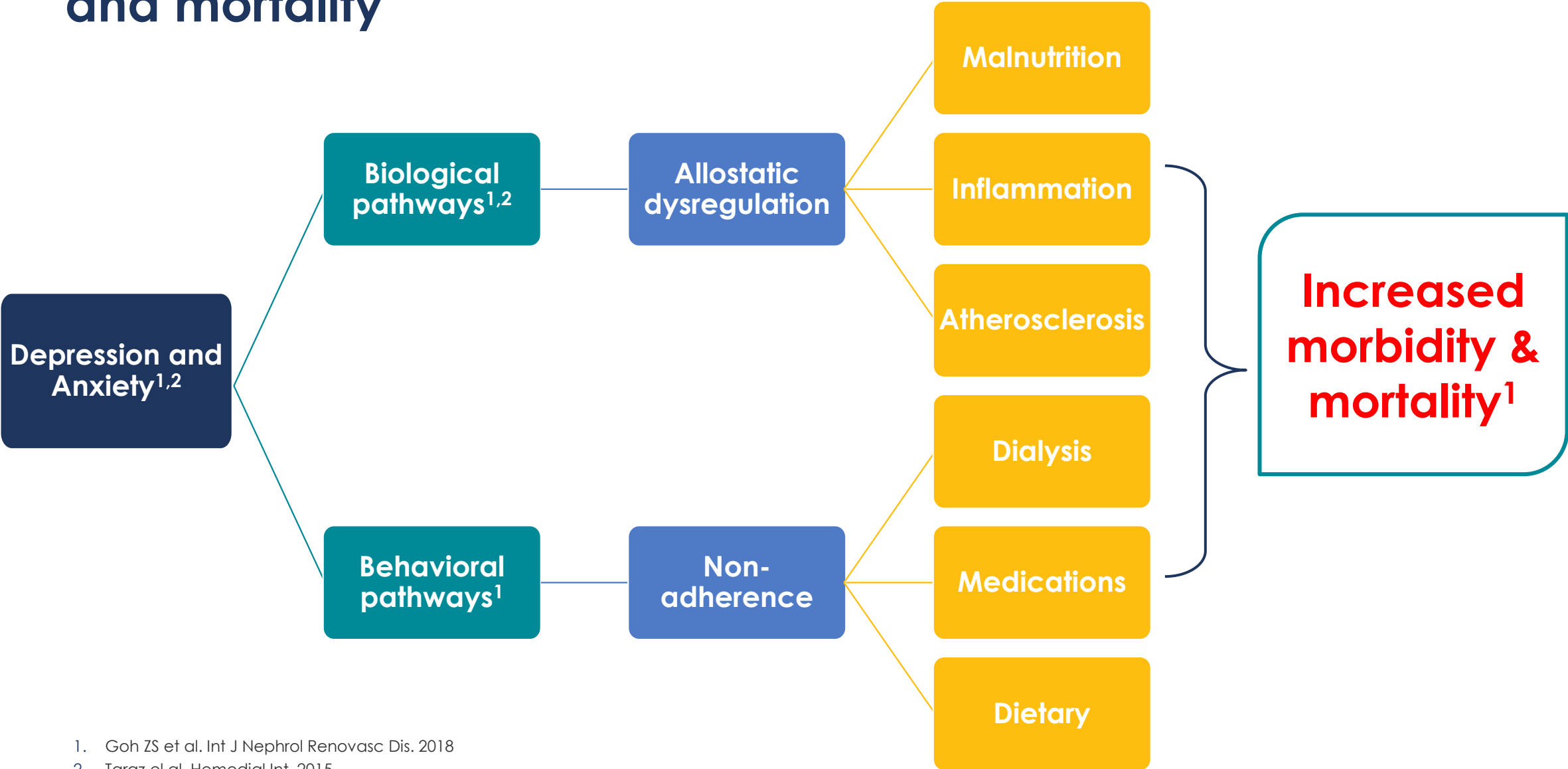


## Adjusted associations between hospitalization and death in adults on dialysis<sup>1</sup>



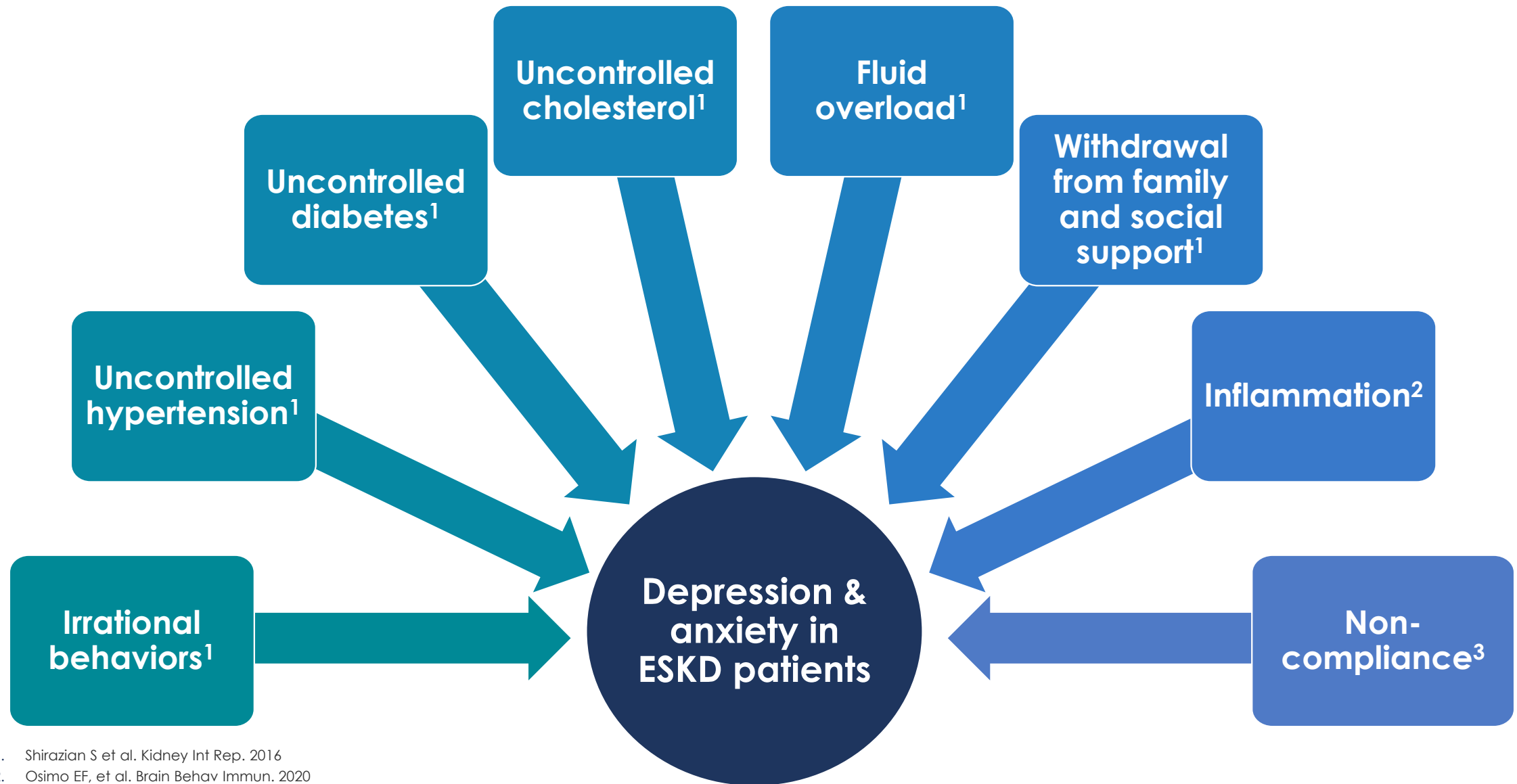
1. Kimmel PL, et al. CJASN. 2019

# Depression & anxiety associated with increased morbidity and mortality



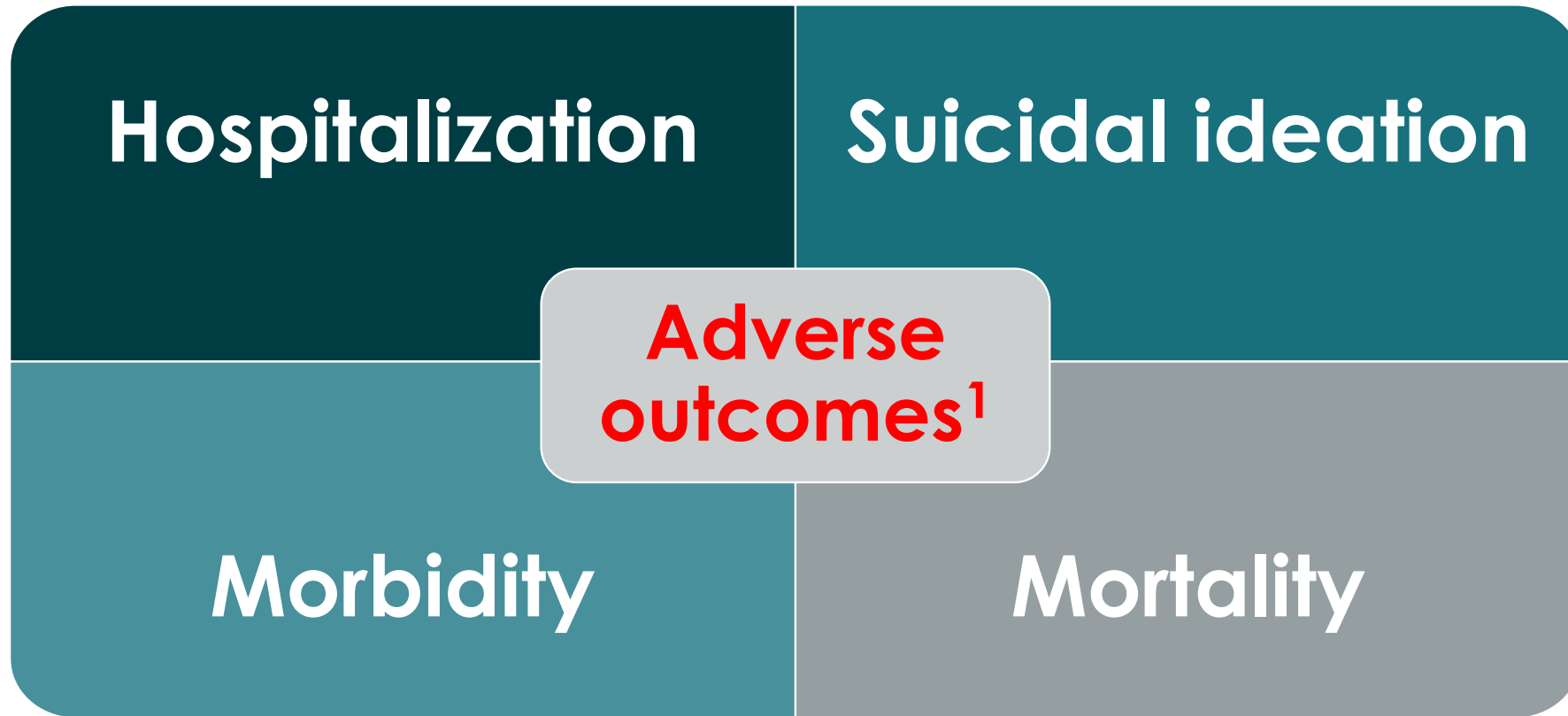
1. Goh ZS et al. Int J Nephrol Renovasc Dis. 2018  
2. Taraz el al. Hemodial Int. 2015

# Impact of depression and anxiety in ESKD patients



1. Shirazian S et al. *Kidney Int Rep.* 2016
2. Osimo EF, et al. *Brain Behav Immun.* 2020
3. DiMatteo MR, et al. *Arch Intern Med.* 2000

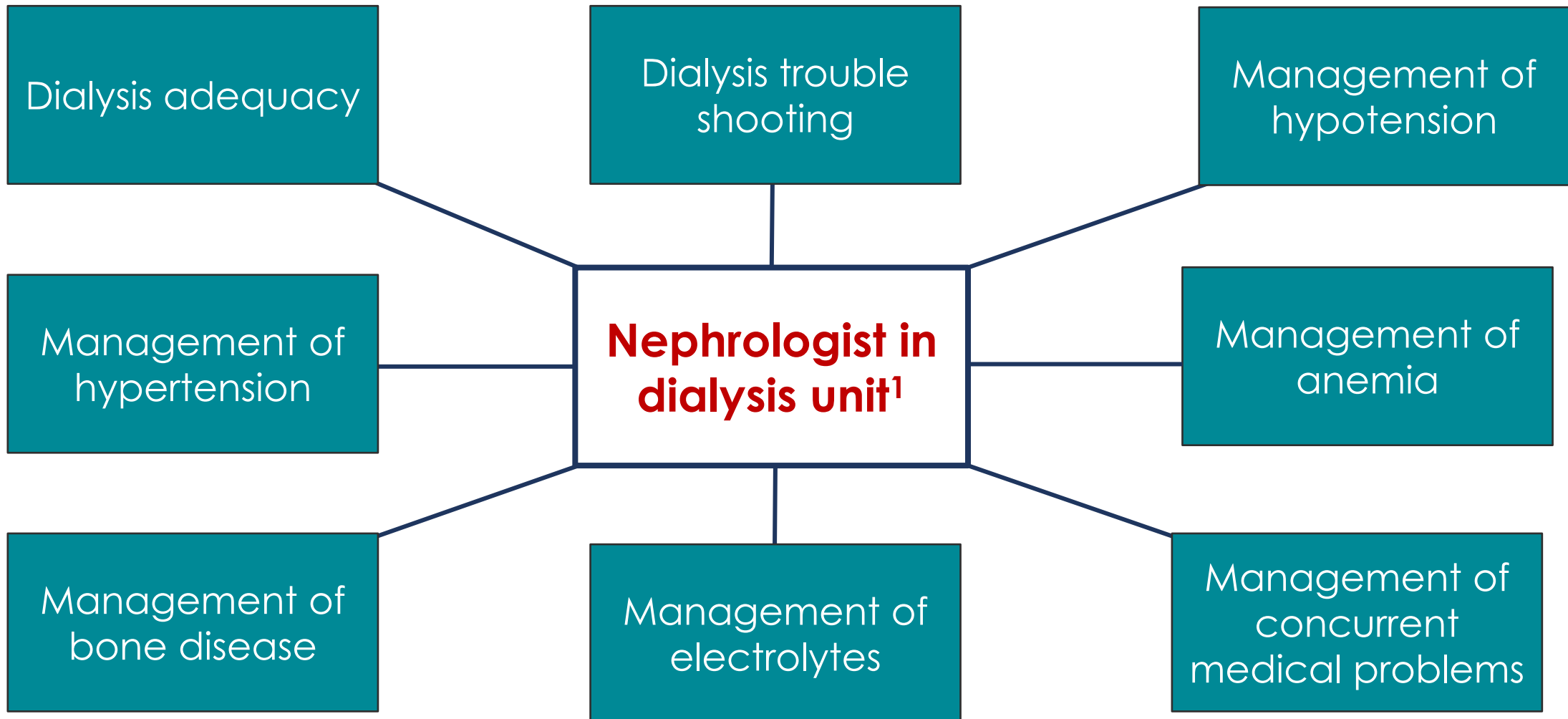
# Why treat depression and anxiety?



1. Shirazian S et al. Kidney Int Rep. 2016



# Role of the nephrologist in dialysis units



1. Lieberman N, et al. <https://www.renalfellow.org/2018/08/18/the-dual-role-of-nephrologist-in/>. 2018

# Nephrologist's role in diagnosing and managing depression & anxiety in ESKD patients

## US Preventive Services Task Force Recommendation:<sup>1</sup>

Screen for depression if systems in place to assure accurate diagnosis and effective treatment

Nephrologists should pay special attention to depression and anxiety in the dialysis patient to improve morbidity and mortality<sup>1</sup>

1. Hedayati SS et al. Kidney Int. 2012

# Screening for depression & anxiety at the dialysis units

## Regular screening of depression and anxiety<sup>1</sup>

- Start screening at the initiation of dialysis
- Screen at 6-months after dialysis initiation
- Follow-up screening annually

### Screening tools for depression<sup>1</sup>

- Beck Depression Inventory (BDI)
- Patient Health Questionnaire-9 (PHQ-9)
- Center for Epidemiologic Studies Depression Scale (CES-D)

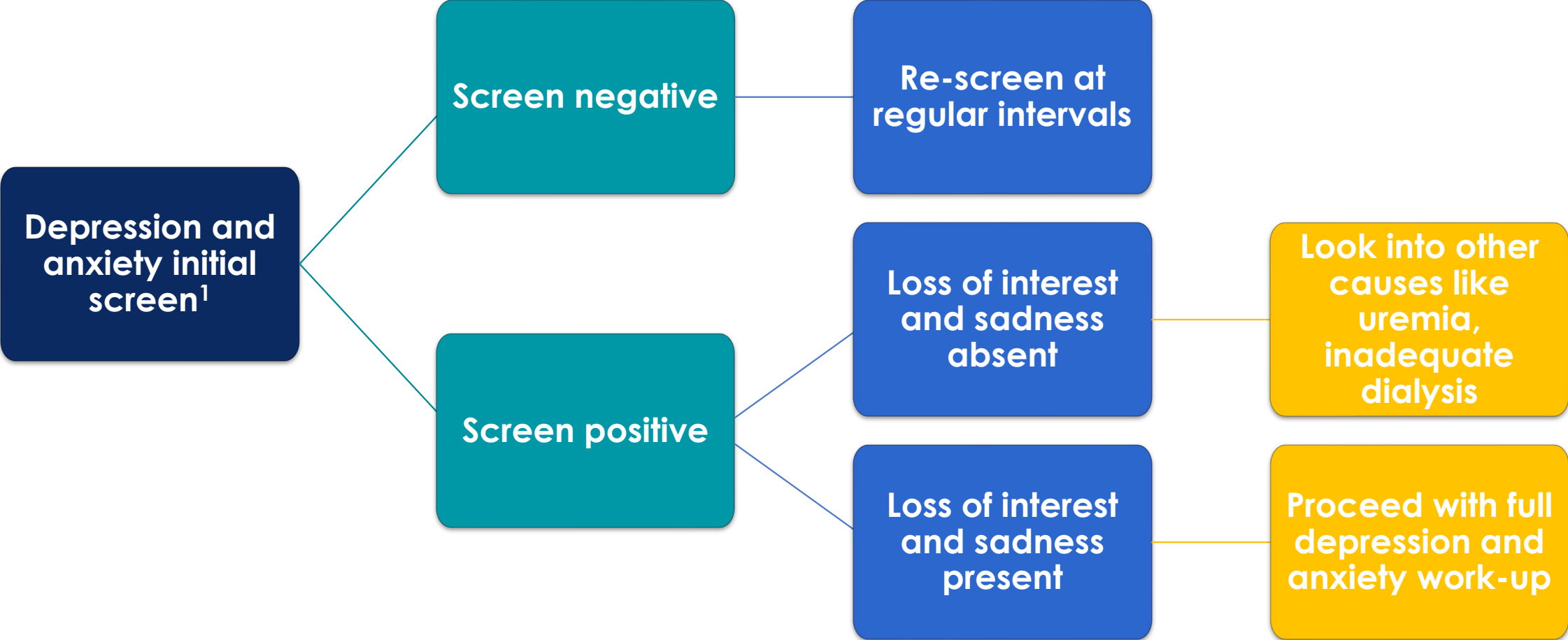
### Screening tools for anxiety<sup>2</sup>

- Beck Anxiety Inventory (BAI)
- Generalized Anxiety Disorder 7 (GAD-7)
- Hospital Anxiety and Depression Scale (HADS)

1. Hedayati SS et al. Kidney Int. 2012

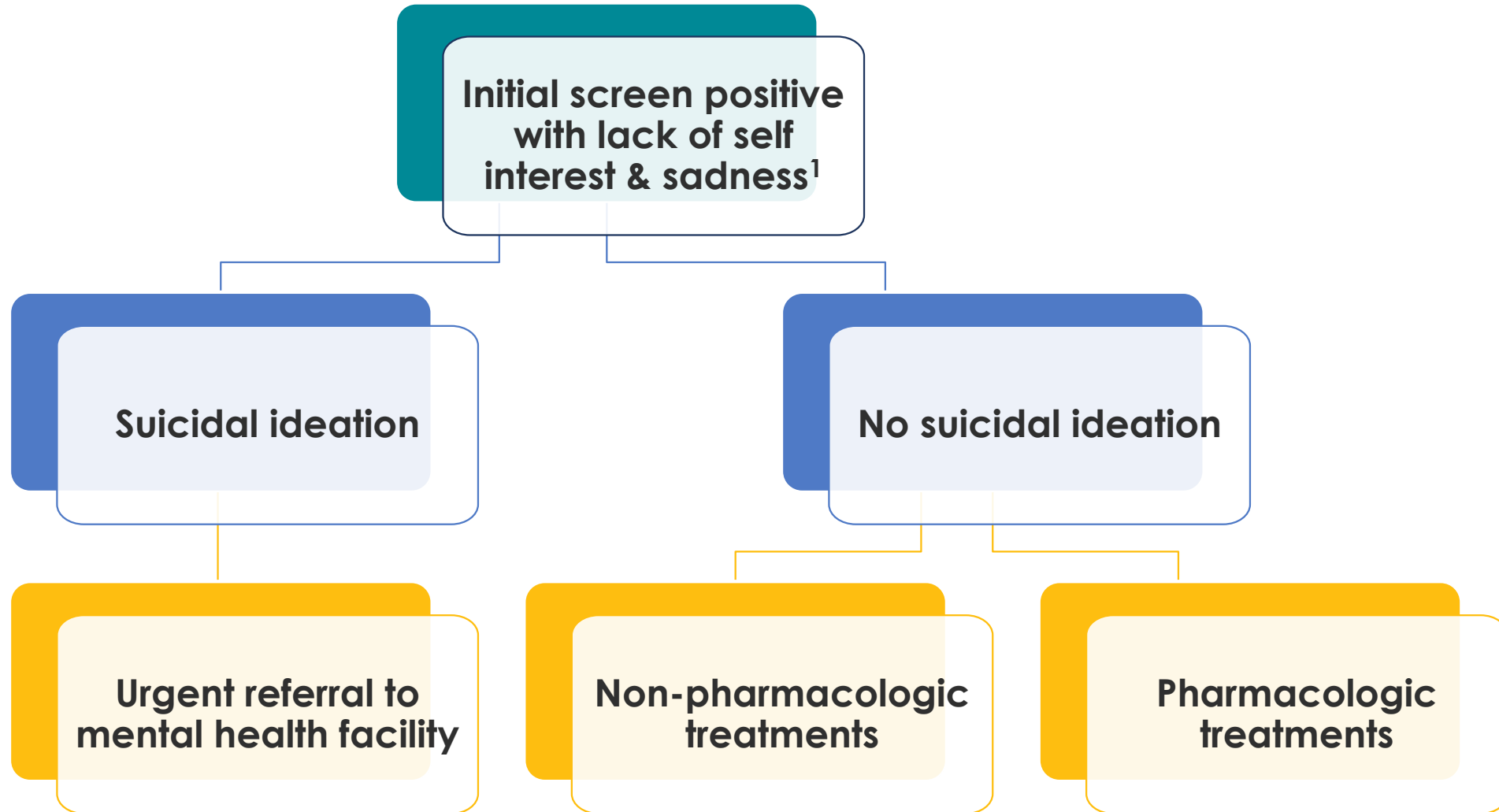
2. Goh ZS, et al. Int J Nephrol Renovasc Dis. 2018

# Approach to the initial screen



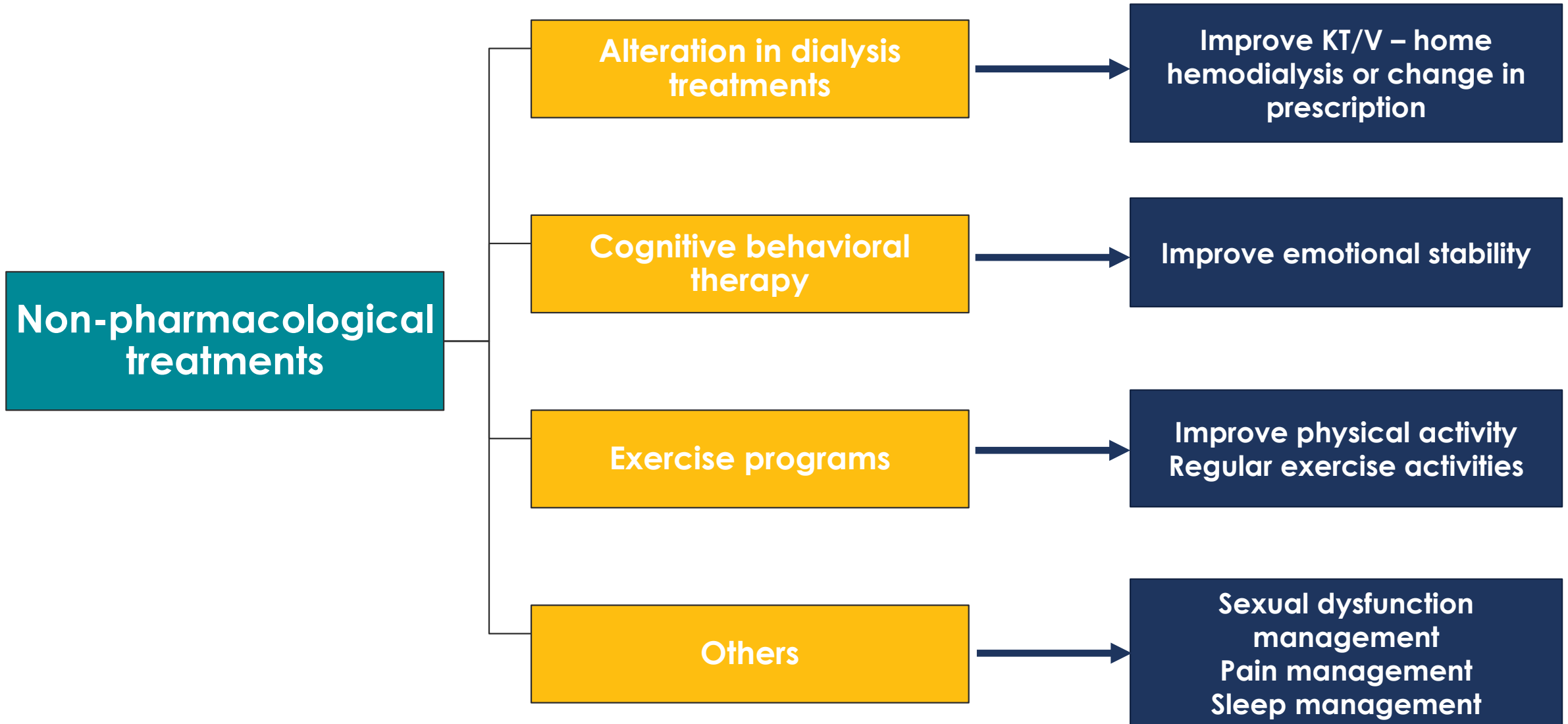
1. Adapted from: Hedayati SS et al. Kidney Int. 2012

# Approach in ESKD patients with depression and anxiety



1. Adapted from: Hedayati SS et al. Kidney Int. 2012

# Non-pharmacologic treatment options



1. Hedayati SS et al. Kidney Int. 2012

# Pharmacologic treatment options

## Major concerns

- Accumulation of potential toxic metabolites
- Drug-drug interactions
- Hypotension
- QTc prolongation
- Arrhythmias
- Orthostasis



## Classes of Medications

- Selective serotonin reuptake inhibitors
- Serotonin/norepinephrine reuptake inhibitors
- Serotonin modulators
- Dopamine/norepinephrine reuptake inhibitors
- Noradrenergic and serotonergic agonists
- Tricyclic and tetracyclic antidepressants (TCAs)
- Monoamine oxidase inhibitors (MAOIs)

1. Hedayati SS et al. Kidney Int. 2012

# Key takeaways

- End-stage kidney disease is the final stage of chronic kidney disease and affects > 700,000 people in the United States
- Depression and anxiety are common and often overlooked and underdiagnosed in ESKD
- Symptom overlap makes it challenging to diagnose psychiatric comorbidities
- Psychiatric hospitalizations within 1 year of dialysis is associated with increased mortality
- Screening for depression and anxiety in dialysis units is imperative
- Non-pharmacologic and pharmacologic treatment options available



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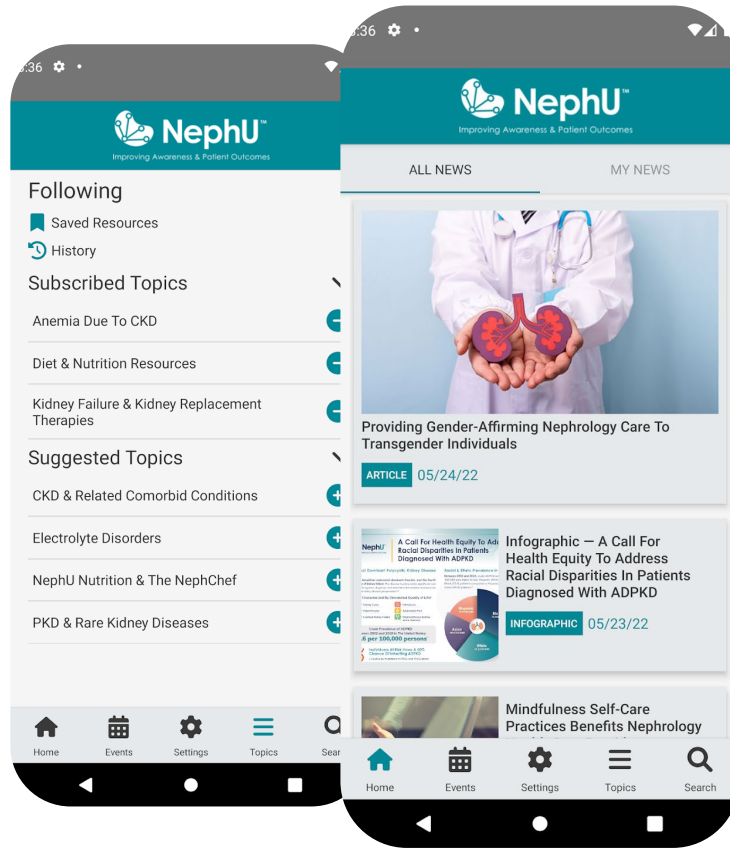
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# Depression and Anxiety in End-Stage Kidney Disease and the Role of the Nephrologist