

# The Comorbidity Between Epilepsy and Psychiatric Disorders: Assessing the Integration of Neuropsychiatric Care

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Psychiatric symptoms are extremely pervasive in epilepsy patient populations and represent a significant burden on quality of life for people with epilepsy (PWE). Despite growing awareness of this reality, mental illness (MI) in PWE continues to be under-diagnosed and under-treated. Recent developments in our understanding of the bidirectional relationship between seizures and psychopathology inform an increased need for collaboration of healthcare providers from neurology and psychiatry disciplines. This article highlights present institutional barriers to diagnosis and treatment of PWE with comorbid MI (PWE/MI), including poor interdisciplinary communication, limited opportunities for cross-specialty training, and the arbitrary theoretical divide between neurology and psychiatry, which distinguishes their approach to managing complex brain disorders. We discuss recent progress towards improving quality of care, both through advancements in our understanding of the common risk factors for epilepsy and MI and through practical interventions, such as increased behavioral health screenings. While these developments have demonstrated a positive impact on patient outcomes, there remains a clear need for system-wide change.

Abbreviations: PWE/MI – people with epilepsy and comorbid mental illness; PWE – people with epilepsy; EEG – electroencephalogram; AEDs – anti-epileptic drugs; PNES – psychogenic non-epileptic seizures; MI – mental illness; ADHD – attention deficit-hyperactivity disorder

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## Introduction

Epilepsy is the fourth most common neurological disorder in the United States, affecting 3.4 million individuals nationally (Hirtz et al., 2007). One in three people with epilepsy (PWE) will also be diagnosed with a psychiatric disorder at some point during their lifetime (Tellez-Zenteno et al., 2007).

The relationship between psychiatric symptoms and epilepsy takes many forms. Mood and anxiety disorders are the most reported psychiatric comorbidities in PWE (Lu et al., 2021). However, psychosis, attention deficit-hyperactivity disorder (ADHD), and substance use disorders are also reported at higher rates in PWE, compared to the general population (Lu et

al., 2021). Psychiatric symptoms can present as interictal (independent from seizure activity), peri-ictal (temporally related to seizure occurrence), or iatrogenic (linked to pharmacological treatments) (Kanner, 2016a). The existence of peri-ictal and iatrogenic psychiatric symptoms suggests overlapping neurobiological etiology for psychiatric and epileptic symptoms.

Comorbidity between seizure and psychiatric disorders has a compounding impact on health outcomes. Psychiatric illness significantly increases risk of pharmacoresistant epilepsy, recurring seizures, and early mortality in PWE (Petrovski et al., 2010; Hesdorffer et al.,

2012; Fazel et al., 2013; Nogueira et al., 2017). Furthermore, multiple studies have demonstrated that psychiatric symptoms are a stronger predictor of quality of life than seizure-related variables (Johnson et al., 2004; Taylor et al., 2011).

In part due to the extraordinary comorbidity across psychiatric and seizure disorders, there is growing recognition of epilepsy as a neuropsychiatric condition (Kanner, 2016b). It is crucial that our approach to care-management addresses the interdependency of seizures and psychiatric symptoms in PWE. The present paper explores the challenges of diagnosing and treating PWE and comorbid mental illness (PWE/MI) from a patient-centered perspective.

To provide a holistic assessment of current epilepsy care management, we conducted unstructured, qualitative interviews with epilepsy care providers during the summer of 2020. All interviews were conducted virtually. Pre-written questions were individualized to the expertise of each provider. Relevant quotes were selected after a review of the literature had been completed. These anecdotes and experience are quoted throughout this review to provide context to the literature.

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“If you think about neurological conditions – they are brain-based things, but so are psychiatric conditions. We separate them academically, but they do have quite a bit of overlap.”

- Hannah Wadsworth, PhD.  
(*Neuropsychologist at the University of Iowa Hospital and Clinic*)

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## Shared Etiology of Seizures and Psychiatric Symptoms

The association between mental health and epilepsy has been a matter of speculation for centuries (Kanner, 2000). Epilepsy is typically diagnosed via electroencephalogram (EEG), which is used to detect abnormalities in spontaneous intercranial electrical activity (Miller et al., 2014). Historically, both clinicians and scientists posited that treating epilepsy could aggravate behavioral symptoms. The primary

example of this is a phenomenon of “forced normalization”, described by Landolt in 1953. While observing treatment of PWE, Landolt reported that normalization of electroencephalogram (EEG) readings was frequently followed by onset of novel chronic psychosis.

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“There’s this terrible irony where sometimes if you normalize somebody’s EEG, their psychiatric symptoms get worse. Sometimes the side effects of the anti-epileptic medications are really bad and sometimes people with brain disease just have really tough symptoms.”

- Gerald Scott Winder, MD. (*Psychiatrist at Michigan Medicine*)

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Subsequent observations of forced normalization are increasingly rare and have largely been attributed to certain anti-epileptic drugs (AED) (Clemens, 2005; Weber et al., 2012; Topkan et al., 2016). However, even with modern treatments, withdrawing medications does not consistently resolve symptoms, suggesting a degree of innate biological antagonism between the pathology of seizures and psychopathologies (Calle-López et al., 2019).

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“Does this mean that seizures have some kind of weird treatment effect on improving psychiatric symptoms? If so, does the reverse hold true that if people have well-controlled seizures, are they at higher risk for depression? I definitely think there’s that dynamic there and it’s really interesting.”

- Nicolas Beimer, MD. (*Epileptologist at Michigan Medicine*)

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For many patients there appears to be a direct correlation between psychiatric symptoms and seizures. For example, current or past diagnosis of depression predicts new-onset epilepsy and failure to achieve seizure-freedom (Josephson et al., 2017). Furthermore, a large-scale comparison of data from FDA clinical trials found that treatment with antidepressants was associated with lower seizure incidence in later years (Josephson et al., 2017). History of depression, psychosis, or personality disorders is also implicated in post-operative seizure reoccurrence in PWE treated with surgical

interventions (Kanner et al., 2009; de Araújo Filho et al., 2012; Koch & Stoecker et al., 2017).

The relationship between psychiatric and epileptic symptoms appears to be bidirectional, with an elevated incidence of psychiatric diagnoses reported both before and after epilepsy diagnosis (Hesdorffer et al., 2012). Among PWE/MI, resistance to AEDs predicts increased severity of psychiatric symptoms (Petrovski et al., 2010). Similarly, one study associated pharmacoresistance among epileptic rats with heightened anxiety, hyperexcitability, and cognitive deficits (Gastens et al., 2008).

While the multifactorial nature of neurologic and psychiatric health makes it difficult to demonstrate a direct causal relationship between epilepsy and psychiatric comorbidities, these examples strongly indicate that treating psychiatric comorbidities also improves seizure outcomes for PWE/MI. The relationship between epilepsy and psychiatric conditions remains largely uninvestigated and poorly understood. Further scientific inquiry into the biological relationship between seizure activity and psychiatric symptom severity has significant potential for informing improvements in care, and thus, quality of life for PWE.

## Challenges Diagnosing Psychiatric Disorders in PWE

### *Psychiatric Diagnosis as a Moving Target*

Diagnosis of psychiatric disorders uses a classification system primarily based on self-reported symptoms (Clark et al., 2017). As our understanding of mental illness and behavioral health evolves, so too do the classifications in the Diagnostic and Statistical Manual of Mental Disorders (DSM). Fluidity in psychiatric nosology accommodates a multimodal approach to treating psychological pathologies that exist on a continuum (Allsopp et al., 2019); however, it also results in a system that is extremely difficult to navigate.

With each iteration of the DSM one of the primary challenges has been optimizing guidance for comorbid diagnoses (Pincus et al., 2004). For instance, under the current classification system, the DSM-5, there are over

400 different symptom combinations that satisfy diagnostic criteria for Major Depressive Disorder (MDD) alone and nearly 300 million possible symptom combinations to diagnose comorbid MDD and post-traumatic stress disorder (PTSD) (Young et al., 2014). This immense diversity in behavioral symptomology complicates both the initial diagnosis of a psychiatric disorder and subsequent care management of psychiatric symptoms.

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“It’s an open secret that sometimes we aren’t very good at treating psychiatric patients. Basically, the whole thing can be just trial and error because the brain is so poorly understood compared to other parts of the body.”

- Dr. Scott Winder (*Psychiatrist*)

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Ambiguity surrounding mental illness contributes to lengthy diagnostic delays, often measured in years or decades from symptom onset (Wang et al., 2004; Berg et al., 2014). In a report from Mojtabai and colleagues, patients cited structural barriers such as affordability, physical accessibility, and shortages in treatment providers as the most frequent causes of delay (2014). While many of these difficulties lie at a systematic level outside the control of individual treatment providers, they nonetheless create an additional burden for people with mental illness. This unfortunately sets up the many PWE/MI with an exponential burden in pursuing treatment for both conditions.

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“One of the unfortunate realities of our healthcare system is that we have long waits. In Iowa we have a lot of people in rural areas that don’t have easy access to [mental health care]. It takes a lot of creative problem solving and we do what we can to get them held over until they can get the help they need.”

- Dr. Hannah Wadsworth  
(*Neuropsychologist*)

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### *Institutional Divide Between Neurology and Psychiatry*

Presently, healthcare disciplines are organized as silos in a fragmented system where individual specialists largely keep to themselves (Tran et al., 2018). Although a recent push prioritizes integrated care and greater

collaboration across specialties (Allen et al., 2006), the historical barrier between psychiatry and neurology lingers in hospitals and clinics. Most epilepsy centers lack a psychiatrist, and while neuropsychologists are often included on the care team for PWE, the focus is typically on evaluating cognition and behavior, not mental health (Lopez et al., 2019). As a result, many neurologists may be missing a crucial resource for informing care decisions, leaving PWE/MI with no clear path from their neurology clinic to treatment under a psychiatrist's care.

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“There are a lot of challenges – insurance challenges, geographic challenges, communication challenges – between mental health and epilepsy providers.”

- Dr. Nicholas Beimer (*Epileptologist*)

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### *Psychogenic Non-Epileptic Seizures (PNES): A Case-Study of Collaborative Care*

Psychogenic non-epileptic seizures (PNES) is a psychosomatic condition that presents identical to epilepsy (Johnsen and Ding, 2020). However, psychogenic seizures are not associated with epileptiform brain activity. Instead, PNES is triggered by psychological stress or emotional cues. Effectively diagnosing and treating PNES demands that neurology and psychiatry services coordinate. Examining clinical management of PNES can provide insight into the current status of integrated care.

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“[Treating PNES] takes time and it's slow moving. I think part of the stigma that surrounds somatic conditions is related to the difficulty providers have with finding the time needed [to treat these conditions appropriately].”

- Dr. Hannah Wadsworth  
(*Neuropsychologist*)

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When patients with PNES first begin experiencing seizures they are typically seen by a neurologist. Inevitably, AEDs prove ineffective and patients are referred to a tertiary epilepsy unit for differential diagnosis. Video EEG (vEEG) allows physicians to detect the presence or absence of epileptiform activity during a seizure behavior. This method is widely regarded as the

“gold standard” for diagnosing PNES (Baslet et al., 2020).

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“There are data suggesting that neurologists are kind of mediocre in diagnosing [PNES] and there are also data that suggest psychiatrists don't believe it's a thing – how crazy is that? So, all of this is to say that this population of patients are poorly understood. They're poorly taken care of, and the fault of that lies in both specialties.”

- Dr. Scott Winder (*Psychiatrist*)

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Despite the widespread use of video EEG across tertiary epilepsy centers, the average diagnostic delay for PNES is estimated around seven to eight years from seizure onset (Reuber et al., 2002; Kerr et al., 2016). Obstacles to timely PNES treatment include stigma and insufficient pathways for interdisciplinary care (LaFrance et al., 2013; Smith, 2014; Baslet et al., 2015). Upon diagnosis of PNES, the patient is typically transitioned to a behavioral health provider (Baslet et al., 2015; Benbadis, 2019). Yet, psychiatrists report low confidence in the reliability of PNES diagnosis by vEEG (Harden et al., 2003). This may reflect a deficit of knowledge on epilepsy and PNES among psychiatrists or a strained working relationship between neurology and psychiatry. Regardless, the discordance in specialist recommendations leads to deficient care management, which, beyond causing further delays, often becomes distressing for the patient and family.

PWE/MI share the same providers and utilize the same services as individuals with PNES. Thus, they are burdened with similar treatment delays and challenges in integrating care management. There remains a clear need to bridge the divide between neurology and psychiatry, both as academic disciplines and physical places for patient care.

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“I think there's always challenges talking between doctors. Sometimes a psychiatrist doesn't really care what a neurologist says, or a neurologist doesn't really care what a psychiatrist says and the minute you start going off in your own jargon the other person turns off.”

- Dr. Scott Winder (*Psychiatrist*)

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### *Improving Behavioral Health Screenings in Epileptic Populations*

Despite known comorbidity between epilepsy and MI, standardized screening for psychiatric conditions in PWE has been practically non-existent (Kanner, 2003; Hanssen-Bauer et al., 2007). In a 2000 survey of 67 American neurologists, only 10% reported screening PWE for depression (Gilliam et al., 2004). Most physicians indicated this was due to a perceived lack of evidence directly linking treatment of depression symptoms with improved quality of life for epilepsy patients.

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“The typical time elapsed between one [neuropsychological] evaluation and another is a year or more. So, it can be really challenging because essentially, we only have them four to five hours one day of the year. The majority of that time is spent testing their cognition and then getting basic information about their mental health.”

- Dr. Hannah Wadsworth  
(*Neuropsychologist*)

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Subsequent research has demonstrated the impact of psychological health and psychiatric treatment on epilepsy pathology (Ribot and Kanner, 2019) and quality of life for PWE/MI (Boylan et al., 2004; Kwon and Park, 2011). However, despite the existence of these data, there remain challenges in the systematic application of screening practices.

To improve detection rates, multiple groups have developed rapid screening tools for common psychiatric comorbidities in PWE (Gilliam et al., 2004; Mbewe et al., 2013; Micoulaud-Franchi et al., 2016). For instance, a 2009 study assessed the application of rapid and systematic mental health screening for epilepsy patients in Texas’ largest public hospital (Friedman et al., 2009). In comparing diagnostic rates before and after implementation of a validated depression screening tool, Friedman and colleagues observed significant improvements in the timeliness of psychiatric diagnoses and referrals. Prior to this, providers were referring patients for psychiatric assessment only based on patient complaints and casual clinical observations. With standardized screening in place, the proportion of PWE who

were diagnosed with clinical depression increased from under 3% to over 25% (Friedman et al., 2009). This reality – that almost a quarter of PWE who were regularly seeing a physician for seizure maintenance had undiagnosed depression – demonstrates a striking benefit to implementation of widespread, standardized screening.

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“It’s very frequent that patients come in with the concern, but not the diagnosis yet.”

- Danielle Nolan, MD. (*Pediatric Epileptologist at Beaumont Hospitals*)

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In recent years, the field of psychiatry has made considerable improvements in behavioral health screening and awareness (Dawood et al., 2018). In contrast with the 2000 survey, over 60% of neurologists who responded to a 2016 survey reported routinely assessing PWE for depression symptoms and close to 50% reported routinely assessing PWE for anxiety (Bermeo-Ovalle, 2019). An additional 15% of neurologist respondents conducted annual psychiatric assessments in PWE (Bermeo-Ovalle, 2019). While voluntary response rates can be inherently biased, mainstream attitudes towards the neurologist’s role in patient behavioral health have clearly shifted.

## **Challenges Treating Psychiatric Disorders in PWE**

### *Managing the Transition from Neurology to Behavioral Health*

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“There’s definitely a lack of psychologists and psychiatric providers nationwide. You can get them in, but there’s a long waiting list. Even with our neuropsychologist, who only works with these patients, there’s a waiting list of about 3-4 months to see her. I also utilize peer-to-peer support groups, but I wish there were other groups I could refer my patients to.”

- Dr. Danielle Nolan (*Epileptologist*)

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After diagnosis of comorbid epilepsy and psychiatric illness, collaborative relationships across disciplines remain critical to navigating pharmacological treatment for both conditions. However, access to psychiatry services remains

limited by the current nationwide shortage of behavioral health professionals. The present demand for psychiatric care in the United States greatly surpasses the number of practicing psychiatrists, and this deficit is only projected to worsen in the coming years (U.S. Department of Health and Human Services, Health Resources and Services Administration, National et al., 2018). In urban areas, reported wait times for psychiatry are up to three months (Malowney et al., 2014) and over half of rural counties in the United States lack any prescribing behavioral health providers (Andrilla et al., 2018).

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“Are we present enough in epilepsy? No. But we are spread so thin. We are often challenged just taking proper care of patients with schizophrenia and bipolar disorder in the community, let alone in more niche environments.”

- Dr. Scott Winder (Psychiatrist)

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Another hurdle to treating psychiatric symptoms in PWE/MI is a disconnect between patients’ and neurologists’ preferred approach to treatment. Even when psychiatric prescribers are accessible, patients may not always want a referral. In a recent survey of 63 PWE, patients reported a 5:1 ratio preference for medication management by their current neurologist over a psychiatric referral (Munger Clary and Croxton, 2021). It is unclear whether this preference is mostly informed by practical concerns, stigmatization of psychiatry, or something else entirely. If stigma informs this preference (Anderson et al., 2015), involvement of psychiatric providers in the care team could help patients feel more comfortable with mental health services.

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“I think a lot of times the parents feel more comfortable with the neurologists managing [psychiatric] medications because [the neurologist] knows the anti-seizure drugs best and how to match those medications.”

- Angela DeBastos, PhD. (*Pediatric Neuropsychologist at Beaumont Hospitals*)

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In contrast to patient preferences, a large proportion of neurologists remain reluctant to prescribe psychotropic medications. In one

survey, just under 60% of epileptologists reported that they were comfortable prescribing antidepressants and only 33% were willing to prescribe an anxiolytic (Bermeo-Ovalle, 2019). Similarly, Mula and colleagues found that close to 50% of epilepsy care providers expressed aversion to prescribing antidepressants or antipsychotics to PWE/MI (2017). One possible explanation is the artificial division of perceived responsibilities created by our medical establishment (Weller et al., 2014). While most neurologists are qualified to prescribe an antidepressant or anxiolytic regime before referring to psychiatry, many still feel this responsibility falls outside of their professional silo (Sekhar and Vyas, 2013).

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“We live in an accountable, and sometimes litigious society, where doctors get sued time. All it takes is for a doctor to be a little too far outside of her scope of practice, too far out on the branch and the branch snaps. Then what?”

- Dr. Scott Winder (*Psychiatrist*)

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Creating a space for behavioral health providers in both epilepsy centers and general neurology clinics would provide both patients and neurologists with an additional resource for informing referrals and care management.

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“It really helps that we are in the same building and I can just walk down the hall to talk to [our neurologist].”

- Dr. Angela DeBastos (*Neuropsychologist*)

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### *Co-Management of Anti-Epileptic Drugs (AEDs) and Psychotropic Medication*

The hesitancy to prescribe psychotropic medications to PWE/MI can also be attributed to the widespread concerns about lowering seizure threshold. The effects of psychotropics in PWE and their interactions with AEDs are still not fully understood (Kanner, 2016a). Most AEDs have some risk of adverse behavioral side effects (Chen et al., 2016) and, likewise, many psychotropic medications present a risk for neurologic complications (Haddad and Dursun, 2008).

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“[Knowing a patient has a comorbid psychiatric condition] does cause me to tailor my seizure medication choices. I might lean towards a Depakote in a male or a Lamictal in a female to help co-manage the epilepsy and the psychiatric concerns.”

- Dr. Danielle Nolan (*Epileptologist*)

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Though a select number of medications – including some atypical antidepressants and certain anti-psychotics – are associated with increased seizure frequency, safety and benefit for PWE/MI has been demonstrated with the large majority of psychotropic drugs (Pisani et al., 2002; Habibi et al., 2016). Furthermore, both animal and human studies have provided evidence to suggest a possible anti-epileptic effect of selective serotonin reuptake inhibitor (SSRI) antidepressants in conjunction with AED treatment in PWE/MI (Kanner, 2016c; Ribot et al., 2017). Similarly, several anti-convulsants – including gabapentin, valproate, carbamazepine, topiramate, and lamotrigine – have demonstrated therapeutic potential in treating both seizures and psychiatric symptoms (Nadkarni and Devinsky, 2005; Sepić-Grahovac et al., 2011; Prabhavalkar et al., 2015).

There is currently little standardized guidance available to neurologists to help guide treatment with psychotropics. While there is an apparent need for more controlled trials demonstrating safety and efficacy of these medications in PWE, findings thus far have been largely positive and support co-treatment of seizures and psychiatric illness. This represents yet another area of care where increased interdisciplinary collaboration between psychiatry and neurology would be of great benefit to both patients and providers.

## **The Future of Neuropsychiatric Care**

The divide between neurology and psychiatry begins with minimal cross-discipline training. As previously mentioned, diagnostic standards for psychiatric disorders are complex and difficult to navigate, even for experts in the field. For neurologists without specific training in this area, psychiatric and behavioral symptoms

are challenging to evaluate separately from seizure activity. For instance, post-ictal anxiety and depression symptoms commonly seen in epilepsy frequently fall short of meeting criteria for a separate psychiatric diagnosis. However, they are often correlated with interictal symptoms that would warrant a DSM diagnosis (Kanner et al., 2004).

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“We spend so much time in training in learning how do a good job at diagnosing and treating people with epilepsy that although we are also trained to recognize when a patient may be depressed or anxious, I don’t know that many or most neurologists are equipped to directly treat these comorbidities.”

- Dr. Nicholas Beimer (*Epileptologist*)

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Deficits in self-perceived knowledge of behavioral health among epileptologists highlights a need for cross-training. A 2017 survey administered by the International League Against Epilepsy (ILAE) found that up to 50% of clinicians who treated PWE reported having poor or very poor knowledge of psychiatric complications (Mula et al., 2017). Specifically, less than 50% of neurologists felt well-informed regarding anxiety, disorders, mood disorders, or comorbid psychoses. There remains a deficit in the literature regarding psychiatrist’s comfort with neurological comorbidities, however few psychiatry residencies offer significant training in the management of neuropsychiatric disorders such as epilepsy (Shalev and Jacoby, 2019). This division in training makes it difficult for providers to address the intersection of comorbid conditions when treating PWE/MI. Interdisciplinary fellowship training programs, such as those in behavioral neurology, neuropsychiatry, and psychosomatic medicine, provide an avenue to better understand reciprocal interactions between biology and behavior (Arciniegas and Kaufer, 2006). These subspecialties serve an important role in breaking down silos. Still, few physicians choose to pursue this degree of specialization and many argue that the diversity in training contributed by the separation of neurology and psychiatry benefits the patient care team (Perez et al., 2018).

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“It’s a hard sell to get people to do a fellowship and it’s a hard sell to get psychiatrists to do a fellowship like [psychosomatic medicine].”

- Dr. Scott Winder (*Psychiatrist*)

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As an alternative to completely merging two fields, physicians from both circles have sought to emulate aspects of neuropsychiatric fellowships, including multidisciplinary mentorship, transdiagnostic procedures, and development of a shared clinical language during residency (Selwa et al., 2006; Kanner, 2014; Perez et al., 2018). By cultivating a deeper understanding of the perspectives and practices carried out by the other discipline, physicians will hopefully become more comfortable exerting flexibility in their roles and collaborating on patient care.

## Reflections & Conclusions

The growing body of literature on diagnosing and treating PWE/MI is encouraging. Yet, the current process of securing and maintaining mental health care in coordination with neurology generates considerable stress for PWE / MI and their families. Patients are frequently misdiagnosed and urgent needs are met with delays. Furthermore, PWE/MI are assaulted by both internal and external stigma – at times from their own well-intentioned care providers.

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“My hope would be that most physicians – no matter what your specialty is if you’re involved in direct patient care – would be capable of diagnosing and managing psychiatric diseases like depression and anxiety. It’s important to recognize early when people are doing well and then when they’re not. That’s the time to be referring to [a mental health professional].”

- Dr. Nicholas Beimer (*Epileptologist*)

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Even when a patient’s case is seemingly well-managed by individual providers, treatment recommendations for the patient’s epilepsy and comorbid psychiatric illness can be disjointed. When neurology and psychiatry are operating independently, responsibility of connecting the dots is left to patients and their families. This

demands time, energy, and a degree of health literacy that is uncommon in the general population.

E. E. Reasoner has first-hand experience with many of these challenges from my own family’s efforts to coordinate care for my sister. Although we have compassionate and knowledgeable physicians dedicated to my sister’s care, too many unanswered questions remain. As a result, we are always left wondering if there is more that we could do to improve her health outcomes and quality of life.

The aim of this review was to identify the source of existing hurdles to integrated care, why these hurdles remain in place, and to identify strategies to eliminate these hurdles. Prior to this investigation, I was confident that health professionals could make simple changes to improve patient outcomes; in my idealistic mindset a neurologist who suspects psychiatric symptoms in PWE should immediately work to resolve that distress. However, it became readily apparent that, while individual physicians can facilitate positive change in access to quality care, the composition of the care team, cross-discipline training, and the structure of our health care system means that change is anything but simple.

Even as our understanding of neurological and psychiatric disorders reveal more similarities than distinctions, the structural divide between medical specialties remains steadfast. That integrative care remains rare despite evidence and motivation on the part of patients, families, and providers alike shows that change must begin at the structural level for real progress to be made. Red tape of institutional and insurance policies and the current shortage of behavioral health providers must be addressed. The disciplinary divide in medicine must be reframed to reflect the biological relationship between neurological and psychiatric symptoms. Importantly, many neurologists and psychiatrists are pushing for evidence-based structural changes through inter-professional advocacy, political lobbying, and pioneering research studies.

As our understanding of the bidirectional link between epilepsy and mental illness unfolds, it is essential that institutions embrace the integration of neuropsychiatric care to guide

future progress in patient outcomes and quality of life.

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