BIPOLAR DISORDER AND AGING

Thomas W. Meeks, M.D.; Colin A. Depp, Ph.D.

VA San Diego Healthcare System

3350 La Jolla Village Drive MC 116A1

San Diego, CA 92161

Thomas.Meeks@va.gov

Cdepp@ucsd.edu

International Bipolar Foundation

How common is bipolar disorder in later life?

Bipolar disorder is uncommon in later life according to studies of community prevalence, such as the Epidemiological Catchment Area (ECA) Survey (Regier *et al.*, 1993). The lifetime prevalence of bipolar disorder in the ECA was 0.4% among persons aged 45 to 64 and 0.1% among persons older than age 65 (compared to 1.4% among persons aged 18-44). Other community surveys indicate the prevalence of bipolar disorder among persons older than age 60 ranges between 0.1% and 0.5% (Hirschfeld, 2003; Unutzer *et al.*, 1998). Although these data suggest that bipolar disorder is less common among older than younger age groups, these studies should be interpreted with caution as these studies did not typically include people in assisted living situations. It is also notable that within mental health settings, bipolar disorder is a relatively common diagnosis among samples of older adults, accounting for between 8 and 10% of all diagnoses (Depp & Jeste, 2004). The reported rates may also be lower in older adults in part because bipolar disorder is associated with increased rates of suicide and chronic medical conditions, both of which decrease the number of persons with bipolar disorder who live on into their later years. Of course, many people may wonder, "What exactly is an *older* adult?" Medical literature typically defines the term "geriatric" or "elderly" as age 65 and above. There is really no biological reason to choose this age over, say, 60 or 70, but this has been a convention derived from the national standards for retirement age. People on an individual level obviously age at different rates; some healthy 70 year-olds may have better functioning bodies and minds than some 40 year-olds in ill health.

What happens to people with bipolar disorder as they age?

When compared to research on other psychiatric disorders, such as later-life depression or schizophrenia, there is little known about the course of bipolar disorder in older adults (Charney *et al.*, 2003). The majority of data on later-life bipolar disorder has come from hospitalized people and anecdotal data (Depp & Jeste, 2004). Early observations were that the long term course of bipolar disorder involves a reduction in symptoms and improvement in functioning, which, in some ways, is what separated bipolar disorder from early conceptions of schizophrenia (Kraepelin, 1921). Other observations provide stark contrast, with the 'kindling' theory proposing that inter-episode recovery periods tend to shorten with age, consistent with the idea that bipolar disorder follows a progressively declining course (Post *et al.*, 1986). Kindling implies that each mood episode actually changes the brain in a way that makes future episodes happen sooner and more severely—a "snowball effect" of sorts. Unfortunately, there is little data to confirm either supposition about the long-term course of bipolar disorder.

However, what is known is that most older people who have bipolar disorder have lived with the illness for many years, as the mean age of onset is between age 20 and 25. These individuals would be referred to as "early-onset." The cut-off between "early-onset" and "late-onset" is often age 50, but varies from study to study (Depp & Jeste, 2004). It is more common that "late-onset" individuals experience neurological illnesses, such as a stroke or progressive dementias. In fact, having a first depressive or manic episode after age 50 is certainly the exception rather than the rule. If someone first shows signs consistent with bipolar disorder after age 50, there should be a thorough work-up, including a CT or MRI of the brain, to ensure that the symptoms are not due to a medical/neurological disorder or due to substances

(illicit drugs, alcohol, or prescribed medications). In general, there are probably more similarities than differences between early- and late-onset patients, but some difference are worth noting. For instance, late-onset patients more often attain functional milestones such as employment and marriage prior to the illness starting and are less likely to have first-degree relatives with bipolar disorder. It should be noted that some seemingly "late-onset" cases may actually be instances of years of misdiagnosed or undiagnosed bipolar disorder, or instances in which the first manic or hypomanic episode occurs more than a decade after the first episode of major depression. Ageist bias may also prevent proper screening for certain symptoms of mania such as impulsive sexual activity and other risk-taking behaviors. Comparing younger and older persons with bipolar disorder, older people may experience less severe symptoms of mania, as identified in a study of people hospitalized for mania (Young & Falk, 1989). According to a large survey, community-dwelling older adults report experiencing more depression- and mania-free days (Calabrese *et al.*, 2003).

What other health problems do older adults with bipolar disorder face?

On balance, older adults experience a much greater degree of medical burden. Most notably, the risk of diabetes and cardiovascular disease is several times higher in older adults with bipolar disorder compared to older adults without psychiatric illnesses (Kilbourne *et al.*, 2004). Risk factors for co-occurring medical disorders include poor health habits (e.g., smoking and physical inactivity), diminished access to medical care, and side effects of medications such as atypical antipsychotics. On a more positive note, older adults with bipolar disorder are less likely to have met criteria for substance use disorders within their lifetimes; prevalence for any substance use disorder among younger adults with bipolar disorder is about 60%, whereas among older adults estimates range from 20 to 30% (Cassidy *et al.*, 2001). This is notable because co-occurring substance use disorders add greatly to the disability associated with bipolar disorder.

With the current epidemic of Alzheimer's disease, the public is becoming increasingly aware of the importance of cognitive disorders among older adults. As a point of clarification, many people confuse the terms "dementia" and "Alzheimer's disease." *Dementia* (which may be renamed *neurocognitive disorder* in the upcoming DSM-5) is the broader term that describes any progressive, irreversible dysfunction in memory, language, decision-making, and other cognitive skills that impairs someone's life functioning. *Alzheimer's disease* is a specific (and the most common) type of dementia whose cause is not fully understood but appears to be related to certain genetic and environmental factors that cause excessive brain deposits of a protein called *beta-amyloid*. Cognitive impairments are more prevalent in older adults with bipolar disorder compared to younger adults. In one study, it was estimated that about 50% of persons older than age 60 with bipolar disorder display clinically significant cognitive impairment, even when not depressed or manic (Gildengers *et al.*, 2004). It is unclear at this point if cognitive impairments worsen at a more rapid rate than that expected from the normal course of aging, with data mixed as to whether this may be the case (Gildengers et al., 2009; Schouws *et al*., 2012).

What is clear is that whenever there is concern about changes in an older person's memory/cognition, further evaluation, often by a neurologist or geriatric psychiatrist, is recommended rather than accepting such changes as part of normal aging or as part of the normal course of bipolar disorder. It is also important to keep in mind that declining cognition could destabilize an otherwise stable course of

bipolar illness. Problems with memory or planning can impair ability to adhere to treatment recommendations, and changes in mood, sleep, and behavioral control are common in dementia. Medical comorbidity and cognitive impairments frequently become important factors in the care of older people with bipolar disorder and often necessitates coordination with primary care providers and family members.

What else could it be? Bipolar imposters

Older adults on average take more prescription medications than younger adults, which creates increased potential for medication-induced mood symptoms as well as medication interactions. Medications that can cause symptoms which mimic bipolar mania include antidepressants, steroids such as prednisone, thyroid supplements, and medications for Parkinson's disease. It should be noted that some people who do go on the develop true bipolar disorder have their first manic or hypomanic episode while taking an antidepressant but then have further episodes independent of any medication. Prednisone, a steroid used to treat disorders associated with inflammation like rheumatoid arthritis, emphysema, and lupus, may cause manic, depressive, or psychotic symptoms, especially when prescribed in high doses. Despite the decreased rates compared to younger adults, a substantial number of older adults also suffer from substance use disorders such as alcoholism and prescription drug abuse. Substances of abuse can cause symptoms that mimic bipolar disorder, but cause-and-effect is not always clear. Many persons with true bipolar disorder also battle substance abuse and may continue to have bipolar symptoms even if they recover from their addiction (see section on substance abuse and bipolar disorder).

Several medical (especially neurological) conditions can cause a cluster of symptoms that mimic bipolar disorder. These include strokes, overactive thyroid, brain tumors, multiple sclerosis, and frontotemporal dementia. Stroke (damage to the brain caused by lack of blood flow, usually due to a clot or hemorrhage) is an interesting example of a medical illness that can cause mood difficulties. Depression after strokes is fairly common, with about 1 out of 3 persons experiencing significant depression symptoms after a stroke. A stroke may obviously cause significant life stress if it results in a new disability, such as impaired ability to walk or speak, but strokes can cause mood symptoms not only for this reason, but also because they may directly impact the brain in regions responsible for mood regulation. While the effects of strokes on speech/language or movement are more obvious, the damage to emotional control from a stroke is often more subtle, and thus people may not link changes in their mood to having suffered a stroke.

While less common than depression, symptoms that resemble mania (e.g., elevated mood, impulsivity, rapid speech, decreased sleep, and irritability) may also occur in up to 1-2% of persons who suffer a stroke. Mania caused by a stroke appears to be more common if the stroke occurs in the right side of the brain (which in turn usually affects the left side of the body) and may be more common if the affected person has a family history of bipolar disorder, suggesting an underlying genetic susceptibility. Strokes should be considered as a potential cause of late-onset mania, especially if someone has notable stroke risk factors such as diabetes or high blood pressure (Santos *et al.,* 2011). On the flip side, however, older adults with early-onset, long-standing bipolar disorder are actually at increased risk for cardiovascular disease and stroke because of elevated rates of diabetes, high cholesterol, high blood pressure, and obesity in bipolar disorder. This is to say, the cause and effect can go both ways: strokes can cause mood

symptoms similar to bipolar disorder, but bipolar disorder (and some of its medication treatments) is associated with increased risk for strokes.

How does treatment differ for older adults?

There are few systematic studies of interventions for bipolar disorder specifically among older adults. This lack of treatment research is even more notable for older adults age 75 and above. As occurs with many mental health disorders, treatment recommendations for older adults with bipolar disorder are largely extrapolated from studies conducted among young and middle-aged adults. Yet, as life expectancy in general and more specifically in bipolar disorder increases, the number of persons with bipolar disorder in late-life will grow significantly. Studies that evaluate treatment options in bipolar disorder among this burgeoning geriatric population will therefore become even more paramount in importance.

Lithium

Medications remain the cornerstone of treatment for bipolar disorder in older adults. Lithium, arguably the most tried and true mood stabilizer, poses unique challenges for use in the geriatric population. Older adults have important changes in how they absorb, distribute, and eliminate medications in the body. A fairly common age-related change is a decrease in the efficiency of eliminating medications from the body, a function usually performed by the liver and/or kidney. Lithium is not processed in the liver but rather is primarily eliminated via the kidney. The kidneys predictably have a decline in functioning with aging, even in the absence of any specific disease affecting them. Additionally, treatment with lithium for decades into late life can at times accelerate age-related declines in kidney function, due to the damaging effects of long-term lithium use on the kidney in a subgroup of individuals. Several medical conditions that become more common with aging, such as high blood pressure and diabetes, may also impair kidney function. Medications used to treat hypertension, such as certain diuretics (“water pills”) and “ACE inhibitors” (e.g. lisinopril), may interfere with the kidney’s elimination of lithium, causing an elevated lithium level. Other common medications that can raise lithium levels are non-steroidal anti-inflammatories (NSAIDs) used for pain relief—the most commonly used are ibuprofen (Motrin, Advil) and naproxen (Alleve).

These phenomena in the kidney often cause a lithium dose that yields a safe and effective lithium blood level in younger adults to yield an elevated, intolerable or even toxic lithium level among older adults. Troublesome side effects that may occur even at therapeutic lithium levels in older adults include cognitive complaints, tremor, worsening urinary frequency or incontinence, impaired balance, lowered thyroid functioning, and weight gain. Symptoms of lithium toxicity include poor muscle coordination, confusion, and pronounced tremors—this is a medical emergency that is managed usually in the hospital by discontinuing lithium and hydrating the affected person with IV fluids, but occasionally may require temporary dialysis to remove excess lithium from the body. In fact, even at a “normal” blood level, the bodily systems of older adults (including the brain) are generally more sensitive to the effects of lithium. This may be in part related to age-associated changes in the integrity of the “blood-brain barrier,” which regulates what compounds in the general blood stream are allowed access to the blood that nourishes the brain. These phenomena have led geriatric psychiatrists to prescribe lower doses of lithium as well as to shift the target lithium blood level from 0.8-1.2 down to 0.5-0.8 mEq/L for most older adults. In addition to usual laboratory monitoring, older

adults treated with lithium should have an EKG (electrocardiogram) checked as lithium can affect electrical conduction in the heart.

Despite these challenges, lithium may be very helpful for some older adults with bipolar disorder, including those who have preferentially responded to lithium over other mood stabilizers as younger adults and those with more "classic" bipolar disorder (euphoric mania without mixed depressive-manic episodes or rapid cycling). In a large recent government-sponsored study on bipolar treatments entitled STEP-BD (Systematic Treatment Enhancement Program for Bipolar Disorder), when adults aged 60 and above were compared to younger adults, lithium use was less frequent but not uncommon (30% of geriatric cases vs. 38% of younger adult cases), and the average dose was about 1/3 lower for older adults. Interestingly, older adults were twice as likely to recover compared to younger adults when treated with lithium (D'Souza *et al.,* 2011).

Lithium is also the only medication shown to have definite protective effects against suicide in bipolar disorder. Because completed suicides are a major mental health concern in older adults, especially older Caucasian males, lithium deserves consideration for older adults with bipolar disorder and prominent suicide risk factors. Additionally, there are some theoretical benefits of lithium for older adults, who are more susceptible to diseases of brain degeneration, such as Alzheimer's disease. Lithium is being studied for its "neuro-protective" properties, that is, molecular actions that may prevent nerve cell death. This is still experimental at this stage, however, and high lithium levels actually impair thinking and memory, especially among older adults. On the whole, with all other factors being equal, ease of use favors other mood stabilizers over lithium as first-line agents among older adults with bipolar disorder. However, all other factors are often not equal, and lithium may be very beneficial for a substantial portion of older adults, such as those who have responded well to lithium earlier in life, those with classic euphoric mania, those at high risk for suicide, and those without prominent medical issues that affect kidney function.

Valproic acid

Valproic acid (or its related slow-release formulation, divalproex [Depakote]), originally approved to treat seizures, has become a common alternative to lithium as a mood stabilizer in bipolar disorder. Valproic acid may be more effective than lithium for certain variants of bipolar disorder, such as rapid cycling or mixed manic-depressive episodes. There is some suggestion that it may also be more effective than lithium in bipolar disorder associated with an underlying neurological abnormality or substance abuse. Overall, efficacy and tolerability have made valproic acid a common first line mood stabilizer in late-life bipolar disorder.

Some special consideration should be given when prescribing valproic acid to older adults, however. With increasing age, levels of the blood protein albumin tend to decline. This is relevant because valproic acid binds to albumin; when there is less albumin available or when other drugs such as warfarin (Coumadin) and aspirin "push" valproic acid off of albumin, this leaves more free levels of valproic acid in the blood. The free (i.e. not protein-bound) form of the drug is the one that exerts both beneficial and adverse effects. Routine labs to check for blood levels of valproic acid do not account for a possible shift to a higher proportion of free drug that may occur with aging or complex medication regimens. This may lead to situations in which older adults benefit from a relatively low total valproic acid blood level or in which side

effects emerge at a seemingly low valproic acid level. Checking a more specialized lab, the *free* valproic acid level, in these cases could help older patients and doctors to aim for a more precise valproic acid dose. Therapeutic effects are often seen for older adults at total valproic acid levels of 65-90 mcg/ml or 6-22 mcg/mL of free valproic acid.

Some common side effects of valproic acid include nausea, sedation, tremor, weight gain, and thinning hair. Other uncommon but serious adverse effects include liver toxicity, pancreatitis, and low blood platelets (which can lead to poor blood clotting). Some evidence suggests liver and pancreas side effects are less common with increasing age. An infrequent and often unappreciated cause of confusion in older adults taking valproic acid is a side effect of increased urea (a "waste product" that may affect brain function when it accumulates). Urea levels can also be measured with a special laboratory test.

Other anticonvulsants

Other anti-seizure medications that were discovered to have mood stabilizing properties include carbamazepine (Tegretol) and lamotrigine (Lamictal). Carbamazepine, like valproic acid, may be useful for bipolar syndromes more often resistant to lithium, such as those with rapid cycling or associated underlying neurological disorders. Carbamazepine tends to be somewhat harder for older adults to tolerate than valproic acid, largely because of neurological side effects such as tremor, dizziness, incoordination, double vision, and cognitive impairment. Carbamazepine can lower blood levels of many medications, so drug interactions are important to consider when using it among older adults. Other side effects that occur in all ages but may be even more problematic in older adults are lowered blood sodium levels, rashes, altered electrical conduction in the heart, and suppression of the bone marrow's production of blood cells. Lowered sodium levels can cause confusion, lethargy, seizures and even coma, and may be more common when carbamazepine is given to older adults taking SSRI antidepressants or diuretics.

Lamotrigine has been an important addition in the treatment of bipolar disorder because of its relative strength in preventing depressive episodes, without the apparent risk of inducing mania or rapid cycling observed with conventional antidepressants. Lamotrigine appears to have good tolerability for most older adults. For instance, cognitive side effects appear less likely in comparison to many other anti-seizure medications. Rash, as in all age groups, is the most important side effect to monitor. Medication interactions with other anti-seizure medications are important to keep in mind as well. For instance, valproic acid increases blood levels of lamotrigine, while carbamazepine decreases lamotrigine levels.

Antipsychotics

As the name implies, antipsychotic medications have traditionally been developed for treatment of psychotic disorders such as schizophrenia. However, psychosis is often evident in severe manic and depressive episodes, and antipsychotics have a long history of use in bipolar disorder. Research has also shown that antipsychotics may act as long-term mood stabilizers, anti-manic agents, and antidepressants in bipolar disorder even without psychotic symptoms. Most research in bipolar disorder has examined the newer, so-called "atypical" antipsychotics, although the older, "typical" drugs, such as chlorpromazine (Thorazine) and haloperidol (Haldol), have been used for decades, especially in the treatment of manic agitation.

Recent years have seen increasing debate over how much better (if at all) atypical antipsychotics are than older, typical versions. Both types have relative pros and cons in older adults. Typical antipsychotics tend to cause more neurological side effects, such as tremors and stiffness resembling Parkinson's disease as well as writhing or jerking movements called tardive dyskinesia. Older adults are more susceptible than younger adults to both Parkinson-like effects and tardive dyskinesia when prescribed antipsychotics. Another antipsychotic side effect more common with typical agents is elevation of the hormone prolactin. Increased prolactin blocks the effects of the sex hormones estrogen and testosterone, which are already on the decline in older adults. This could worsen bone loss and osteoporosis as well as sexual functioning, two issues often problematic for older adults. Certain typical antipsychotics strongly block a brain chemical messenger called acetylcholine. Decreasing the functioning of acetylcholine is particularly troublesome in older adults because this may worsen certain symptoms already common in aging, such as memory impairment, trouble urinating, blurry vision, and constipation.

"Atypical" antipsychotics have traditionally been defined by their decreased likelihood of causing neurological side effects in comparison with typical antipsychotics. While this is true, enthusiasm for the use of atypical antipsychotics has declined somewhat as another set of side effects has emerged with the atypical drugs, namely adverse effects on body metabolism. Drug-induced changes in metabolism with atypical antipsychotics include elevated blood sugar, elevated lipids/cholesterol, and weight gain. Older adults already have increased rates of diabetes and high cholesterol, so these drugs should be used with caution in this population. Nevertheless, some evidence suggests effects on weight and lipids/cholesterol may not be as common in older adults as in younger adults, and atypical drugs vary in how likely they are to cause metabolic side effects (Mathys *et al.,* 2009). An important advantage of atypical antipsychotics over typical agents is the better library of evidence supporting their acute and long-term benefits in bipolar disorder. This is particularly true for bipolar depression, for which quetiapine (Seroquel) and olanzapine in combination with fluoxetine (Symbyax) are the only medications of any class FDA-approved for the acute treatment of bipolar depression.

Special mention of another apparent age-related side effect of antipsychotics bears mentioning here. All antipsychotics (typical and atypical) have warnings about increasing the risk of death and stroke in older persons with dementia. The rates of death and/or stroke increased by 1-2% in the initial 12 weeks of treatment with an antipsychotic in studies looking at whether these drugs improved behavioral and psychological symptoms associated with dementia, such as aggression and agitation. While most older adults with bipolar disorder do not have dementia, this could be an emerging clinical problem as persons successfully treated with antipsychotics for bipolar disorder grow older. Additionally, it is not clear whether the risk of stroke and death is specific to the diagnosis of dementia or is a broader risk associated with antipsychotic treatment among older adults, independent of diagnosis. Antipsychotic use requires a careful individualized assessment of risks and benefits of the medications by physicians and patients. The potential benefits of antipsychotics for bipolar disorder are, on the whole, considerably better established than for dementia-associated behavior changes. Other potential risks of antipsychotics of particular relevance to older adults include impaired balance, falls, drops in blood pressure upon rising, and electrical abnormalities in the heart.

Antidepressants

The use of antidepressants in bipolar disorder is generally controversial, regardless of age, because of risks of medication-induced mania or rapid mood cycling. Nonetheless, antidepressants are often prescribed to older adults with bipolar disorder for either the acute or maintenance treatment of bipolar depression. Their use is probably most reasonable in the following situations: acute depression not responding to adequate mood stabilizer treatment, absence of rapid cycling or mixed depressive-manic symptoms, and/or bipolar illness historically characterized by prominent depression and relatively brief periods of mania or hypomania. As previously mentioned, lamotrigine and atypical antipsychotics are probably better alternatives for maintenance and acute treatment of depression, respectively, if side effects do not prohibit their use. One bright note about antidepressant use in older adults is that, in contrast to reports of more suicidal thinking/behavior in a small portion of persons under age 25 taking antidepressants, these medications on average actually decrease suicidal tendencies in adults age 65 or older.

When using antidepressants for older adults with bipolar disorder, selective serotonin reuptake inhibitors (SSRIs) and bupropion (Wellbutrin) are reasonable first choices. Among the SSRIs, sertraline (Zoloft) and escitalopram (Lexapro) are good options for older adults because they have relatively few interactions with other medications used for common health conditions. Citalopram (Celexa) also has few medication interactions, but recent data suggest it may predispose older adults to electrical conduction problems in the heart at doses over 20 mg per day. Fluoxetine (Prozac) and paroxetine (Paxil) can be helpful in some cases but are not common initial choices for older adults; they both can interfere with the liver's metabolism of certain other medications, and paroxetine is somewhat anti-cholinergic, which can impair memory functions. Common initial side effects of SSRI's include nausea, diarrhea, anxiety, fatigue, insomnia, headache, and sexual dysfunction (inability to reach orgasm, for instance). Most of these side effects are mild-to-moderate and dissipate over time. A notable exception is sexual dysfunction, which is often a more persistent side effect. Ageism should not make affected persons or their treatment providers insensitive to the possible impact of sexual side effects on older adults. Less often, SSRIs may be associated with lowered sodium levels, accelerated loss of bone mass, and gastrointestinal bleeding in older adults.

Bupropion has a potentially lower propensity to cause mania than other antidepressants, does not cause weight gain, may help fatigue, and does not have sexual side effects, but tremors, anxiety, insomnia, and agitation can be limiting side effects. Bupropion (especially short-acting formulations) should be used very cautiously in persons susceptible to seizures. Other antidepressants include serotonin-norepinephrine reuptake inhibitors, such as venlafaxine (Effexor), desvenlafaxine (Pristiq), and duloxetine (Cymbalta). These may be helpful for persons with chronic pain co-occurring with bipolar disorder, although blood pressure should be monitored for elevation on venlafaxine in particular. Mirtazapine (Remeron) is a unique antidepressant that boosts serotonin and norepinephrine levels in an indirect way. Notable common side effects include weight gain and sedation, which can be used to a person's benefit if loss of appetite and insomnia are problematic symptoms of depression. Mirtazapine also does not appear to cause sexual side effects and may actually help with nausea/stomach upset. Older medications such as tricyclic antidepressants (TCAs) and monoamine oxidase inhibitors (MAOIs) are seldom used among older adults with bipolar disorder. TCAs may be more likely to induce mania than other antidepressants, and they are difficult for older adults to tolerate. Possible side effects of TCAs include constipation, dry mouth, sedation, difficulty urinating, heart arrhythmias, and memory impairment. MAOIs have multiple medication

interactions and dietary restrictions, which, if violated, can cause very high blood pressure, stroke, and even death. However, when other treatments fail, they sometimes can be helpful for bipolar depression.

Electroconvulsive therapy (ECT)

Few topics in modern medicine incite more controversy and divisive opinions than electroconvulsive therapy (ECT). A comprehensive review of ECT is beyond the scope of this text. Unfortunately, media dramatization, unfounded stereotypes, and certain organizations have led many people with severe, chronic, difficult-to-treat mood disorders to refuse ECT before getting medically reliable information on its risks and benefits. ECT is primarily used in the treatment of medication-resistant or very severe depression (including bipolar depression), but it is also effective in treating mania. ECT has a long history of mostly well-intentioned but admittedly occasionally inappropriate use in psychiatry. *Any* past abuses, however rare, are condemnable but should not prevent suffering patients from an accurate appraisal of whether ECT might be a viable treatment alternative for them. Modern medical procedures and technology have streamlined ECT to make it quite tolerable (more so than medications for some people), and most states have very strict legal guidelines about safe and ethical use of ECT.

Media portrayals of ECT have usually painted a picture of it as a punishment for "bad behavior" and/or as a painful, traumatic experience in which patients thrash about or scream in agony. I have personally never known anyone (a patient's family member or a medical trainee) witness ECT for the first time that was not entirely *under*whelmed when they saw it first-hand. The actual electrical stimulus applied to the brain lasts on the order of seconds and the induced seizure on the order of 1-2 minutes. For decades, patients receiving ECT in the US have been under anesthesia and thus unaware when the actual procedure is being done. It is not punitive and patients typically have no recall of the procedure or of the minutes-to-hours surrounding the procedure. Additionally, there is no thrashing about—that, in fact, did occur with early ECT, but modern methods have long used a muscle blocker which prevents the therapeutic seizure activity that happens in the brain from causing any jerking movements in the body. The most invasive aspect of ECT is typically a short-term IV line to administer the anesthetic and muscle blocker.

ECT has been used safely and effectively among older adults with a wide variety of medical illnesses. In fact, some evidence suggests older adults with melancholic or psychotic depression may be among the most robust responders. ECT, however, is not without possible side effects. Rates of death are very low, but not zero. Risk of death appears similar to that for other minor procedures requiring general anesthesia and is roughly comparable to the risk of death during childbirth. Medical problems which may complicate the use of ECT and increase the risk for adverse outcomes include unstable heart disease and a brain mass/tumor. Probably the most concerning possible side effect for most people is cognitive impairment, specifically memory loss. This is particularly relevant for older adults, who are more prone to memory impairments. Patients commonly report trouble remembering some events in the weeks to months before and after ECT, although this usually resolves. In fact, many people have improvements on tests of cognition with ECT because the mood disorder itself was already severely impairing their memory and concentration. Certain techniques during the ECT procedure can help spare memory and this can be inquired about prior to the treatment.

ECT typically is given 3 times a week, for an average of 8-12 total treatments. Some people are maintained on medications during ECT, although anticonvulsants such as valproic acid and lamotrigine can interfere with the ability to induce a seizure, and lithium may lead to more confusion immediately after ECT is given. Medication regimens thus have to be individualized for each person. Almost always, however, some mood stabilizing medication is continued, started, or re-initiated once ECT is done, as ECT does not "cure" bipolar disorder. Its effects may be pretty long-lasting, and many people only need one course of treatment in their lifetime. Others may have recurrent bouts of mania or depression that respond better to another course of ECT than to medications. Less frequently, persons with bipolar disorder may have chronic symptoms that are unresponsive or inadequately responsive to any treatment other than ECT. In such cases, after finishing a round of successful ECT, future treatments can be gradually spaced apart to one treatment every few weeks to months in what is called "maintenance ECT," meaning ECT for these persons is used not only to treat severe acute mood episodes, but is also used less frequently over the long-term as the primary treatment method.

What is the role of psychotherapy in late-life bipolar disorder?

Psychotherapy as an adjunctive treatment is increasingly seen as a viable method of improving patients' chances of remaining euthymic and improving overall functioning (Scott & Colom, 2005). There are now several evidence-based models of psychotherapy that have empirical support, including cognitive-behavioral therapy, psychoeducation, family focused therapy, and interpersonal and social rhythm therapy. None of these treatments have been adapted specifically for older adults, but older adults with other psychiatric illnesses often do respond well to psychotherapy when a few modifications are made. Adaptations for older adults may include holding briefer sessions, providing written review of session content to increase retention, and involving supportive persons in therapy (Arean *et al.*, 2003). Another important target for psychosocial treatment in later life bipolar disorder is medication adherence. Although older adults are more likely to be adherent to medications than their younger counterparts, older adults are more likely to endorse unintentional non-adherence (e.g. forgetting, misplacing medications). As such, interventions such as Medication Adherence Skills Training (MAST-BD) focus on compensation for cognitive impairments that may interfere with regular medication taking, such as reminders, pill boxes and pairing activities with medications.

Because older adults with bipolar disorder often have diverse needs, spanning financial, transportation, medical, and social realms, an important clinical task is to broker engagement with social service agencies serving seniors. Knowledge of community services is thus necessary. Given that social isolation is among the most potent predictors of recurring depression among older adults, mutual support organizations can be an incredible resource for people with bipolar disorder. The Depression and Bipolar Support Alliance (www.dbsalliance.org) and the National Alliance for Mental Illness (www.nami.org) are the largest such organizations, with thousands of chapters operating across the United States. Unfortunately, for reasons that are unknown, older adults typically underutilize mutual support groups.

Conclusions

More and more persons with bipolar disorder are enjoying the increases in longevity that the general population has already experienced for many years. Nonetheless, aging with bipolar disorder presents some unique challenges, such as increased rates of some medical disorders, cognitive impairments, and frequent need for adaptation of medication and psychosocial treatments. Later-life bipolar disorder has been markedly understudied, and much remains to be learned. Important areas of research include changes in the course of the illness, differences in symptom presentation, the effectiveness of treatments developed for younger adult populations, and the interaction between bipolar disorder and cognitive disorders. There are important positive aspects of aging that are relevant to bipolar disorder, such as better treatment adherence, age-associated improvements in emotional regulation, and, according to many cultures, increasing wisdom. Along those lines, perhaps it is best to conclude this discussion about the effects of aging on bipolar disorder with the thoughts of someone who has experienced it first-hand.

An Interview with David a 69 year old man with bipolar disorder

David was born in Massachusetts in 1943. He first started experiencing symptoms of bipolar disorder in his early 20s. The illness was recognized by an internist whose mother had the illness. David was first hospitalized at age 24, but states “While watching other patients playing volleyball while under meds I vowed not to return.” Some of his life time achievements include obtaining an M.B.A. degree and starting five small businesses. David remarked that he was fired from many jobs, but at the same time kept climbing the “corporate ladder”. He has been married for 40 years, and, of his wife, he says “She must be a saint to put up with the heartaches and headaches caused by my BD.”

Q. What has changed about bipolar disorder since it first started for you?

The illness does not change. My experience of it has changed by learning the nuances of it as the illness cycle keeps repeating.

It is chronic and learning my triggers took time. I still am not as proficient as I need to be to fend off severe mood changes. However, I have learned to somewhat lessen them.

Q. What it is like to manage BD in the context of the other good and bad parts about older adulthood:

As long as I am busy I can mostly keep depression away or, at least, minimized. Among these activities I have learned to keep healthy by trying to help other people. This counters my feeling like a "victim / loser" which is part of my downward spiraling depressive pattern.

Managing BD is paramount so I can remain calm and logically face the challenges of getting older. I can become depressed when focusing on my failed prostate cancer operation and my failing kidneys whose demise started with taking Lithium for 13 years before I educated myself on the hazard of taking it. Of course, when I started with Lithium, it was the "only game in town".

Q. Reflecting on your experience with bipolar disorder, what “wisdom” can you share?

Assemble a team you can trust if you can afford it- Med management (Psychiatrist) and Psychologist. Meds may take time to work as your body is a laboratory. 100 years from now the treatment we receive will be

considered barbaric.

While you are well create an agreement with someone who sees you often that they will make you aware when your behavior deviates from your own "normal (not necessarily society's standards)". This is a concept of gaining feedback through your "mirror".

Realize that you can't throw a baseball 100 miles/ hour but you could not do that when you were 20. That is, the "good old days" are over - if they ever did exist.

Don't isolate. A group such as DBSA allows you to see that you are not alone on the path you are on. Listen to member stories. Somehow a group has wisdom that you may not find on your own.

If you believe that people will stigmatize you if they know you have BD - So, what else is new? - Try telling someone. When I do so I have been surprised by the number of people who say they have someone they know with the illness.

We are not weak. It takes more strength to live with BD than the average person comprehends.

Try to stay in the moment. Learn to take a deep breath. Don't panic! A little humor helps.

Suicide is a permanent solution to a temporary problem. Take a walk or whatever gets you out of listening to the tape that keeps replaying in your brain.

You can't drive forward while looking through a rearview mirror.

A special acknowledgment to David Z. who volunteered his time so that his personal experience might benefit others.

International Bipolar Foundation

References

Arean, P., Cook, B., Gallagher-Thompson, D., Hegel, M., Schulberg, H., & Schulz, R. (2003). Guidelines for conducting geropsychotherapy research. *American Journal of Geriatric Psychiatry, 11*(1), 9-16.

Ayalon, L., Arean, P., & Alvidrez, J. (2005). Adherence to antidepressant medications in black and latino elderly patients. *American Journal of Geriatric Psychiatry, 13*(7), 572-580.

Bearden, C. E., Hoffman, K. M., & Cannon, T. D. (2001). The neuropsychology and neuroanatomy of bipolar affective disorder: A critical review. *Bipolar Disord, 3*(3), 106-150; discussion 151-103.

Calabrese, J. R., Hirschfeld, R. M., Reed, M., Davies, M. A., Frye, M. A., Keck, P. E., et al. (2003). Impact of bipolar disorder on a u.S. Community sample. *J Clin Psychiatry, 64*(4), 425-432.

Cassidy, F., Ahearn, E. P., & Carroll, B. J. (2001). Substance abuse in bipolar disorder. *Bipolar Disord, 3*(4), 181-188.

Charney, D., Reynolds, C., Lewsi, L., Lebowitz, B., Sunderland, T., Alexopouls, A., et al. (2003). Depression and bipolar support alliance consensus on the unmet needs in diagnosis and treatmnet of mood disorders in late life. *Archives of General Psychiatry, 60*, 664-672.

Depp, C., & Jeste, D. V. (2004). Bipolar disorder in older adults: A critical review. *Bipolar Disord, 6*(5), 343-367.

D'Souza, R., Rajji, T.K., Mulsant, B.H., & Pollock, B.G. (2011). Use of lithium in the treatment of bipolar disorder in late-life. *Curr Psychiatry Rep, 13,* 488-92.

Gildengers, A., Butters, M., Seligman, K., McShea, M., Miller, M., Mulsant, B., et al. (2004). Cognitive functioning in late-life bipolar disorder. *American Journal of Psychiatry, 161*(4), 736-738.

Kilbourne, A. M., Cornelius, J. R., Han, X., Pincus, H. A., Shad, M., Salloum, I., et al. (2004). Burden of general medical conditions among individuals with bipolar disorder. *Bipolar Disord, 6*(5), 368-373.

Kraepelin, E. (1921). *Manic-depressive insanity. Tranlated by rm barclay*. New York: Arno Press.

Mathys, M., Blaszczyk, A., Busti, A. (2009). Incidence of abnormal metabolic parameters and weight gain induced by atypical antipsychotics in elderly patients with dementia. *Consult Pharm, 24,* 201-9.

Post, R., Rubinow, D., & Ballenger, J. (1986). Conditioning and sensitisation in the longitudinal course of affective illness. *British Journal of Psychiatry, 149*(191-201).

Regier, D., Narrow, W., Rae, D., & al., e. (1993). The de factor us mental and addictive disorders service system: Epidemiologic catchment area prospective 1-year prevalence rates of disorders and services. *Archives of General Psychiatry, 50*(85-94).

Sajatovic, M. (2002). Treatment of bipolar disorder in older adults. *International Journal of Geriatric Psychiatry, 17*, 865-873.

Santos, C.O., Caeiro, L., Ferro, J.M., & Figueira, M.L. (2011). Mania and stroke: a systematic review. *Cerebrovasc Dis, 32,* 11-21.

Schouws, S.N., Stek, M.L., Comijs, H.C., Dols, A., & Beekman, A.T. (2012). Cognitive decline in elderly bipolar disorder patients: a follow-up study. *Bipolar Disord, 14,* 749-755.

Scott, J., & Colom, F. (2005). Psychosocial treatments for bipolar disorders. *Psychiatr Clin North Am, 28*(2), 371-384.

Unutzer, J., Simon, G., Pabiniak, C., Bond, K., & Katon, W. (1998). The treated prevalence of bipolar disorder in a large staff-model hmo. *Psychiatr Serv, 49*(8), 1072-1078.

Young, R. C., & Falk, J. (1989). Age, manic psychopathology, and treatment response. *International Journal of Geriatric Psychiatry, 4*, 73-78.