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Norcross J & Goldfried M. Handbook of Psychotherapy Integration: Second Edition. 2003. New York: Oxford Univ Press.

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Incorporating Transcendental Meditation (TM ®) into Evidence-Based Treatment (EBT): Practical Suggestions for Clinicians

R. Boyer, P. Barrett, D. O'Connell, W. Stixrud, F. Travis[1]

Abstract

Drawing on extensive clinical and experimental evidence, suggestions are offered for managing treatment of patients/clients who add the Transcendental Meditation (TM) program to their healing process. After a brief overview of the TM program, how to support its effectiveness is discussed, with special considerations for medication, substance abuse, PTSD, ADHD, ASD, and chronic psychiatric disorders.

Key words: Transcendental Meditation, fourth state of consciousness, *samadhi,* yoga, TM as an adjunct to therapy

Introduction

This paper is for clinicians who work with patients/clients practicing the Transcendental Meditation (TM) technique or who may make referrals for TM instruction. Extensive research documents that this technique produces a distinct state of restful alertness, which decreases stress, increases resilience, and promotes personal development. Understanding the specific, systematic technology of TM practice is important for supporting its practical results as an adjunct to psychotherapy and other clinical treatments (O'Connell, Bevvino, 2015).

The Transcendental Meditation technique differs from contemplation, concentration, chanting, and other practices sometimes associated with meditation. In TM practice, mental activity naturally settles and is *transcended* to the inner silent state of *pure consciousness*. Historically identified as *samadhi* or *turiya*, pure consciousness is a fourth natural state in addition to the three ordinary states of waking, dreaming, and sleep (Maharishi Mahesh Yogi, 1963, 1967, 1994). A primary healing principle is that *rest is the basis of activity.* Profound restful alertness is gained when mental activity settles to its least excited state, pure consciousness—which can be considered the *holistic active ingredient* for natural healing.

How is the Transcendental Meditation technique taught and practiced?

The TM technique is taught by certified TM teachers who have completed the extensive training program established by Maharishi Mahesh Yogi. Instruction is personalized depending on *in vivo* experiences and cannot be learned from a book or recording. It is taught in seven standardized steps: two introductory presentations, personal interview, private instruction, and follow-up on the three days after instruction (Roth, 2011; 2018). TM practice does not require any particular belief or lifestyle. However, to foster clear initial experiences, avoiding non-prescription drugs for 15 days prior to instruction and attending a 1 ½-hour session on four consecutive days of instruction are essential.

TM **i**nstruction includes assignment of a sound or 'mantra'—which importantly has no meaning attached to it—and systematic guidance in its use as a vehicle for transcending (Maharishi Mahesh Yogi, 1963). Because it is easy to learn, and practice, deep relaxation and expanded awareness are commonly experienced in the first session. It is practiced sitting quietly and comfortably, twice daily for 15-20 minutes each time.[R]

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Regular follow-up helps maintain correct practice and understanding of the transcending process. This includes the smooth transition from ordinary activity into TM practice, experiences during the practice, and the smooth transition back to ordinary activity. A systematic procedure to ensure correct practice—called *checking*—is a key part of life-long follow-up (Roth, 2011). It is recommended monthly the first year, and periodically thereafter as desired (more often for those in psychotherapy or pharmacotherapy). A follow-up meeting is held 10 days after instruction, and regular meetings are available for group practice, questions/answers, and advanced knowledge of personal development gained through long-term practice.

The Transcendental Meditation program is drawn from the most ancient continuous knowledge system, *Veda* ('total knowledge')—an ancient *science*, not a faith-based religion. Vedic educator Maharishi Mahesh Yogi (here referred to as Maharishi) revived the TM program. With his background in modern science, Maharishi reestablished it as a systematic technology. Initial instruction is preceded by a simple cultural ceremony to help foster the correct teaching of TM by recognizing its ancient tradition—which the student is asked to witness.

***Effortless* transcending during TM practice.** In ordinary waking, mental attention is typically outward to sensory objects—opposite of turning inward and naturally settling to inner silence. As a simple comparison, included in the ability to run is the ability to run slower, to walk, and to stand still. Included in the ability to talk is the ability to talk softer, and to be silent. Likewise, in the ability to think is the ability to settle mental activity and transcend to the inner silence of pure consciousness. This natural process is so simple that it had been overlooked for millennia.

Maharishi (1963, 1967) reestablished *effortless* meditation as the TM® technique. In the absence of this crucial understanding of effortlessness, many methods of mental control have developed involving contemplation and concentration. In distinct contrast, transcending all mental activity to pure consciousness through TM practice is *effortless* based on the natural tendency of the mind; and practically speaking, it can be enjoyed by anyone. It is trademarked in order to maintain recognition of its uniqueness and the importance of its correct instruction.

Because of the subtlety and naturalness of *effortless* transcending, considerable misunderstanding has developed about its relationship to approaches that appear to be similar and use similar terminology (Rosenthal, 2011, 2017; Travis, Parim, 2017). Brain research differentiates various types of mental practices. Practices that focus attention are associated with gamma EEG (20-50 Hz); practices that involve 'mindful' attending to moment-to-moment experiences are associated with frontal theta and posterior alpha2 EEG (10-12 Hz); and TM practice is associated with alpha1 (8-10 Hz) originating in the front of the brain and spreading to the back to include the entire cortex (global EEG coherence). Different practices also produce different results (Travis, Shear, 2010; Hebert, et al., 2005). For example, Sedlmeier et al. (2012) scored 27 psychological variables to compare focused attention, mindfulness, and TM practice. Measures of "mindfulness" were higher in mindfulness practitioners, measures targeting emotional regulation were higher in 'focused attention' subjects, and 'self-realization' was higher in TM practitioners. Across all variables, the average effect size for the TM group was significantly higher.

Research on benefits of TM® practice. From the deep restfulness and expanded alertness of the fourth state of consciousness during TM practice, healing mechanisms that dissolve obstacles to healthy functioning are said to be induced. Sub-periods during TM practice positively correlate with breath quiescence or virtual suspension, increased skin resistance, and other indicators of profound restful alertness (Orme-Johnson, 1997; Orme-Johnson, Herron, 1987; www. tm.org/research-on-meditation; Orme-Johnson, 2010). TM

practice has been shown to reduce anxiety and depression, and to improve sleep—probably the most common complaints to health care professionals (www.tm.org; Orme-Johnson, 2010; Eppley et al., 1989; Orme-Johnson, Barnes, 2013; O'Connell et al., 1994; Farrow, Hebert, 1982; Badawi, Wallace, et al., 1984; Travis, Wallace, 1997; Travis, Arenander, 2006; Orme-Johnson, 2008; Dillbeck, 2011; Scientific Research on Maharishi's Transcendental Meditation Programme—Collected Papers, Vols. 1-5, 1977-1990).

In addition to stress reduction and better sleep, individuals may become interested in TM practice for self-actualization and personal development, or when experiencing a 'spiritual' crisis. TM practitioners frequently report deeper self-integration, wholeness, and inner stability. One mechanism for this may be reduction of sympathetic neural activity in the fight-or-flight response (Dillbeck, Orme-Johnson, 1987). Also, frontal alpha EEG coherence during TM practice is positively correlated with emotional stability, self/ego development, normalization of affect, and moral maturity (Deans, 2005; Schneider, Fields, 2006; Barnes, Orme-Johnson, 2012).

Further, regular TM practice correlates positively with lower stress hormones, which helps explain its wide range of health benefits. These benefits include decreases in anxiety (Orme-Johnson, Barnes, 2013), posttraumatic stress symptoms (Rees et al., 2014), depression (Sheppard et al., 1997), insomnia (Brooks, Scarano, 1985), high blood pressure (Rainforth et al., 2007), heart attacks and strokes (Schneider et al., 2012), burnout and caregiver stress (Elder et al., 2014). Moreover, it correlates positively with lower biological age (Alexander et al., 1989), substance abuse (Alexander et al., 1994), and medical care utilization (Orme-Johnson, Herron, 1987), as well as increasing vitality (Chhatre et al., 2013), longevity (Schneider et al., 2005), and positive measures of quality of life (https://tmhome.com/benefits-of-meditation-studies/; Chhatre et al., 2013; www.davidlynchfoundation.org/research.html).

For example, a randomized control trial by physician/researcher Robert Schneider and colleagues compared TM practitioners to a health education control group over a nine-year follow-up period. Research staff were blind to participants' treatment group status; and outcome measures not subject to self-reporting biases by participants were used. The TM group showed a 48 percent reduction in the rate of heart attacks, strokes, and deaths relative to the control group, and also reductions in blood pressure and anger (Rainforth, Herron, 2015). Extensive research also documents the effects of TM practice for resilience, rehabilitation, academic performance, nonverbal intelligence, cognitive efficiency, and self-actualization. Psychologists David Orme-Johnson and David O'Connell (2015, p. 270) conclude that the TM technique is "…a *best practice* for a broad range of mental and physical disorders and maladaptive social behaviors."

The TM technique has been taught to people with diverse educational, cultural, and religious backgrounds. It also has been applied in discipline-challenged school settings plagued by despondency and violence, substance abuse treatment programs, maximum security prisons, psychiatric wards, and nursing homes (O'Connell, Bevvino, 2015). Quite significant for contemporary healthcare, insurance utilization rates for many chronic medical and psychiatric conditions are lower in regular TM practitioners compared to matched samples from the general population. This research supports the safety and wide applicability of this technology (Barnes, Orme-Johnson, 2012; Orme-Johnson, 2008; Orme-Johnson, 1997; Orme-Johnson, Heron, 1987; www.tm.org/research-on-meditation).

To summarize, the Transcendental Meditation program promotes natural healing and personal development by allowing the mind to settle effortlessly to its inner silent ground state of pure consciousness. This natural fourth state, restful alertness, helps remove imbalances and enhances brain coherence to optimize consciousness-mind-body functioning. The TM program is unique in its theory and principles, its traditional origin in *Vedic sci-*

ence, its method of instruction and practice, and its reliable experiences (including how actual transcending feels). It also is distinguished by its systematic approach to consciousness development, its fundamental relation to integrative and preventive medicine, and its wide range of well-documented benefits.

Supporting the effectiveness of Transcendental Meditation practice

We now consider unique aspects of TM practice that are important for understanding how to manage treatment of patients/clients who practice it. This can help support its effectiveness.

Thoughts during TM practice. With deeply settled experiences of restful alertness, biochemical and structural imbalances are said to dissolve naturally—termed the *process of normalization* (Roth, 2011). This increased activity in the body is associated with the mental activity of thoughts during the practice. A key point is that because this type of mental activity during TM practice occurs as a result of, and subsequent to, the release of stress and tension, it is a by-product of normalization that has already taken place. Thus, attention is not placed on these thoughts or feelings. Intellectual analysis of experiences during TM practice is not part of this technology. Reports of emotional release or similar experiences are understood in terms of normalization, not material for 'insight' or 'therapeutic work.' As needed, the checking procedure helps re-establish correct practice and understanding and smoothes out normalization processes. Outside of practice, the focus is on active vigorous pursuit of healthy personal and societal goals with increased coherence.

The Transcendental Meditation program is 'C*onsciousness-Based*.®' The TM program differs from psychotherapeutic approaches that emphasize conscious mind as based in the 'unconscious'—such as psychodynamic, humanistic, somatic, cognitive/behavioral, and positive psychology approaches. It does not involve bringing 'pathogenic beliefs' or 'repressed material' into conscious attention to 'analyze' or gain 'insight' about them. The 'bottom line' of the mind is *consciousness*—fundamentally contrasting with unconscious-based approaches (Boyer, 2012).

This technology applies the principle that 'what attention is placed on grows in one's life,' consistent with solution-oriented approaches. In this understanding, focusing attention on problems can increase their hold on the mind. The grip of past trauma is reduced over time by current positive experiences. This doesn't preclude psychotherapeutic interventions outside of TM practice, which can be quite valuable especially in cases of chronic disorders—for which TM practice can be an adjunct. It does suggest avoiding habits that can complicate thinking and interfere with the unique simplicity of TM practice (Maharishi Mahesh Yogi, 1963, 1967).

Life-long follow-up through local TM Centers. The TM program includes life-long support of regular practice for its benefits to accumulate. Local TM centers hold events to advance understanding and experience, enjoy group TM practice, discuss experiences with certified TM teachers—and also social networking and a sense of community. Further, advanced techniques, as well as retreats for extended periods of inner silence and rest, accelerate progress toward more integrated states of consciousness, self-actualization, and spiritual development.

The calm atmosphere around someone in a deeply settled state during TM practice is frequently reported to be more noticeable in groups. Over 50 well-controlled, peer-reviewed studies have shown that practice of TM and its advanced programs in very large groups create coherent and peaceful trends even on a societal scale (www.mum.edu-research-overview/ maharishi-effect). These advanced programs are recommended when the indi-

vidual is grounded in stable daily routines. But they don't replace, or serve as, group therapy. Taking advantage of the educational activities at local TM centers and affiliated organizations world-wide is encouraged; however, participation is optional.

TM centers also offer educational credit courses through Maharishi University of Management (MUM), a fully accredited academic institution in Iowa with in-residence and on-line programs. It offers undergraduate, master's, and doctoral programs in unique Consciousness-Based ® Education, combining TM and its advanced programs with academic curricula. Currently, these curricula include art, business, computer science, integrative studies, literature and writing, cinematic arts, media and communication, mathematics, physiology and health, sustainable living, Maharishi Vedic Science, Maharishi Ayurveda, and independent studies (www.mum.edu).

Maharishi Ayurveda. Ayurveda—knowledge of the lifespan—is the ancient Vedic system of natural medicine. *Maharishi Ayurveda* emphasizes the importance of the development of consciousness for health. Transcendental Meditation is the fundamental recommendation, along with programs in dietetics and healthy foods, herbal therapy, body purification therapies (*panchakarma*), gentle exercise routines (yoga *asanas*), simple breathing exercises (*pranayama*), aromatherapy, music therapy (*gandharvaveda*), and specific daily and seasonal routines (*behavioral rasayanas*), as well as numerous other approaches to promote health, balanced success, and longevity. These are least-intrusive approaches that are described within the Maharishi Ayurveda framework as opposite of the physiological and psychological precursors of disease. These approaches also can be added to treatment regimens (Brooks, 2016; Boyer, 2012).

General Suggestions for Clinicians

The extensive training of TM instructors does not include training in mental or physical health treatments. However, research has shown that TM practice may have significant benefits for individuals who need these services. Here is the first of several lists of practical suggestions in this paper to support the effectiveness of TM practice with your patients/clients:

- Direct clients to their certified TM teacher for questions about TM practice.
- Encourage clients to get their TM practice 'checked' whenever questions about it arise, including experiences during or after practice that seem related to it (thoughts, memories, emotions, discomfort, straining, non-attachment and other unfamiliar positive experiences).
- Avoid applying psychodynamic or related 'insight' interventions in attempts to interpret experiences that occur during TM practice.
- Avoid asking clients to explain confidential aspects of TM practice or attempting to change it based on other models of mind and mental practices.
- Encourage regular twice-daily TM practice for benefits to accumulate, evaluating progress over the longer-term rather than reflecting on experiences during the practice.
- Inquire about plans by your client to participate in additional TM and Maharishi Ayurveda programs—to consider the appropriateness of timing and to monitor changes.
- Consider getting formal written permission from your client, allowing you to talk with the TM teacher for the purpose of providing information directly relevant to TM practice, and also for feedback on changes related to treatment regimens you prescribe.

- Recognize that practices differ and produce quite different results. Consider not giving the impression that experimental and experiential results of TM practice are the same as other practices—extensive research shows they are different.
- Prescribing the TM technique may result in an instruction fee reduction—check the online TM Health Professionals Program (TMHPP) referral system, or the local TM center.
- Consider joining the TMHPP (www.tm.org/healthpro), which provides information and support, and also the affiliated Global Union of Scientists for Peace (www.gust.org).
- Consider that client interest and compliance is considerably enhanced when administrators and clinical staff also learn and practice the TM technique.

Considerations for specific clinical populations

Medication management. Prescribing clinicians consider with their patients the benefits versus the side-effects of medication. An additional consideration is how medication may interact with regular TM practice. The normalization process in the TM program is said to increase refinement and coherence in the mind-body system. Thus, the powerful effects of allopathic medication can be experienced more intensely as a disruption in homeostasis. While complaints about unwanted side effects are common from patients generally, we suggest extra monitoring for TM practitioners.

Relevant to pharmacotherapeutic interventions, here are additional suggestions:

- Medication management is based on judgment of need, medication interactions, preexisting conditions, and potential benefits in consultation with the patient. However, for TM practitioners, coordinating with the TM teacher can also be useful.
- Consider that TM practitioners may need lower initial and subsequent dosages than many other patients.
- Consider that feelings of sadness, typically the last symptom to lift in depressed patients, tend to be less persistent with TM practitioners due to earlier resolution of anhedonia.
- Consider that TM practitioners typically report earlier return of energy and reduced fatigue, probably from the restful alertness that naturally occurs with regular TM practice.
- Recognize that a somewhat higher percentage of TM practitioners may be reticent with respect to pharmacotherapy, surgery, and other allopathic treatments viewed as highly intrusive. They may need additional explanation and support to comply with these treatments in a timely manner.
- Recognize that some patients may regard their TM teacher as somewhat of an authority in complementary and Integrative health. For patients who resist taking needed medications, consider coordinating with the TM teacher (with proper release of information) to reinforce compliance and the value of taking medications as prescribed, until not needed.

Substance abuse. Researcher Vernon Barnes (2015, p. 74) comments on the Transcendental Meditation technique with respect to substance abuse—at crisis levels in society today:

- A meta-analysis of 198 studies on behavioral techniques for reducing tobacco, alcohol, and drug consumption suggested that TM has substantially larger effect sizes in reducing harmful substance consumption compared to other techniques. The findings also showed that patterns of abstinence were maintained for a longer time. A study of 295 university students showed a significant reduction in drinking rates in males. A

prospective study of 324 cigarette smokers found that 51 percent of those who reported full compliance with TM practice quit smoking after two years, compared to 21 percent for both partial TM adherents and non-TM controls. The TM program dispenses no advice to quit smoking. Rather, reduction in smoking behavior subsequent to TM is thought to be motivated by reduced need for stimulation and increased sensitivity to the harmful effects of tobacco on the body.

A new pilot study supports the feasibility of incorporating TM practice into in-patient alcohol treatment programs, with regular TM practice correlated with better outcomes and reduced relapse (Gryczynski, Schwartz, et al., 2018). O'Connell and Arenander (2015) summarize the larger body of studies on Transcendental Meditation practice and substance abuse:

- Improvements in psychological functioning in substance abusers practicing TM were approximately twice as large as those…by other forms of meditation and relaxation.
- For alcohol, the effects of TM were 1.5 to 8 times larger than those produced by other forms of meditation and relaxation.
- For tobacco dependence (smoking), the effects of TM were 2 to 5 times larger than those of other treatments.
- For illicit drugs use, the effects of TM were 1.5 to 6 times larger than…other treatments.
- In contrast to standard treatments, where success rates generally decrease over time, the effects of TM either increased or remained stable over time.
- The impact of TM could not be attributed to nonspecific treatment or placebo effects such as expectancy, attention from trainer…social support, or…motivation to change (p. 159).

Regarding mechanisms, it is interesting that William James (1958), the 'father of American psychology,' asserted that alcohol may provide a *sort of* religious experience for some people. If euphoric experiences motivate addictive behavior, it seems reasonable that natural experiences of 'inner bliss,' sometimes reported with transcendence during TM practice, fulfills the same need without deleterious side effects. Findings of increased feelings of well-being, social adaptability, and reduced anxiety place TM practice as a highly desirable tool for recovery.

In considering the role of stress in chemical use and dependency, clinicians/researchers William Stixrud and Sarina Grosswald (2015) point out that a highly sensitive reward system, along with a dysregulated and overly reactive stress response system and lowered executive control, contribute to repeated use and relapse. Anything that reduces stress can reduce the risk of substance abuse. Alcohol and drugs have highly reinforcing properties of transient pleasure and reduction of discomfort. TM practice includes both of these effects naturally through nearly the same brain systems, such as elevations of serotonin (Bujatti, Riederer, 1976). We view TM practice as highly effective for reducing drug abuse, achieving abstinence, and promoting life-long recovery.

David O'Connell, past clinical director of community-based substance abuse programs, explains that substance abuse recovery first involves helping the patient detoxify and stabilize. Frequently this is best done at in-patient settings, typically for 7-10 days, and most often includes medications to reduce mortality, establish physiological balance, ease withdrawal symptoms, and eliminate cravings. In the second stage, early recovery, we recommend introducing TM practice for further stabilization and enhancement of patient comfort. Typically, at this stage patients are introduced to the 12 steps of AA/NA, or another program

such as Rational Recovery. TM practice can be very helpful in facilitating openness and honesty in therapy and reducing defensiveness, fear, anxiety, grief, remorse, and depression that tend to emerge at this stage.

The next stage typically involves realizing there is a (higher) power that, if allowed, can help restore health—associated with the "spiritual" process in addictions recovery. The patient learns to 'surrender' to a natural process. TM practice can be immensely helpful here, by the patient learning a simple and specific way to achieve this style of functioning. Work on the remaining steps can then begin, such as self-assessment, admitting mistakes, making amends to others hurt in the course of addiction, seeking forgiveness, and working to remove character flaws. Research is clear concerning the impact of TM practice on self/ego development (Alexander et al., 1991); Chandler et al, 2005) and the reduction of negative personality traits (Eppley et al., 1989; Alexander et al., 2003: Nidich et al., 2016; Nidich et al., 2009). Thus, the TM technique can be extremely helpful in facilitating the growth and maturity necessary for on-going sobriety.

The final steps of AA/NA instruct the patient to practice prayer and meditation to increase closeness with a 'higher' power—however the patient understands it. Our experience is that TM practice facilitates the 'spiritual' aspect of recovery (Travis, 2014). It removes much of the vagueness and mystery of this process, often a stumbling block for patients attempting to work a 12-step approach (O'Connell, Alexander, 1994; O'Connell, Bevvino, 2007). In this context, it is noteworthy that Bill Wilson, co-founder of Alcoholics Anonymous, practiced the TM technique. He found it highly useful to promote 'spiritual awakening' in recovery, considered essential to the effectiveness of 12-step approaches. Reflecting on his own experience, he said," I didn't fully understand the 11th step until I learned TM" (Kolodner, 2015).

A potential criticism is that the effortlessness and non-expectation of any particular outcome during TM practice may promote laxness or disinhibition. Some critics have suggested that the *effortlessness* of TM practice could erode the self-imposed adherence to boundaries necessary to avoid relapse. The pattern of rationalization, deception, compartmentalizing, and denial common in substance abusers potentially could be erroneously reinforced by this crucial aspect of the practice. It is important that the support team recognize the value of TM practice, despite how it may be manipulated at times by the patient in the ups and downs of treatment; and also, to connect patients with their TM instructor for follow-up.

For substance abuse treatment:

- Most of the clinical suggestions for incorporating TM practice into psychotherapy also apply to addictions treatment.
- Consider proactively informing your patients/clients of the research and potential value of regular TM practice, including how to contact the local TM center and even 'prescribing' it as an adjunct to other evidence-based treatment.

Anxiety and Posttraumatic Stress. Research strongly supports TM practice for reducing trait anxiety (Eppley et al, 1989; Alexander et al., 1993; Orme-Johnson, Barnes, 2013; Kam-Tim, Orme-Johnson, 2001; Elder, 2011; Nidich et al., 2009; A; Burns, 2011). For example, a recent meta-analysis of 16 studies and 1,295 subjects found that TM practice reduced severe trait anxiety better than psychotherapy and relaxation procedures (Orme-Johnson, Barnes, 2013). As with anxiety disorders in general, posttraumatic stress (PTS) can be considered a 'distortion of time' whereby stimuli in the present trigger intense emotional reactions from past experiences. In TM practice, these experiences are ad-

dressed in terms of stress and normalization; regular 'checking' resolves many concerns. However, because PTS can involve serious decompensation, we strongly encourage instruction and on-going supervision with a TM teacher take place in a clinical setting.

Results of a newly published pilot study by Heron and Rees (2017) of veterans with PTS symptoms who began TM practice calls for further research specific to this population. They state that in the context of all related previous research:

> [T]he…evidence suggests that TM practice may offer a promising adjunct or alternative method for treating PTSD. Because of the widely recognized need to identify effective new approaches for treating PTSD, randomized research with control groups is warranted (p. 1).

Dusty Baxley, Executive Director of Boulder Crest Retreat for Military and Veteran Wellness, incorporates the TM technique into its solution-based Warrior PATHH (Progressive and Alternative Training for Healing Heroes) Program. This program is designed to track and improve PCML-5, normal quality of life, and indicators of *posttraumatic growth* (Tedeschi, Moore, 2016). It is an excellent example of how healing effects of TM practice can be integrated into a non-intrusive, non-pathologizing therapeutic program. Baxley (2017) explains:

> Through the Warrior PATHH Program (2017) our Combat veterans receive an education about…the power of struggle…and self-regulation [practices]… of which TM is one…. They learn the difference between reacting and responding to life…. Once you understand…the major symptoms of PTSD… you begin to realize that we are exactly who we are supposed to be…[a] normal human who has survived an abnormal experience…. We are a product of our training and experience as combat veterans and what has changed is the environment from combat back to society and there is an adjustment…to grow from the adversity…. TM is the cornerstone meditation practice…. We also just received preliminary results from the current longitudinal study being conducted by Dr. Rich Tedeschi and Dr. Bret Moore…that our Warrior PATHH Program for…post traumatic growth is 2-3 times more effective than any current modality/treatment program for PTSD through applied post traumatic growth.

Anxiety and trauma may be the most frequent psychosomatic concerns. They are treated with a combination of psychotherapy, antidepressant and anxiolytic medications, as well as behavioral interventions. There are also self-help books and audio/video tapes to help manage anxiety. Unlike TM practice, these approaches involve some form of effort.

The TM technique is therapeutic, but not 'therapy.' TM practice emerges as perhaps the most effective program for reducing pathological and general anxiety. However, because findings show it can produce rapid symptom relief, individuals whose daily life has been shaped around the symptoms can benefit from professional therapy to help integrate regained abilities (Gerace, 2017).

Here are further clinical suggestions for posttraumatic stress, and also anxiety disorders:

- Consider recommending that individuals experiencing posttraumatic stress start TM practice in a formal support program that includes at least weekly TM checking.
- Consider posttraumatic symptoms not so much in the disease-oriented model but as coping reactions to abnormal, very extreme conditions that require patience, rejuvenation, and significant re-adjustment to normal life.

- Help your patient/client distinguish between TM practice, psychotherapy, and behavioral interventions, and utilize the services of the TM instructor to clarify them.
- Help your patient/client avoid intermixing TM practice with other coping strategies such as relaxation methods (this often occurs, reducing the effectiveness of TM practice).
- If a patient/client reports anxiety-related thoughts and experiences during TM practice, make a referral for them to a TM teacher for 'checking' to ensure correct practice.
- Inform the patient that TM practice has been shown to reduce anxiety (some may stop the practice due to incorrect understanding, sometimes even reinforced by therapists).
- Consider fostering TM instruction for patients with similar presenting histories as a group to support the therapeutic experience—as well as to increase efficiency of services.

ADHD and Autism Spectrum Disorders. Many disorders that emerge in childhood and adolescence are increasing in prevalence, including attention and autism spectrum disorders (ASD). Attention Deficit Hyperactivity Disorder (ADHD) is believed to affect more than 10 percent of children and adolescents (Visser et al., 2014). There is an important relationship between the physiological imprint of stress and ADHD symptoms. Prenatal stress appears to contribute significantly to ADHD symptoms observed during childhood.

Arnsten (2009) has demonstrated that hormones triggered by the stress response disrupt neurotransmitter balance in the prefrontal cortex, and thereby produce symptoms in children and teens that are identical to those seen in individuals with ADHD (e.g., inattention, distractibility, impulsiveness, restlessness). Chronic and severe acute stress damage the body's ability to return to non-stress levels, leading to chronically elevated cortisol that impairs executive function and self-regulation in children with ADHD (Arnsten, 2009). Due to its stress-reducing effects, there is strong interest among clinicians in the potential of TM practice for improving ADHD symptoms. It also has been proposed that TM practice should benefit young people (and adults) with ADHD because of its capacity to increase coherent brain functioning. It enlivens prefrontal executive areas shown to improve behavioral regulation in typically developing adolescents and young adults (Arnsten, 2009).

There is some empirical evidence that supports the TM program in the treatment of ADHD. A pilot study of TM effects on middle school students with ADHD found a 43 percent reduction in self-reported symptoms of stress and anxiety, as well as improvement in ADHD symptoms such as inhibitory control after three months of daily practice of TM in school (Silk et al., 2009). Travis et al. (2011) studied the effects of TM practice on brain coherence and brain development in middle school students with ADHD. Subjects were randomly assigned to the TM group and a delayed-start condition, which served as a control group. After three months, theta/beta ratios (highly correlated with ADHD severity) increased in the delayed-start group, opposite of the desired effect, while TM subjects moved closer to normal values. At a 6-month posttest, with both groups in TM practice, theta/beta ratios decreased in both groups.

Evidence is also emerging that TM practice may play an important role in treating stress and anxiety symptoms–and possibly social symptoms–seen in adolescents and adults with ASDs. Stress-related disorders involving anxiety and sleep disturbance are very common in children and teens with ASDs (Visser et al., 2014). Studies of individuals with ASDs estimate that from 40 percent to as high as 84 percent suffer from significant anxiety (Arnsten, 2009). Mothers of older adolescents with ASDs show cortisol levels comparable to soldiers in combat (Silk et al., 2009) and thus also may benefit from the stress-reducing effects of TM practice.

Presently, there are no empirically supported treatments for emotional and behavioral difficulties in children and adolescents with ASD; as well as for anxiety, including medications, in students (Silk et al., 2009). There is currently one published case report of an adolescent with ASD that describes improvements in sleep and self-regulation with TM practice (Kurtz, 2011). There is also an as-yet unpublished retrospective pilot study on the effects of TM practice in adolescents and young adults with ASD (Black, Rosenthal, unpublished). In this case study of six participants (16 to 22 years of age), all participants were able to learn the TM technique, with five practicing twice-daily who reported reduced stress and anxiety, improved emotional/behavioral regulation, increased productivity, and more effective coping in new situations. Additionally, parents reported that their children took more responsibility, recovered from stress faster, and appeared more at ease. Parents of some participants also reported increased social motivation, eye contact, and flexibility.

Two important clinical observations are often made regarding young people with ASDs. The need for rigid compliance to a routine seems to serve the objective of regular TM practice, especially with parental co-participation; and caregivers welcome the relief from the daily demands of care. In our experience, many adolescents and young adults will practice on their own if they see TM practice as a tool that can alleviate their physical and/or emotional pain, or if it is a daily routine of parents and family. However, because of the importance of peer approval, they are more likely to meditate regularly with the approval of other young people, especially when the practice is conducted during the school day.

To date, more than 500,000 students across 60 countries have learned the TM program and practice it in classroom settings, where existing schools employ certified TM teachers as faculty. Research at these schools show that adding TM practice to the curriculum facilitates long-sought goals for reducing violence and disciplinary interventions, and for increasing self-regulation, cooperative behavior, and grade point average. It is described as transforming schools into more peaceful and welcoming environments for students, teachers, and administrators.

Here are additional suggestions with respect to ADHD, Autism Spectrum, and other disorders associated with youth:

- Though TM practice is *with eyes-closed*, there is no need to 'stop fidgeting and sit still.'
- Students with ADHD may tend to fall asleep as they relax deeply during TM practice. Falling asleep during TM practice is considered part of correct practice, due to settling of the mind and natural needs of the body to gain the rest of sleep at that time. On the other hand, additional attention may be required by TM teachers to avoid tendencies toward impatience and frustration that can lead to concentration (not part of TM practice).
- In lieu of school-based programs, beginning TM practice as a family helps ensure social support for young people to invest in regular practice.
- Children and teens benefit when their parents can serve as a non-anxious presence, and there is evidence that many children's greatest wish for their parents is that they be happier and less stressed. We thus recommend TM practice to parents of children and teenagers who are struggling, even if their children do not want to meditate.
- We recommend that older children and teens be introduced to the TM program and invited to learn as long as they are willing to give meditation a good try—which we suggest means every day for three months, usually twice daily.
- For teens, we recommend presenting the TM program in an engaging way, such as

videos by the David Lynch Foundation (www.davidlynchfoundation.org/research.html). We also suggest helping teens think through how it fits into their schedule (e.g., during study hall or right before dinner) and that attempts be made to gain their 'buy-in' before starting. Helping them talk about benefits they notice in themselves (better grades, getting in trouble less) facilitates taking ownership themselves for regular TM practice.

Other Chronic Psychiatric Disorders. Major depression and related mood disorders are typically treated with psychotherapy and antidepressants, often two or more agents to target specific symptoms such as sleep disturbance and irritability. Many patients respond to treatment and experience a full or partial remission of symptoms. There is some research showing TM practice helps normalize moods and reduces the frequency/intensity of bipolar episodes and depression.

An early application of the Transcendental Meditation program began in 1972 at an in-patient long-term psychiatric facility serving individuals with chronic schizophrenia (Glueck, Stroebel, 1975; Stroebel, Glueck, 1984). These patients were helped remarkably by TM practice, showing quantifiable improvements on several indicators. However, as would be expected, serving this population presented special challenges. As a general guideline, the greater the illness the greater attention/care required for success. If TM teachers are part of the therapeutic milieu in an institutional setting, any patient population can benefit from the TM technique as an adjunct to clinical treatment. For this patient population, here are specific suggestions:

- It is strongly recommended that individuals with chronic mental illness be instructed in the context of integrated treatment by professional clinical staff that includes extensive monitoring and support—along with at least weekly 'checking' by a TM teacher.
- In cases of psychiatric illness, the duration of a patient's session of TM practice and other aspects need careful monitoring by the TM teacher. Clinicians who are not TM teachers should be informed of changes but avoid making adjustments in the practice.
- In cases of decompensation, increased agitation, reduced self-control, or a decline in adaptive functioning, the TM teacher should be involved to help reestablish correct understanding and practice of the TM technique.
- "The effective implementation [of the TM program] depends to a large extent on the training and motivation of the healthcare administration… (Barnes, 2015, p. 78)."

Summary and conclusion

The wide range of documented mental and physical health benefits strongly suggests that Transcendental Meditation practice accesses quite fundamental levels of mind and body to facilitate natural healing. The most pervasive clinical problems—stress, anxiety, insufficient sleep—contribute strongly to the development of other disorders (e.g., mood and chemical use disorders). The evidence that TM practice lowers stress and anxiety and improves sleep is quite significant for prevention and treatment of both mental and physical health conditions.

Certified Transcendental Meditation® teachers at your local TM center are a major resource for consultation and practical support. They can research further any questions about the TM program arising as you support your clients/patients. Also, the online TMHPP Referral system and healthcare professionals' network are useful services.

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First Episode Psychosis and Prodromal Psychosis: Risk Factors and a Review of Clinical Assessment Strategies

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Abstract

Psychotic episodes result in a major disruption in an individual's life and often result in a subsequent lifetime of significant functional impairment. Over the past one hundred years there has been a steady unraveling of the numerous risk factors that can contribute to an individual experiencing a first episode psychosis (FEP).

This article explores the many diverse risk factors that can contribute to a FEP and reviews Prodromal Psychosis (PP), the pre-psychotic period which typically precedes the onset of a FEP. It also outlines a comprehensive approach to clinical assessment for the medical psychologist when evaluating a patient with suspected PP or FEP. This includes the role of history taking, interviews, laboratory and other medical assessment as well as psychological/neuropsychological screening and testing.

Understanding the biological and psychosocial risk factors involved has the potential to minimize their contribution to the development of a FEP through elimination, where possible, or dampening the detrimental impact. Once an individual has a FEP rigorous clinical assessment and aggressive comprehensive treatment may greatly impact long term prognosis.

***Introduction**:* It has been estimated that in the United States approximately 100,000 adolescents and young adults have a first episode psychosis/FEP annually[1]. The peak onset is between 15 and 25 years of age. An evolving literature has consistently demonstrated that comprehensive early intervention improves outcomes over the following two years as compared to treatment as usual[2]. Arguably, intervening to reduce modifiable risk factors well before the onset of the FEP has the potential to delay and possibly prevent the processes that ultimately converge to cause brain structural and functional changes that present as a FEP. Recognizing non-modifiable risk factors can inform mental health monitoring, family and patient psycho-education and health promoting interventions in an attempt to delay or minimize FEP symptoms. Additionally, shortening the time to the diagnosis and treatment of a FEP, which was a median of 74 weeks in the NIMH RAISE study, could minimize the neurotoxic effects of untreated psychosis and improve long term outcomes and functioning[3&4].

A comprehensive assessment and differential diagnosis in patients presenting with FEP at the point of entry into the health care system can clarify the etiology of the FEP, and allow for the aggressive interventions which are appropriate to maximize long term recovery and function. Additionally, identifying individuals who are in the pre-FEP prodrome phase,

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patients with so called “Prodromal Psychosis”, creates the possibility to intervene by minimizing modifiable risk factors and beginning the lifelong process of implementing a wide range of interventions to promote neuroplasticity to maximize brain health. These early interventions may slow down or prevent progression to a FEP.

A FEP can be the doorway to a wide range of psychiatric diagnoses, including psychotic disorders, affective disorders, severe personality disorders, post traumatic stress disorder, and a brief psychotic disorder. Throughout this article “schizophrenia” and “psychotic episode” are used interchangeably, with the understanding that the actual etiology of a psychotic episode includes a lengthy list of diverse causal factors. This is due to the extensive literature that exists in schizophrenia research, in contrast to the limited research on the broader topic of FEP.

History: Psychosis has been described in human culture for thousands of years. In India, Indian snakeroot (from the plant Rauwolfia serpentine, which contains the dopamine depleting molecule reserpine) was used to treat “insanity.” In late 19th century Europe, the most common etiology of psychosis was tertiary syphilis[5]. Although in the United States today syphilis rarely is the cause of psychosis, this infectious etiology paved the way for the long list of infectious diseases that can be causal to psychotic episodes. Emil Kraepelin (1856-1926) was the first to differentiate psychosis seen in schizophrenia from psychosis in bipolar disorder. Sigmund Freud “. . . was wary of treating psychotic patients, believing them to be beyond his methods, though he did hazard a wild guess that paranoid schizophrenia was the result of suppressed homosexual impulses.”[6]

In 1935, a psychoanalyst from Germany, Frieda Fromm-Reichmann, arrived at the Chestnut Lodge in Rockville, Maryland. In 1948 she wrote: “The schizophrenic is painfully distrustful and resentful of other people due to the severe early warp and rejection he encountered in important people of his infancy and childhood, as a rule, mainly in a schizophrenogenic mother.”[7] Reductionist psychodynamic formulations of this kind are no longer considered sufficient to explain the onset of a FEP. However, there is a growing appreciation of the role of psychosocial factors in furthering a better understanding of schizophrenia and related psychotic conditions.

In 2006, Rasmussen reviewed linkage studies in Sweden[8]. He reviewed data on over 700,000 subjects born between 1973 and 1980 who were followed from birth up to 2002. In fully adjusted analyses, the risk of schizophrenia in offspring was 4.62 times higher when fathers were 50 years or older at conception compared to fathers 21-24 years old. De novo mutations in the germ cells of older fathers may play a causal role in the etiology of some cases of schizophrenia.

A 1992 paper by Kety and Ingraham confirmed that a genetic diathesis for schizophrenia was important by studying pedigrees of adoptees and demonstrating that biological relatives are ten times more likely to have schizophrenia than their adoptive families[9]. Genetic vulnerability has been extensively studied, and over 100 different genes are currently believed to contribute to the risk of schizophrenia.

In the general population, approximately 1% of individuals will develop schizophrenia during their lifetime. In biological relatives of individuals with schizophrenia, the incidence of developing this illness increases to 9% in full siblings, 16% in non-identical twins, 40% if both parents have schizophrenia and 50% in identical twins.

It has been established that during the prenatal period, human brain development is active and complex. Neuronal differentiation and migration is most active during this time, and the

brain's transcriptome as well as epigenetic modifications impact how the circuitry of the brain will ultimately be constructed.

Neurotransmitters and Psychosis: Up until the 1950s a large population of persistently psychotic individuals in the United States were institutionalized sometimes for the remainder of their lives at state psychiatric hospitals. In 1952 in France, an astute surgeon Henri Laborit observed that a new drug, chlorpromazine, helped calm patients post- operatively. He shared his observations with his psychiatric colleagues, and by 1954 chlorpromazine was being used in the United States to treat chronically psychotic patients, sometimes with complete remission of their most noticeable symptoms. This led to the first wave of de-institutionalization of the chronically mentally ill in the United States. It was soon discovered that chlorpromazine's effectiveness in reducing psychotic symptoms seemed to be related to its property of blocking dopamine receptors in a specific part of the human brain. Hence was born the dopamine hypothesis of psychosis. Dopamine-2 receptor antagonism remains the primary pharmacological target of most antipsychotic drugs today.

However, in 1988 clozapine, a complex drug which had effects on many different types of brain receptors, including dopamine-2 and some of the serotonin receptors, was FDA approved—this resulted in a second wave of de-institutionalization. Clozapine was another paradigm shifter, as it became clear the neurochemistry of psychosis was far more complicated than had been hoped. Today, a diverse range of molecular targets are being studied in attempts to treat psychotic symptoms more effectively, and with the understanding that the neurophysiology of psychosis is quite complex. Current targets of research include multiple neurotransmitter systems including dopamine, serotonin, acetylcholine, glutamate, glycine, GABA and others.

Psychosis and the Fourth Dimension: In 1987, Daniel Weinberger wisely hypothesized that "the cause of schizophrenia is no longer present when the symptoms appear." As we delve deeper into the etiology of psychotic episodes, it has become clear that "time," the fourth dimension, is a central player in the progression of neuronal events that converge on a FEP. Genetic and epigenetic pre-natal modifications are associated with the later development of schizophrenia. Fetal exposure to infections is also associated with an increased risk of schizophrenia in offspring, including infections with the influenza virus, the herpes simplex virus, poliovirus, rubella and the protozoan toxoplasmosis[10]. Additionally, preeclampsia causing fetal hypoxia has been shown to increase the risk of schizophrenia nine-fold.

Substantial data exists supporting an increased risk of schizophrenia as a result of gestational starvation. During the well documented Dutch Hunger Winter of 1944-1945, which resulted from a German blockade of food and supplies to the Dutch citizens, it was determined that gestational starvation resulted in a relative increased risk of schizophrenia between 2.2 and 2.6[11].

Additional pregnancy related risk factors that increase the risk for schizophrenia in the offspring include abnormal maternal thyroid functioning, and complications during labor and delivery.

Cannon et al. performed a retrospective review of individuals who developed schizophrenia, looking for symptoms that predated the first episode of psychosis[12]. Their analysis revealed a history of anxiety, delayed onset to ambulation, and having poor verbal comprehension as consistent symptoms predating first episode psychosis.

Postnatal events increasing the risk of a psychotic episode: A large number of developmental occurrences, from birth until the onset of an FEP can increase the propensity

for psychosis. These include postnatal brain insults, environmental toxins, brain infections and substance abuse.

With the increased legalization of cannabis, either medically and/or recreationally in many states, the question is often asked about any evidence-based association between cannabis usage and psychosis. The answer, not surprisingly, is complicated. There are at least 80 unique cannabinoid molecules in cannabis plants. Depending on the genetic hybrid that the leaf is obtained from, the types and amounts of each cannabinoid can vary widely. To keep it simple, the two primary cannabinoids are tetrahydrocannabinol (THC) and cannabidiol. The human body has at least 2 endogenous cannabinoid receptors, CB-1 and CB-2, as well as at least 5 endogenous cannabinoids, the most common one is anandamide. Heavy usage of THC during brain development has been consistently correlated with an increased risk of psychosis as well as an enduring lowering of an individual's IQ. In contrast, cannabidiol is associated with an anti-psychotic effect as well as having other health promoting properties[13]. The cannabinoid receptors/ligands have an important role in maintaining neuronal homeostasis by modulating the release of various neurotransmitters [14].

When an adolescent or young adult uses large amounts of cannabis (especially THC), it directly impacts the homeostasis of brain physiology during a critical time of neuroplasticity/brain development. Andrade demonstrated that the onset of psychosis was 2.7 years earlier in cannabis users compared to non-users[15]. This was in contrast to alcohol users where the onset of psychosis was not significantly earlier compared to non-users (earlier by 0.3 years). One third of patients that develop a FEP are cannabis users. Additionally, Andrade showed that increasing cannabis use increased the risk of psychosis. Ten studies showed a dose-dependent increase in the risk of developing psychosis. A median level of cannabis use doubled the risk of psychosis (OR = 1.97). Cannabis users in the top 20% of amount used increased the risk 3.4 times. The highest level cannabis users increased risk 3.9 times.

Synthetic cannabinoids, as well as bath salts and other "designer drugs" have been shown to be quite neurotoxic. Over the past 10 years there has been a significant increase in the onset of a FEP in individual's abusing these synthetic drugs. It is not clear if the psychosis results from an underlying propensity towards psychosis from risk factors that already exist, or if the psychosis is fully attributable to these drugs[16-20].

Converging towards or away from a first episode psychosis/FEP: It has become clear that a large heterogeneity of risk factors can collude to increase the likelihood for an individual to develop a FEP, usually between the ages of 15 and 25 years. The initial hypothesis that a single gene would predict the risk of psychosis has long been laid to rest. However, genetics clearly contributes to the relative risk of developing psychosis. By impacting the neurodevelopment of the brain, genetics may create a greater vulnerability, or a protective effect, which can be amplified by environmental events and exposures. A recent meta-analysis which evaluated the associations between non-genetic risk factors for schizophrenia and schizophrenia spectrum disorders identified 98 potential associations. The authors concluded: "Despite identifying 98 associations, there is only robust evidence to suggest that cannabis use, exposure to stressful events during childhood and adulthood, history of obstetric complications, and low serum folate level confer a higher risk for developing schizophrenia spectrum disorders[21].

Jongsma et al. determined that there were 2,774 individuals with new onset psychotic disorders when examining a population of 12.9 million person-years at risk in 17 settings across 6 countries[22]. The European Network of National Schizophrenia Networks Studying Gene-Environment Interactions multisite international incidence study took place from

May 1, 2010 through April 1, 2015 in England, France, Italy, the Netherlands, Spain and Brazil. When they examined the number of first episode nonorganic psychotic disorders, there was a crude incidence of 21.4 episodes per 100,000 person-years. Significantly, there was an 8-fold variation in all psychotic disorders, with a low of 6.0 per 100,000 years in Santiago, Spain to a high of 46.1 per 100,000 years in Paris, France. An increased incidence of psychotic disorders was also correlated with male sex, younger age, racial/ethnic minorities and areas with a lower percentage of owner occupied houses.

Similarly, a broad array of factors may serve to protect against the onset of a first episode psychosis. The current challenge is to educate about risk factors that can be modified and intervene early and aggressively when prodromal symptoms surface. With the well-established science of neuroplasticity and our evolving understanding of epigenetic factors that, during an individual's life, can literally turn on or off gene transcription which can have a significant impact on the brain's neurocircuitry, we continue to learn more and more about the multimodal treatment interventions that should be an essential part of the treatment of PP and a FEP.

Individuals with schizophrenia suffer from symptoms of various domains, including cognitive, negative, affective as well as positive (hallucinations and delusions) symptoms. Current medications used to treat schizophrenia target primarily the positive symptoms, and even in this regard up to 1/3 of patients retain some degree of psychotic symptoms when adequately treated. Despite vigorous attempts to develop medications to treat the disabling cognitive and negative symptoms of schizophrenia, to date there is no FDA approved medication to treat these symptoms. Non-pharmacologic approaches increasingly demonstrate benefits in all symptom domains.

Integration of Biological and Psychosocial Perspectives on Etiology and Treatment: While orthodox psychodynamic views on etiology and treatment lack clear empirical validation studies support the importance of psychological and other psychosocial factors, notably the role of stressors in increasing risk and precipitating onset of symptoms, for a comprehensive understanding of the clinical needs of patients with schizophrenia and related psychotic disorders and the utility of a broad range of psychotherapeutic interventions [23,24]. Moreover, there is good support for the value of cognitive-behavioral therapy in reducing the severity and impact of persistent psychotic symptoms in schizophrenia[25] There is also a growing appreciation of the critical role played by other psychosocial interventions in promoting better outcomes including functional recovery: Family psychoeducation, Illness Management Recovery/IMR, Social Skills Training/SST, Assertive Community Treatment/ACT as well as supervised housing and supported education and employment[26].

Therefore, biological and psychosocial influences germane to etiology and intervention should be viewed as complimentary perspectives which, in tandem, can facilitate improved outcomes. Employing both perspectives in assessment and treatment is in keeping with the well-established Stress-Diathesis model for understanding the development of psychiatric illness and its treatment[23].

The Prodrome: Identifiable symptoms and functional changes that precede the FEP: Prodromal Psychosis (PP) is referred to as Attenuated Psychosis Syndrome in the DSM-5. In this manual Attenuated Psychosis Syndrome is listed as a condition warranting further study and is not considered a validated diagnosis.

PP generally refers to the insidious onset of subtle alterations in mental status characterized by the development of a constellation of heterogeneous signs and symptoms, beginning as early as the start of adolescence and as late as the young adult years, which do

not meet criteria for a clear-cut FEP. PP is characterized by a variable course. Symptoms can sometimes remain stable or even improve over time, progress slowly in frequency, duration, severity and/or number and, in some instances, advance fairly quickly to an FEP over a period of a few months following initial onset.

PP is considered a major risk factor for the eventual development of a FEP within months to a few years of diagnosis. Conversion rates vary widely but in some studies about one in three patients develop a FEP within three years of known symptoms[27]. In some cases of PP which progress, patients develop mental health conditions other than a FEP including Bipolar Disorder, Depressive Disorders, Social Anxiety Disorder and Obsessive- Compulsive Disorder[28].

Numerous factors have been identified which elevate risk for a transition to a FEP: Familial/genetic diathesis for psychotic illness; schizotypal personality traits; pre-existing, concurrent and/or progressively worsening neurocognitive impairment, persistent "heavy" substance abuse (especially alcohol, amphetamines, cannabis and/or hallucinogens); greater severity, longer duration and recent worsening of "positive" and "negative" symptoms; a worsening functional decline including social impairment/withdrawal[27-32].

Alterations in mental status in PP are less frequent, persistent, severe and disruptive to everyday functioning than is typically seen in a FEP. There is usually concomitant subjective distress and relative preservation of insight/skepticism regarding one's symptoms which also differentiate PP reasonably well from a FEP. As well, changes in comportment are generally less apparent to significant others than in a FEP, at least in the early phases of PP. However, the boundaries between advanced PP and a FEP are not well defined.

Prodromal Psychotic symptoms typically involve a mix of relatively non-specific and specific signs/symptoms[33].

1. Nonspecific Signs and Symptoms: Low stress tolerance, anxiety, (includes social anxiety), obsessive-compulsive symptoms, depressed and/or irritable mood, heightened feelings of alienation/estrangement and related self- identity and "existential" concerns as well as vague somatic complaints.

2. Specific signs and symptoms: This usually involves a mix of sub-syndromal/ sub-threshold "positive" and "negative" symptoms.

    - Positive: Odd/peculiar feelings, thoughts, beliefs and preoccupations: Transient ideas of reference, increased mistrust/ suspiciousness, grandiosity, depersonalization/derealization, evanescent changes in auditory, visual, somatic, gustatory and/or tactile sensation/perception

    - Negative: Amotivation/avolition, apathy, blunted affect, anhedonia and social disengagement/detachment.

Neuro-cognitive symptoms of generally mild severity frequently co-occur with this constellation of symptoms: Decreased attention/concentration—increased distractibility, forgetfulness, circumstantial and/or disorganized thinking and transitory confusion/perplexity[33]. Cognitive difficulties of this kind are fairly nonspecific and can be seen in patients with a number of neurodevelopmental and neuropsychiatric difficulties including attention deficit disorder, learning disorders and mood disorder. Therefore, in some instances these difficulties may precede the development of the PP neuropsychiatric symptoms reviewed above and worsen with their onset.

This symptom complex is eventually associated with a generally mild functional decline evident in one or more settings/situations: School, work, family/peer relationships and self-care together with a diminished quality of life.

Evaluation of a First Episode of Psychosis/FEP: Aggressively evaluating an individual with a FEP provides an opportunity to treat the etiology of the psychosis quickly and effectively. In some cases, this initial intervention can dramatically improve the functional and psychosocial quality of a patient's life.

The first task is to rule out any active metabolic, infectious, traumatic or substance induced etiology which, if treated appropriately, may rapidly improve symptoms and minimize long term impairments. Table 1 and 2 list the elements of a thorough initial evaluation of a FEP. Table 3 provides a comprehensive differential diagnosis to consider when evaluating a FEP[34].

Equally important during this initial evaluation is the collection of relevant history which can provide clues to the diagnosis. A comprehensive family history is essential, because, as discussed above, many psychotic disorders reflect a genetic vulnerability.

A thorough medical history can direct additional diagnostic testing. Speaking to family, friends or acquaintances familiar with the patient's behavior and functioning over the hours, days, weeks and months preceding the FEP provides a timeline that can greatly inform an understanding of the etiological factors involved.

A detailed history of medications, recreational drugs (legal and illicit), herbal supplements, or environmental exposures can provide essential information for serum drug levels, urine toxicology screens (immunoassays), or sending serum or urine samples for more accurate analysis by liquid chromatography/mass spectroscopy. A travel history might suggest screening for less common infectious diseases than might otherwise be overlooked. Any past medical, psychiatric and/or substance abuse, legal or interpersonal history that can be obtained early in the evaluation may save tremendous time and resources in establishing factors contributory to the onset of a FEP[35]. In particular, this should include assessment of family functioning especially the role that "high expressed emotion" and other negative psychosocial influences may play in the onset and persistence of symptoms (36).

Starting with the initial evaluation, serial mental status examinations should be obtained and recorded. Changes in levels of consciousness, agitation versus somnolence, fixed or changing delusional content, cognitive clarity versus confusion, the presence or absence of hallucinations, the type of hallucinations (auditory, visual, olfactory, or sensory), degree of cooperation, general appearance, level of self—awareness/degree of insight, judgement quality of speech, the presence or absence of mood and/or anxiety symptoms, affect, unusual behaviors, degree of disorganized behavior and thinking, the presence or absence of suicidality and homicidality all provide clues to guide the differential diagnostic possibilities. This information, along with its stability or fluidity over time, provides invaluable guidance on how to proceed with the assessment, and deciding on the most appropriate next level of treatment.

Additionally, psychological/neuropsychological testing and other psychometric assessment tools can further clarify a patient's clinical status in cases of known or suspected FEP—see below—The Clinical Utility of Psychometric Tools in the Identification of Prodromal Psychosis/PP and First Episode Psychosis/FEP.

Table 1 – Initial evaluation of a FEP[30]
Medical, neurological, psychiatric and substance abuse history
Comprehensive mental status exam
Heart rate, BP and temperature
Body weight, height and Body Mass Index (BMI)
Routine laboratory testing (Table 2)
Electrocardiogram
Brain MRI (preferred) or Brain CT – if indicated
Electroencephalogram – if indicated
Heavy metal toxicology

Table 2 - Initial evaluation- laboratory tests[30,31]
Toxicology screen (urine and +/- blood)
Complete blood count
Serum electrolytes
Serum glucose, cholesterol and triglycerides
Hepatic, renal and thyroid function tests
Calcium and parathyroid hormone
Pregnancy test
Prolactin level
Syphilis test, Lyme Disease test
HIV status, Hepatitis C screen
Additional: Vitamin B12, folic acid, thiamine, niacin, 25-OH-vitamin D

Table 3 - Differential Diagnoses of a FEP[30,31]

- Medical etiologies:
  - Delirium
  - Infectious
  - Endocrine
  - Metabolic
  - Autoimmune
  - Oncologic origin
  - Nutritional deficiency
  - Brain tumors
  - Head trauma
  - Multiple sclerosis
  - Huntington's disease
  - Wilson's disease
  - NMDA-receptor autoimmune encephalitis
  - Lyme disease (Borrelia burgdorferi)
  - Tertiary syphilis
  - Seizures
- Medication side effects:
  - L-dopa (and other anti-Parkinson's disease medications)

  - Amantadine
  - Psychostimulants (methylphenidate, amphetamine)
  - Anticholinergic medications
  - Corticosteroids
  - Ketamine
  - Medication overdose
  - Medication toxicity due to drug-drug interactions
  - Rare side effect of many prescription drugs

- Substance induced FEP – can be from drug intoxication or withdrawal:
  - Hallucinogens (LSD, psilocybin, and mescaline)
  - Stimulants (cocaine, methamphetamine)
  - PCP and ketamine
  - Heavy cannabis abuse
  - Alcohol withdrawal delirium
  - Sedative/hypnotic withdrawal
  - Bath salts
  - Spice, K2 and other synthetic cannabinoids
  - Inhalant abuse

Once a comprehensive evaluation is complete, and no clear medical, medication induced or substance use related diagnosis is determined, Table 4 lists possible psychiatric disorders that may be presenting with the FEP.

Table 4 - Possible psychiatric disorders presenting with a FEP[32]

- Brief Psychotic Disorder
- Schizophreniform Disorder
- Schizophrenia
- Delusional Disorder
- Schizoaffective Disorder
- Psychosis in Major Depression
- Psychosis in Bipolar I Disorder

The Clinical Utility of Psychometric Instruments in the Identification of Prodromal Psychosis (PP) and First Episode Psychosis (FEP): The use of psychological tests in the assessment of mental health disorders, notably psychosis, has a long and storied history in clinical psychology[37]. Over the past decade the use of psychometric assessment instruments has expanded to include the identification of PP and evaluation of the risk of this syndrome evolving to a FEP[38].

Indications for Psychological Testing: Psychological testing is not routinely indicated to establish a diagnosis of a FEP as, in many instances, this can be reliably made via the history (including information provided by credible informants regarding everyday interpersonal and executive functioning), medical examination/laboratory findings and the patient's mental status together with other information culled from clinical and/or semi-structured interviews. Also, many patients are too agitated, distractible and/or suspicious to engage in a productive manner in assessment of this kind.

Testing is most clearly indicated for those patients where concern persists about a possible initial psychotic process despite a careful medical/psychiatric assessment. Following such evaluation, clinical status can sometimes remain uncertain due to problems establishing adequate rapport with the patient. Also, the clinical presentation may be limited to relatively vague and circumscribed symptoms that are difficult to reliably identify as psychotic and/or there is a paucity of informant-based collateral data.

Early in treatment testing can help delineate symptoms which may serve to guide psychopharmacologic and other interventions- impulse control difficulties, anger/rage, paranoid, suicidal and/or homicidal thinking, etc. Testing is also a good choice to identify possible residual psychotic symptoms following treatment for a well-established FEP. Testing can be particularly useful to facilitate decision- making as to the appropriateness of a transition from a higher to a lower level of care, for example, from inpatient services to a partial hospitalization program or direct transfer to outpatient services for patients whose symptoms have improved over time but where there is concern about residual symptomatology which may precipitate relapse. In addition, testing can be of utility, subsequent to a FEP, as a means to "track" a patient's symptomatic status over time and response to treatment.

Psychological Instruments Appropriate for Clinical Use: Broad -band psychological tests commonly employed to identify a FEP include the following: Rorschach Inkblot Test, Minnesota Multiphasic Personality Inventory-2/MMPI-2, the Minnesota Multiphasic Personality Inventory- Restructured Form/MMPI-2- RF (the briefer form of the MMPI-2), Personality Assessment Inventory/PAI, Millon Clinical Multiaxial Inventory-IV/MCMI- IV and the Symptom Checklist -90- Revised/SL-90-R.

The NEO Personality Inventory-3/NEO-PI-3 should also be considered for its excellent and highly evidence-based coverage of broad domains of personality functioning which are of clear relevance to a patient's clinical status and treatment needs. However, it does not specifically include formal psychoticism scales and indices- see below.

With the exception of the Rorschach Inkblot Test, a "projective" test which involves "face to face" evaluation, these instruments are self-report measures.

These omnibus tests of psychological adjustment/functioning include scales and indices specifically pertaining to psychoticism: Psychotic experiences/symptoms- impaired reality testing, thought disturbance and paranoid thinking. These tests also contain content germane to the assessment of "negative symptoms" of psychosis: Amotivation/avolition, anhedonia, apathy, poor self-care, social alienation/detachment and withdrawal.

As multidimensional assessment tools, these tests are comprised of scales which can also provide helpful information about co-occurring psychiatric difficulties. This includes personality disorder and substance use disorder- conditions which can predispose to the development of psychotic symptoms, influence the timing of the onset of psychotic symptoms as well as a patient's particular constellation of symptoms and also impact treatment decisions and outcome. As well, these tests contain validity indices which can aid in assessing whether a patient may be overreporting or underreporting psychological difficulties including symptoms of psychosis.

Most of these tests are normed on persons eighteen years and older. It is questionable, though, whether these tests are appropriate for elderly patients especially those with known or suspected cognitive loss.

There are versions of these instruments which are standardized for use with adolescents under the age of eighteen: MMPI- Adolescent Version/MMPI-A; Personality Assessment Inventory –Adolescent/PAI-A and the Millon Adolescent Clinical Inventory/MACI. The NEO-PI-3 can be utilized with patients twelve years and older while the SCL-90-R is suitable for adolescents beginning at the age of thirteen.

These self-report measures require an at least fourth grade level of reading proficiency

and most require a fifth to sixth grade reading level. However, it is uncertain, whether patients with this limited range of reading skill possess the requisite skills to produce valid and interpretable protocols. When reading proficiency is an issue some examiners prefer bypassing this matter by utilizing the Rorschach Inkblot Test.

Selection of Test Instruments: In general, the psychoticism scales and indices of broadband self- report psychological tests which are utilized to identify a FEP show modest convergence with respect to findings. Moreover, none of these measures has clearly been shown to be consistently more accurate than others for the detection of psychotic symptoms.

Therefore, there is no "gold standard" instrument that should be routinely administered. Rather the choice of which test to employ depends on other factors. These include the psychologist's training and experience (including greater familiarity and trust with one or more instruments than others) and the patient's degree of cooperation/compliance with the assessment process. Shorter tests like the PAI are more likely to result in higher rates of adherence and some patients are more comfortable being left alone to complete a self-report inventory at their own pace than interacting directly with the psychologist with tests like the Rorschach Inkblot Test.

These instruments have a reasonably strong evidence base with respect to sensitivity to a psychotic process and ability to differentiate psychotic from non-psychotic neuropsychiatric conditions especially major depression and bipolar depression[39-42]. Some of these tests, notably the MMPI-2, have also been shown to distinguish bonafide from malingered psychosis[43].

Assessment tools of this kind are less adequate psychometrically regarding specificity, notably reliably differentiating a FEP from relatively advanced symptoms of PP. However, this is a difficult clinical judgment to make under the best of circumstances.

These tests are also limited when it comes to ascertaining the etiological basis for the patient's symptoms- clearly and unequivocally distinguishing between idiopathic psychotic syndromes- Schizophrenic Spectrum Disorder versus Major Depressive Disorder with Psychosis and Bipolar I Disorder with Psychosis as well as differentiating idiopathic psychosis from other neuropsychiatric conditions which can be accompanied, at times, by psychotic symptoms, for example, Borderline Personality Disorder, Dissociative Disorders and Post-Traumatic Stress Disorder[44,45].

They also perform less well when it comes to distinguishing idiopathic psychosis from "secondary" psychotic disorders: Substance-Induced Psychotic Syndromes and other medical factors including psychotic symptoms which sometimes accompany certain types of early stage Major Neurocognitive Disorder, for instance, Major Neurocognitive Disorder with Lewy Bodies and Frontal- Temporal Major Neurocognitive Disorder[46,47].

That said, there is evidence that some of these tests are able to discriminate Schizophrenic Spectrum Disorder reasonably well from other psychotic conditions and, in some instances, can differentiate psychotic disorders from personality disorders with associated perceptual thought disorder (48). Most importantly, the utility of these instruments in narrowing down the probable etiology of a patient's psychotic symptoms can be augmented by "testing in context" - integrating the test results with the patient's psychosocial, medical and psychiatric history, laboratory findings and mental status[49].

Assessment Strategies: Especially with "difficult to engage patients" evaluation can begin

with screening for PP employing a test like the Prodromal Questionnaire/PQ—see below. With cooperative patients and when findings, in the context of the history, suggest more widespread, persistent and severe symptoms consistent with a FEP proceeding with in-depth psychological testing is indicated utilizing one of the broad-band self- report measures cited above or the Rorschach Inkblot Test.

Principles of Test Interpretation for Assessment of FEP- Best Practices

- Accurate diagnosis of a FEP is more reliable based on findings from multiple than single scales within a particular test. More specifically, configural analysis, based on combining two or more scales, for example, the use of MMPI-2 "code-types" and/or utilizing a psychoticism index is more reliable than dependence on individual scales. Also helpful in this regard are findings from subscales, notably the Harris-Lingoes scales which are included in the MMPI-2 as well as the pattern of endorsement of "critical items" which comprise most self-report personality inventories.

- There is insufficient research support to routinely administer more than one test, for example, the MMPI-2 and another self-report inventory or employing a self-report instrument with the Rorschach Inkblot Test in an effort to enhance incremental validity. This form of validity can be defined as an increase in sensitivity and specificity with respect to accurate detection of a FEP by combining two or more tests.

  Moreover, this practice can inadvertently create resistance/non- adherence on the part of the patient, contribute to diagnostic error/uncertainty and interfere with a timely completion of the assessment. In general a "less is more" assessment approach is advised for highly unstable and hard to engage patients. This would initially involve administration of a single broad- band instrument, sometimes preceded by a screening level evaluation with a PP self-report questionnaire, when there is a question of the patient being unable to tolerate completion of a lengthier self- report test or managing a sustained interaction with the examiner in the case of the Rorschach Inkblot Test.

  At the same time once a patient is more stable and amenable to clinical assessment important diagnostic information can often be gleaned from administration of additional broad-band personality measures.

The Role of Neuropsychological Testing: Assessment specifically with neuropsychological tests should be considered when there is question of pre-psychotic cognitive impairment on a neurodevelopmental or an acquired basis, compromised neuro-cognition accompanying PP or an FEP and/or cognitive dysfunction which seems to have developed de novo soon after the onset of a FEP. Longitudinal assessment with neuropsychological tests is also an option to track changes over time following a FEP including possible improvement in a patient's neuro-cognitive status[50-52].

Screening Level Assessment for Prodromal Psychosis/PP: While broad- band self-report psychological measures can be employed to identify PP, briefer self-report screening tests specific to the mental status changes/symptomatology which characterize this neuropsychiatric syndrome have evolved as the standard of care[38]. One of the most widely studied and promising of these screening instruments, with respect to accurate detection of PP, is the Prodromal Questionnaire[53]. Other screening tests include the PRIME Screen and the Youth Psychosis at Risk Questionnaire/YPARQ-B. These tests are comprised of item content germane to the accurate identification of sub-threshold psychotic experience and associated symptoms: Perceptual abnormalities, atypical thought content, paranoid thinking and attenuated "negative" symptoms.

Screening for PP is indicated for any patient where there is concern about symptoms of this condition as PP is usually more difficult to identify than a FEP when relying entirely on the history, findings from the mental status examination and other aspects of the clinical interview. As well, patients with suspected PP are generally more easily engaged than patients with suspected FEP and better able to tolerate and accurately respond to psychometric assessment. Most of these screening tests can be successfully administered and scored in less than twenty minutes.

These instruments demonstrate good to sometimes excellent Sensitivity- Negative Predictive Efficiency and, hence, significantly increase rates of detection of PP. However, in most instances, they demonstrate only fair Specificity-Positive Predictive Efficiency. Therefore, scores which fall below the cutoff for PP rule out this condition with a high degree of certainty[54]. Scoring above the cutoff can, unfortunately, generate a relatively high number of false positives.

Consequently, the lower Positive Predictive Efficiency of this class of assessment tools can result in iatrogenic effects- stigma, increased stress/turmoil for the patient and family and premature intervention including treatment with anti-psychotic medication.

As is the case generally with psychiatric screening tests, PP measures should not be considered “stand alone” diagnostic assessment tools. In particular, these tests have not been shown to reliably distinguish PP from patients in the early phase of a FEP. Their clinical utility can be bolstered by grounding results in data from the family and personal history together with findings from the mental status, interviews and laboratory studies.

Psychometric Prognostic Interviews: A screening level PP questionnaire is best utilized as a first tier assessment strategy. Following a “positive screen” consideration can be given to further assessment with a “psychometric prognostic interview,” for example, the Comprehensive Assessment of At Risk Mental State/CAARMS or the Interview for Psychosis Risk Syndrome/SIPS. These semi-structured interviews have been found to correlate reasonably well with findings from PP self-report screening tests (55).

A meta-analytic review of this group of instruments with respect to the identification of PP and ability to predict conversion to FEP notes good to excellent Sensitivity - Negative Predictive Efficiency- “screening negative” for PP ruled out the subsequent development of a FEP with a high degree of certainty. However, Specificity- Positive Predictive Efficiency was problematic- “screening positive” for this syndrome resulted in fairly high rates of false positives[55]. Moreover, these interview schedules can be time consuming to administer and result in elevated rates of patient non-compliance and the risk of evanescent worsening of symptoms.

Assessment of Functional Decline/Disability: None of the assessment tools reviewed above are specifically designed to evaluate the evolving functional decline which typically accompanies PP and a FEP[56,57]. Therefore, psychometric evaluation can be supplemented by the use of scales of everyday functioning, notably the Global Functioning Social and Role Scales[58].

Evaluation for a suspected concurrent functional decline can also be extended to include self- report and informant- based measures of everyday executive functioning, like the Behavior Rating Inventory of Executive Function/BRIEF and the Comprehensive Executive Function Inventory/CEFI. There are versions of these tests for use with both adolescents and adults.

Additionally, research suggests an emerging role for neuropsychological tests in the short-term and intermediate range prediction of functional disability among patients with sub-threshold psychotic symptoms[59,60].

Future Research Directions for Psychometric Assessment: Accurate evaluation of PP and a FEP would be enhanced if it could be established that one or more of the three categories of evaluative tools discussed above: Broad-band psychological tests, PP screening questionnaires and psychometric prognostic interviews are clearly superior to the others with regard to concurrent validity- ability to identify prodromal or first episode psychotic symptoms at the time of assessment and predictive validity- ability to predict outcomes, notably conversion to an FEP and in which clinical settings and patient populations.

Recent research findings suggest an important emerging role for neuropsychological tests for the prediction of a transition from PP to a FEP[59,60]. Additional research in this area should include which tests may be the most robust predictors when utilized in conjunction with one or more of the other classes of psychometric tools reviewed above.

Likewise, it would be important to ascertain what combination of these instruments might boost incremental validity in identifying PP and a FEP and predicting conversion to an FEP while maintaining good clinical adherence. In particular, research suggests "equivalent overall efficiency" in the recognition of PP using self-report screening tests or psychometric prognostic interviews[55]. Therefore, further study is needed to determine whether combining PP screening questionnaires with these semi-structured interviews augments incremental validity in a clinically meaningful way—significantly improves identification of PP over and above the accuracy achieved by using a brief and easily tolerated self-report questionnaire.

Additional research is also warranted to establish the optimal cut- off scores for PP screening tests across health care settings and patient populations and whether sensitivity-specificity can be strengthened by incorporating indices of subjective distress and related constructs into these instruments[54].

It is also important to elucidate which psychometric tools singly (but more likely in combination) may be best at identifying a concurrent functional decline and predicting an emerging negative change in everyday functioning among patients with PP and a FEP.

Lastly, it would be useful to ascertain how non-standardized clinical interviews—the current standard of practice in most clinical settings—might most productively interface with the other assessment methods reviewed above to improve diagnostic accuracy and facilitate better treatment outcomes.

Patient and Family Psychoeducation: The potential benefit of psychometric test consultation for patients with presumptive PP symptoms or a suspected FEP can be bolstered by educating the patient and family as to the reasons for this additional assessment. When feasible, this can supplemented by having the consulting psychologist further clarify the nature and scope of the evaluation prior to a final decision about proceeding with screening level and/or more in-depth psychometric testing.

During feedback session (s) to review assessment findings/recommendations families can better appreciate the patient's clinical situation and treatment needs based on the normative data generated by psychological/neuropsychological tests- how the patient compares with persons with similar demographic profiles with respect to neuro-cognitive status, traits and symptoms.

DISCUSSION: A patient presenting with a FEP should be treated as a medical emergency. Failure to identify and aggressively treat many reversible etiologies can result in lifelong significant impairments, and even death. Psychosis, as with all high stress and chronic stress experiences, is toxic to the brain and the longer a psychotic episode, or chronic stressor remains untreated, the poorer the long-term prognosis.

Additionally, the longer a FEP persists without adequate diagnosis and treatment, the greater the likelihood of a poor response to treatment and a greater likelihood of future relapses. In the case of schizophrenia, negative symptoms and cognitive decline increase in severity when first onset psychotic symptoms are poorly controlled.

To maximize long term function and minimize a trajectory towards disability, early treatment should involve a range of psychosocial interventions tailored to the needs of the individual case in addition to psychopharmacology. These may include cognitive-behavioral and supportive psychotherapy, family psychoeducation, case management, strategies for stress reduction, healthy lifestyle changes: Good sleep hygiene, smoking cessation, aerobic exercise, substance abuse treatment and the development and maintenance of meaningful and supportive relationships with treaters. Such interventions may help to reduce dependence on medication, enhance compliance and a better quality of life.

Improving our recognition of the prodromal phase that commonly precedes a FEP allows for the possibility to intervene even earlier by decreasing modifiable risk factors and psychosocial stressors.

The patient should also be monitored closely, with regular ongoing psychotherapy visits ranging from once a week to once a month, looking for early signs of decompensation. An increase in treatment intensity with various modalities can occur as soon as a functional decline is detected. When the decompensation includes progression to frank first episode psychotic symptoms, such as hallucinations and delusions and/or worsening disorganization of behavior and thinking, antipsychotic medication can be started well before a more severe psychosis occurs.

Although time and resource intensive, an aggressive assessment at the onset of a FEP, or during the prodromal phase is likely to have a positive outcome on an individual's long-term functioning: Socially, psychologically, interpersonally, occupationally, and medically. As well as improved quality of life for the individual, overall health care cost and utilization are likely to decline. With the brain's inherent capacity for neuroplasticity, synaptogenesis, and the epigenetic ability to change gene expression throughout our lives, early interventions and treatments hold the potential for increased function and quality of life.

CONCLUSION: Understanding the many potential etiologies for a FEP allows for aggressive early intervention once the casual factors have been clarified. Moreover, improving the ability to identify individuals in the prodromal phase may further decrease symptom severity and progression. Early intervention minimizes toxicity to the brain and can improve short and long term everyday functioning. Prompt intervention with medications and psychosocial interventions together with ongoing routine monitoring can have a significant positive impact on a population of individuals who traditionally have become increasing disabled over time following a FEP.

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Medication/Substance- Induced Mild Neurocognitive Disorder/MND: A Review for Medical Psychologists

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Abstract

Medication/Substance—Induced Mild Neurocognitive Disorder is a high base-rate neuropsychiatric syndrome seen in mental health and chemical dependency settings. This article reviews the diagnosis of this condition for medical psychologists It also addresses the following related topics: Reliability- stability of diagnosis, prevalence, outcome/prognosis, co-occurring neurodevelopmental, medical and neuropsychiatric disorders and the role of psychological/neuropsychological testing for differential diagnosis and treatment planning. Also discussed are over-the- ounter/OTC preparations, frequently prescribed medications and drugs of abuse/dependence which are implicated in the development of this type of Mild Neurocognitive Disorder. Recommendations are made to enhance clinical practice with patients with this neuropsychiatric condition

Introduction

Mild Neurocognitive Disorder/MND is defined in DSM-5 as a less severe and disruptive form of acquired cognitive impairment referable to the effects of one or more medical and/or medication- substance related factors (Blazer, 2013). It is considered a heterogeneous neuropsychiatric syndrome with respect to etiology, onset, symptomatology, course, outcome/prognosis and psychological/neuropsychological test profile (Sachdev, Blacker, Blazer, Ganguli, Jeste, Paulsen& Peterson, 2014).

DSM-5 recognizes eleven discrete etiologies for the development of MND. In addition, this diagnosis can be referable to two or more of these etiologies- termed Mild Neurocognitive Disorder Due to Multiple Etiologies or designated as “unspecified” when there is insufficient evidence for one or more underlying causal factors.

This article provides an overview of the diagnosis of Medication/Substance- Induced Mild Neurocognitive Disorder for medical psychologists. It reviews the following topics: Reliability-stability of diagnosis, prevalence, outcome/prognosis, co-occurring medical, neurodevelopmental and neuropsychiatric disorders and the role of psychological/ neuropsychological testing for purposes of differential diagnosis and treatment planning. Also addressed are over-the-counter preparations, commonly prescribed medications and

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illicit substances which have been implicated in the development of this type of MND. Recommendations are outlined to augment clinical practice.

The Diagnosis of DSM-5 Mild Neurocognitive Disorder/MND: The description of MND in DSM-5 includes a "modest" alteration in intellectual functioning from baseline status which involves at least one cognitive domain: Attention/concentration, memory, language processing, visuo-spatial abilities and/or executive functioning based on patient and/or informant report. The diagnosis also depends on evidence of "modest impairment" in intellectual functioning ascertained by the findings of a screening level cognitive assessment or a more in-depth battery of psychological/neuropsychological tests.

The decrements in MND are discrepant with the patient's educational and vocational attainment. For example, a highly regarded certified tax accountant in her sixties begins to struggle completing routine tax returns in an accurate and timely manner and is referred by her neurologist for psychological/neuropsychological testing. Findings include relatively well maintained cognitive/intellectual efficiency except for scores on tests of anterograde-episodic memory which fall only from Borderline to Low Average limits. These results are clearly discrepant with this patient's level of formal education and vocational achievement and are consistent with a probable recent mild and delimited cognitive change from baseline when correction is made for age.

Behavioral/affective symptoms may precede, accompany or emerge soon after the cognitive change(s): Apathy, anxiety, depression, irritability and/or disinhibition (Sachs- Ericsson & Blazer, 2015).

With specific reference to Medication/Substance- Induced MND the cognitive deficits are evident beyond the phases of acute intoxication and/or withdrawal. The identified causal medication(s) and/or substance (s) and the duration and severity of use are considered sufficient to explain the acquired cognitive change. In addition, the course of the symptoms align in real time with the history of medication and/or substance use.

In many cases, symptoms stabilize, improve or at least partially remit after a sustained period of abstinence, a medication adjustment and/or following interventions aimed at treating the medical and/or psychiatric effects of use. Finally, the onset and persistence of symptoms are not explainable by the normal effects of aging or the impact of the cognitive difficulties which often accompany major mental illness (Pollak, 2016).

As is true in all cases of MND, the change(s) in cognition may, to a limited degree, disrupt the ability to perform some instrumental activities of daily living particularly those that involve increased information processing and executive functioning demands. Enhanced effort and/or implementation of compensatory strategies by the patient and/or significant others are sometimes needed to bolster everyday functioning. However, even with this support, individuals may display a somewhat reduced level of efficiency in some areas of their daily life especially performance of more complex everyday activities like medication management and finances (Lindbergh, Dishman & Miller, 2016). For instance, a middle age person with MND may become increasingly dependent on lists when shopping and/or monitoring/supervision by others when driving to unfamiliar locations.

MND can be differentiated from Major Neurocognitive Disorder (formerly termed Dementia in DSM-IV-TR) based on the number and relative severity of the impaired neuro-cognitive domains as well as the impact of the acquired cognitive impairment on everyday functioning. However, the boundaries between MND and Major Neurocognitive Disorder-mild severity are not well defined.

Reliability/Stability of Diagnosis: Prior to DSM-5 the reliability of the diagnosis of MND was problematic due, in part, to the use of disparate diagnostic criteria across research and clinical settings. The DSM- 5 definition includes several well-explained and specific criteria for MND as outlined above. This improvement in definitional clarity should enhance the accuracy of this diagnosis going forward.

Still, in some instances, it can be difficult to establish a firm diagnosis of MND. Patients with Medication/Substance -Induced MND may repeatedly acquire and lose this diagnosis depending on their medical and substance use histories and whether formal cognitive testing is employed as part of the assessment. Integrating the DSM-5 criteria with findings from a formal cognitive assessment may serve to bolster the reliability of this diagnosis (Sachs-Ericsson & Blazer, 2015).

Prevalence: In view of the broad range of possible causal factors implicated in the genesis of MND this clinical syndrome should be conceptualized as a “lifespan” diagnosis. Increased rates of Medication/Substance- Induced MND can be seen as early as the adolescent years in patients with complicated medical histories involving poly-pharmacy and/or with histories of substance abuse.

The estimated prevalence of MND in patients with substance abuse disorders ranges from thirty to as high as eighty percent (Copersino, Fals-Stewart, Fitzmaurice, Schretien, Sokoloff & Weiss, 2009). Older adults with histories of major mental illness, multiple medication use and substance abuse may have one of the highest rates of Medication/Substance- Induced MND of all clinical groups (Mackin & Arean, 2009).

Rates across the age range, however, may be inflated when patients are assessed prematurely while still in the acute or residual phases of intoxication or withdrawal and/or have significant co-occurring symptoms of major mental illness. On the other hand, acute or residual symptoms of withdrawal may obscure significant cognitive change.

Despite its relatively high prevalence Medication/Substance-Induced MND is frequently under recognized and poorly documented in chemical dependency and other health care settings due to an emphasis on detoxification and treatment, the low reliability of self- report of cognitive symptoms based on clinical interview and the underutilization of psychological/neuropsychological testing in many inpatient and residential treatment settings (Copersino, Fals-Stewart, Fitzmaurice, Schretlen, Sokoloff & Weiss, 2009).

Failure to identify and address the presence of MND among patients with substance abuse disorders is associated with several adverse consequences: Lower rates of treatment adherence, reduced motivation to change, decreased insight/greater denial of illness and poorer treatment outcomes (Copersino, Fals-Stewart, Fitzmaurice, Schretlen, Sokoloff & Weiss, 2009). Additionally, under-recognition results in failure to consider the need, in some instances, for more specific and specialized interventions including a trial of cognitive rehabilitation.

Outcome/Prognosis: The effects of medication and/or substance use on neuro-cognition can vary considerably depending on the factors involved in a particular case: Age of onset, chronological age (frequency, severity and persistence of adverse effects is greater among older adults), type, potency and number of medications and/or substances consumed and severity and duration of use including whether there is a history of sustained periods of abstinence. Other relevant variables include neurodevelopmental status, pre-existing acquired cerebral dysfunction (especially recurrent head trauma), the presence and severity of co-occurring medical and mental health conditions and individual differences in cognitive reserve/resilience.

Outcomes are variable for patients with Medication/Substance -Induced MND. They can involve partial or complete reversibility to baseline neuro-cognitive status, long term stability- lack of progression without a return to baseline status and slow progressive worsening of cognitive change over time. Over a several year period, partial or complete reversibility or a persistent negative change in neuro-cognitive functioning without a return to baseline are the most frequent outcomes assuming appropriate medical and/or psychiatric intervention and sustained abstinence from the offending medications and/or substances.

On the other hand, a gradual deterioration in neuro-cognition, accompanied by a further decline in ability to perform some instrumental activities of daily living, can sometimes occur resulting in an eventual diagnosis of Major Neurocognitive Disorder. This unfortunate outcome is associated with multiple substance use (including drugs with high neuro-toxicity) and persistent consumption with few, if any, sustained periods of abstinence especially after the age of fifty. Ongoing poly-pharmacy for co-occurring medical and/or psychiatric conditions can also be contributory. This is exemplified in cases involving an initial diagnosis of MND in middle age but which does not lead to any improvement in the patient's pattern and severity of substance use. This results in more widespread and pronounced cognitive deficits and increased problems managing one's everyday affairs with aging consistent with Major Neurocognitive Disorder.

Co-occurring Conditions: There are a number of neurodevelopmental, medical and neuropsychiatric conditions which can co-occur with Medication/Substance Induced MND. These conditions often complicate the cognitive status of patients with this form of MND and can negatively impact outcome. Concurrent treatment of one or more of these conditions may contribute to a better prognosis.

- **Neurodevelopmental:** Attention-Deficit/Hyperactivity Disorder; one or more specific learning disorders; prenatal exposure to potential neuro- toxic agents including alcohol, cannabis, cocaine and other substances of abuse; lead exposure.
- **Medical:** Nutritional deficiency, electrolyte imbalance, diabetes, metabolic syndrome, hepatic disease, pulmonary disease, renal disease, sleep disorder (especially sleep apnea), infections with direct or indirect central nervous system effects on neuro-cognition: HIV, Hepatitis C, and Lyme Disease meningitis, traumatic brain injury, seizure disorder, cerebral vascular disease, other neurodegenerative brain disease, cardiovascular disease and metastatic neoplastic disease especially when associated with paraneoplastic syndrome.
- **Neuropsychiatric:** DSM-5: Major Depressive Disorder, Bipolar Disorder, Schizophrenia Spectrum and Other Psychotic Disorders, Anxiety Disorders, Obsessive- Compulsive Disorder and Posttraumatic Stress Disorder.

Role of Psychological/Neuropsychological Testing: Psychometric testing is the most reliable diagnostic method for assessing neuro-cognitive status and the functional implications of mild cognitive change (Scott, Ostermeyer & Shah, 2016). That said, the utility of psychological/neuropsychological testing in establishing a diagnosis of MND and medication/substance- induced MND in particular has been hampered by the lack of a consensus regarding a standardized—"Gold Standard" test battery and the use of varying thresholds-cut-offs for identifying impaired performance across a range of psychometric tests. As well, the relatively high base rates of Below Average and Impaired range scores which accompany Normal aging, even among some persons with presumptive Above Average neuro-cognitive pre-morbid baselines, has contributed to the problem of diagnostic accuracy leading to an elevated number of "false positive" diagnoses (Binder, Iverson & Brooks, 2009).

The value of this diagnostic approach can also be undermined by an incomplete and/or unreliable neurodevelopmental, medical-neurologic, psychiatric, medication/substance use, educational and/or occupational history. In particular, an accurate and comprehensive history of medication and substance use can be difficult to obtain in the best of circumstances and can be especially problematic with patients who have complicated alcohol and/or drug histories.

A proclivity to "overreport" or "underreport" symptoms as well as inaccurate reporting pertaining to possible change(s) in the ability to perform one or more instrumental activities of daily living on the part of some patients and informants can also limit the usefulness of psychometric tests employed to assess for Medication/Substance- Induced MND (Harvey & Pinkham, 2015). More specifically, a remote and/or recent history of substance misuse is associated with inaccurate accounts by patients of their neuropsychiatric difficulties (Goldberg, Garakani & Ackerman, 2012). Problems with inaccurate reporting can, in turn, contribute to difficulties establishing an accurate pre- morbid neuro-cognitive baseline against which to compare test findings over time. An incomplete appraisal of motivation to perform optimally on psychometric testing as well as evaluation which is initiated too early in the recovery process can also lower diagnostic accuracy.

Consequently, evaluation findings can be equivocal for a diagnosis of Medication/Substance- Induced MND even when psychometric testing is employed to elucidate a patient's clinical status. Therefore, serial testing over a several year period is sometimes needed to clarify this matter particularly for patients with complicated medical, substance use and psychiatric histories (Sachdev, Blacker, Blazer, Ganguli, Jeste, Paulsen & Petersen, 2014).

These caveats notwithstanding, there is good evidence that cognitive screening tests as well as the use of comprehensive test batteries can fairly reliably discriminate cognitively impaired from non- impaired detoxified patients in inpatient and residential care (Copersino, Fals–Stewart, Fitzmaurice, Schretien, Sokoloff & Weiss, 2009).

Test batteries have also been shown to be helpful in the identification of relatively distinct cognitive/neuropsychological profiles which are fairly good predictors of outcome/prognosis. These include profiles characterized by "single domain "severe impairment, notably impaired memory or multi-domain cognitive impairment. These profiles are associated with lower rates of reversibility and higher rates of eventual progression to Major Neurocognitive Disorder (Sachs- Ericsson & Blazer, 2015).

Psychometric testing can also be quite useful in assessing the need for compensatory strategies and lifestyle modifications as well as formal cognitive rehabilitation services (Schwarz, Roskos & Greenberg, 2014).

There are a number of psychometric tests which can be employed to help establish a diagnosis of Medication/Substance-Induced MND. These include the Wechsler Adult Intelligence Scale-IV/WAIS-IV, Wechsler Memory Scale-IV/WMS-IV, California Verbal Learning Test-3/CVLT-3 and the Delis-Kaplan Executive Function System/K-DEFS

Medication Induced MND

1. Over the Counter Preparations: A large number of over-the- counter/OTC medications employed as sleep aides contain antihistamine and/or have anticholinergic effects that can cause or contribute to MND especially among older adults. The most common example is Diphenhydramine which is included in numerous sleep agents.

2. Prescribed Medications: Many widely prescribed medications also have anticholinergic activity that can cause or contribute to MND (Fox, Richardson, Maidment, Savva, Matthews, Smithard, Coulton, Katona, Boustani & Brayne, 2011). These include anti-depressants, mood stabilizers, first and second-generation antipsychotics, antispasmodics, sleep hypnotics, anti-convulsants, anti-parkinsonian agents, muscle relaxants, and drugs to treat urinary incontinence. As is true with over-the-counter preparations older adults are more vulnerable to the cognitive impairing effects of these medications than younger persons (Campbell, Bustani, Limbil, Ott, Fox, Maidment, Schubert, Munger, Fick, Miller & Gulati, 2009; Rogers, Wiese & Rabheru, 2008).

Substances of Abuse/Dependence

1. Alcohol: There is a substantial literature attesting to the pernicious long-term effects of excessive and protracted alcohol consumption on multiple aspects of cognitive/neuropsychological functioning (Sachdeva, Chandra, Choudhary, Dayal & Anand, 2016; Topiwala & Ebmeier, 2018).

2. Illicit Drugs: There is fairly strong evidence for the persistent negative effects of a broad range of frequently consumed illicit drugs on numerous domains of cognitive/neuropsychological functioning.

    - Cannabis (Ganzer, Broning, Kraft, Sack & Thomasius, 2016; Harvey, 2019; Volkow, Swanson, Evins, DeLisi, Meier, Gonzalez, Bloomfield, Curran & Baler, 2016).

    - Cocaine (Potvin, Stavro, Rizkallah & Pelletier, 2014; Spronk van Wel Ramaekers & Verkes, 2013)

    - MDMA- Ecstasy: (Kalechstein, De La Garza, Mahoney, Fantegrossi & Newton, 2007; Nulsen, Fox, & Hammond, 2010);

    - Methamphetamine (Berheim, See & Reichel, 2016; Scott, Woods, Matt, Meyer, Heaton, Atkinson & Grant, 2007).

    - Hallucinogenics: The acute adverse effects of these agents on cognitive/neuropsychological functioning, notably LSD and Mescaline, are well documented (Halpern & Pope, 1999; Passie, Halpern, Stichtenoth, Emrich & Hintzen, 2008). This literature, however, does not clearly support enduring long-term cognitive effects of hallucinogenics warranting a diagnosis of MND (Halpern, Sherwood, Hudson, Yurgelun-Todd & Pope, 2005).

3. Benzodiazepines: This class of widely prescribed medications, which include the drugs Ativan and Klonopin, has well established short term and frequently reversible negative effects on anterograde- episodic memory and information processing speed (Vermeeren & Coenen, 2011). Findings have been mixed, though, as to whether long term continuous use of benzodiazepines elevates risk for persistent and irreversible MND and/or an evolution to Major Neurocognitive Disorder. The most recent study pertaining to this matter casts doubt on these outcomes even among older adults (Gray, Dublin, Yu, Walker, Anderson, Hubbard, Crane & Larson, 2016)

4. Opioids: Chronic use has been implicated in both circumscribed as well as broader cognitive/neuropsychological impairment (Baldacchino, Balfour, Passetti, Humphris & Matthews, 2012). On the other hand, ongoing use of prescribed opiates among

older adults appears to be associated with only a minimally elevated risk for premature cognitive change (Dublin, Walker, Gray, Hubbard, Anderson, Yu, Crane & Larson, 2015).

Implications for Clinical Practice

1. Medical/Neurologic Screening: In addition to a detailed history of medication and substance use and urine toxicology screen, some patients with suspected Medication/Substance- Induced MND should be considered for medical/neurologic screening to rule out possible additional cause(s) for cognitive complaints/symptoms. Referral for such screening is indicated when there is concern about recent cognitive change which is not satisfactorily explained by psychiatric influences or reliably documented medication and/or substance related causes and where the history is concerning for possible contributory influences, for example, seizure disorder, head trauma, central nervous system infection etc.

   Medical screening may include one or more of the following depending on a patient's history and clinical presentation: Neuro-imaging, sleep deprived electroencephalogram, carotid ultrasound, electrocardiogram, electrolytes, metabolic panel, complete blood count, levels of folate and vitamins B12 and D, HIV and hepatitis C screening, lipid profile, thyroid stimulating hormone level, sex hormone levels (estrogen and testosterone) and urine analysis (Langa & Levine, 2014).

   The patient's medication list should be reviewed at every medical encounter because numerous prescribers from different medical specialties may be involved in a patient's treatment and have limited, if any, knowledge of the other medications that have been prescribed. Routinely, the primary care prescriber should be reviewing the active medication list looking for medications which could be discontinued or the dosages lowered.

2. Mental Health Screening: This should involve administration of self- report measures of anxiety, mood disorder and psychotic symptoms and be embedded in the cognitive assessment given the well- established impact of a patient's mental health status on measures of cognitive/neuropsychological functioning (Trivedi, 2006; Wood & Gupta, 2017).

3. Follow-up Psychological/Neuropsychological Testing: Patients who complete baseline psychometric assessment should have follow-up testing in eighteen to twenty-four months when test results are equivocal for concerning cognitive change or align reasonably well with a diagnosis of a Medication/Substance- Induced MND. Re-assessment is especially important for patients whose test protocol is indicative of single domain- severe impairment or multi-domain change/impairment in view of their linkage to more impaired everyday functioning and progression of cognitive dysfunction over time.

   Reliably verified abstinence from all substance use for at least three months is a prerequisite for follow-up testing to reliably assess a patient's evolving neuro-cognitive status. Random urine toxicology screens that are sent for laboratory confirmation with liquid chromatography/gas spectroscopy are a reliable monitoring tool.

   Medical psychologists working with patients treated with multiple medications and/or with histories of substance abuse should advocate for the inclusion of psychological/neuropsychological testing in their work settings when questions arise about possible cognitive impairment.

4. Psychoeducation: Patient, family and staff psychoeducation, aimed at enhancing understanding of the risk factors and outcomes germane to Medication/Substance-Induced MND and the value of psychometric testing with regard to diagnosis and follow-up assessment should also be an integral component of assessment and treatment.

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THE POST-OPIOID ERA: A CALL TO MEDICAL PSYCHOLOGISTS

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Acknowledgements

This document has significant symbolic meaning. I have spent a career in pain medicine and various pain management enterprises. I have observed the full range of pain services from when psychological and cognitive interventions were cornerstones in pain treatment, and then to when medical interventions and opioid analgesics became central. Now, the pendulum is swinging back to where the value of psychological intervention is understood essential in dealing with the consequences of the opioid epidemic and the evidence-based limitations of pain interventions.

In addition, I will be presenting this paper at an international forum, the 31st World Psychiatrists and Psychologists Meet, June 24-25, 2019 in Ho Chi Minh City, Vietnam.

Vietnam represents a personal and cultural challenge. I was one of the "lucky" kids who even though my number was near the top in the draft lottery, I was able to get a deferment and not be drafted into the military. I was attending the College Conservatory of Music in Cincinnati (1969-1973) and the church where I was the pianist ordained me, hence making me ineligible for military service. I was able to easily turn my head the other way until knowing of the death of one of my high school class mates, Graham Hughes. I dedicate this presentation to Graham, knowing that he gave everything.

Abstract

The post-opioid era represents the climate that exists within pain management services since opioid analgesics are not considered first line treatment for chronic pain. For over a generation, the use of opioid analgesics were prescribed to a level that contributed to what is now called "the opioid epidemic." Chronic pain is a major public health problem that affects approximately twenty percent of the American adult population let alone the excessive financial burden to the tune of approximately $560 billion annually. With this epidemic, although the initial risks noted about opioid medications were not recognizedinitially, and in fact notably under-reported. A statistic that represents the exdsss of opioid in American cultyre is that although we have five percent of the blobal population, we use eightly percent of the world's supply. There is now a generation of patients who have been introduced to opioids and are conditioned to expect pain relief even when the benefits of the medication cease. With the increase in opioid-related death over the past decade, clinical and legal guidelines have been developed to define the appropriate use of these agents. Since 2010, there has been a notable reduction in opioid prescribing. Patients who have been maintained on opioids have been deemed as either not appropriate for continued use, weaned from the medications, switched to non-opioid analgesics and confronted with the option of having pain-reducing interventional procedures. Those who have addiction-prone challenges or opioid use disorders are offered other agents to assist in the wean or taper.

The opioid epidemic is due to the over-prescribing of medical providers couples with the biomedical focus of pain, rather than a balance biopsychosocial perspective and practice. My work will look at the following concerns:

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- How and why are the biomedical perspective minimizes the psychological aspects of pain treatment;
- The barriers that have emerges that interfere with offering psychological pain services;
- How to integrate psychosocial interventions as first ine interventions;
- Psychological interventions that are helpful for chronic pain management;
- Evidence that psychological services are available and integrated within comprehensive pain treatment and barriers are addressed.

The post-opioid era of pain management hopes to re-establish the essential place that pain and medical psychologists hold in their role of providing biopsychosocial assessment and treatment for chronic pain sufferers. Because chronic opioid therapy is restricted and not used for chronic non-malignant pain as first line treatment, it would be reasonable to consider that psychosocial treatment possibilities would be readily available and proliferating. However, there are many factors that complicate this process and limit or undermine the availability of psychological treatment.

The treatment of pain produces more visits to primary care providers than any other clinical issue. Chronic pain services within the biomedical arena, compounded by the additional referrals to orthopedic and interventional pain services, perpetuate a system that operationally is able to exclude psychosocial involvement. The inherent psychological principles and values that historically have undergirded psychological treatment within the pain arena supports, trains and encourages patients to improve self-management which essentially becomes a fiscal threat to the biomedical services industry. The industry perpetuates ongoing procedures that are best considered transient in their benefit for perceived pain relief. The overarching goal of pain management treatment is to have less pain from whatever method possible or to get rid of pain completely. Current psychological theory, in many ways, is counter to the fuel and intentions that perpetuate this industry. Liberal opioid analgesics are limited mostly to acute care and recognized as ineffective for chronic pain management. The beliefs that have emerged for the last generation have conditioned patients to believe that pain relief is possible, if not a right, even though chronic opioid therapy contributes to more complications and health risks, and in many cases, even more pain (hyperalgesia).

In a recent Yahoo News publication that asked, “Why are Americans in so much pain?” a question prompted by the fact that with five percent of the global population, Americans use about 80 % of the world’s global supply of opioid prescriptions. What has contributed to this imbalance and clinical practice is complicated and multi-faceted. The amount of opioids used in the American culture has been influenced by practices reinforced by the pharmaceutical industry, the industry that distributes such medications and the medical practices of not only pain specialists, but also primary care providers (physicians and mid-level PR actioners) who liberally provide such medication as first line treatment. Since the introduction of and the marketing associated with OxyContin, one of the major opioid medications introduced by Purdue Pharma in 1996, we now have a twenty year history of liberal availability and a culture of psychological and physical dependence. OxyContin has been identified as the “tool” of choice for controlling pain. This has been predicated on the belief that pain is not to be tolerated and that medications have been designed “to get rid of pain.” The major problem with this thesis is that, although the desired benefit of pain treatment is to be rid of pain, the many interventions used for this process are at best marginal in achieving this goal and benefit. Clinical evidence notes on average 25 to 30% of pain relief is obtained with opioids.[24] The relief obtained by the many pain interventions available

is limited and partial. Patients, however, are not informed that the outcome of treatment will likely be temporary, and, although there may be a lessening of pain, the actual clinical benefit is no more than what is obtained from psychological interventions that do not offer risks.[16] Opioids are effective for short-term relief following surgical intervention and medical procedures. The World Health Organization and other health organizations have elevated practices that reinforce a graded pain treating and relieving process that proposes various treatments for varying levels of pain severity, with opioids identified as an appropriate treatment for moderate to severe pain.[27] This "ladder approach" has contributed to the perceived need for something stronger, greater and more effective for severe pain. This tenet has influenced patients to expect higher doses of more potent medication, perpetuating the belief that there is something that will "take the pain away." Earlier opioid practice also encourage that titrating to higher doses would not contribute to risk, misuse or addiction. This belief is reinforced by medical practice and the often repeated expectation associated with subjective pain rating. With zero meaning "no pain" and ten," the most excruciating pain," patients seek the lowest possible number and whatever intervention will bring it to fruition is pursued. What this evaluative exercise does not take into consideration is that the patient's psychological status and perceptions of pain are not part of the equation. The exercise is purely subjective and is influenced by the patient's history, cognitive structure and personal coping strategies. For many, current practice does not assess the patient's psychological architecture and, in so doing, further reinforces that there is an industry that can get rid of pain. Now that opioid medications have failed to provide the promised relief, the graded system becomes impotent if not irrelevant. Addressing chronic pain requires comprehensive treatment that encompasses psychological intervention. The option can no longer be dismissed or avoided.

When considering medical interventions, it is essential to know what the underlying goal and intention is associated with treatment, primarily what is reasonable and possible. When chronic opioid therapy was available as first line intervention, it also contributed to an unrealistic if not inaccurate belief about what was clinically possible. For many, various pain interventions and procedures were offered either for analgesic benefit or for diagnostic clarification. This is one of the aspects that can become blurred in treatment if the full spectrum that contributes to chronic pain is misrepresented, unacknowledged or not explained. It is reasonable to expect that pain is notably diminished when using opioids to treat an acute injury. When the complexity of the condition is chronic, it is also far more likely that cognitive, emotional and life quality issues are present. Getting rid of pain cannot be the overarching goal of treatment. Cognitive researchers have offered that, when the treatment focus is set on having less pain, such a focus cements the reality and consequence of having more pain.[22] Since the option of having opioids for chronic pain is not considered first line treatment, it is appropriate to educate consumers of this reality and to not reinforce the idea that, if only opioids were offered, pain would be adequately addressed.

Endorsing the biopsychosocial approach to pain requires acknowledging the influence of thoughts, emotions and behaviors. This is where pain and medical psychologists are most useful. The challenge is how to access this service and how to minimize the stigma and fear associated with integrating psychological care. A referral to medical or pain psychology can be made at any time. However, earlier in treatment is best and particularly not at the end when all other treatments have failed. It is also essential to recognize that patients have abilities and strengths to address pain from their history and capacity already defined by life events and from learned coping strategies. These are skills learned and integrated, not necessarily associated with medical options. A patient can claim, define and access these abilities without the intervention of a medical provider.[10] Pain is a common human experience but culture defines methods for coping. It can be argued that medical intervention as part of the pain-relieving industry, may interferes with the innate and even learned skills

of pain management and tolerance. Since primary care providers are often the first to address a pain complaint, it would be helpful if they would refrain from the conditioned response of seeking first and foremost a pill remedy; this only reinforces the potential abuse of opioids and fails to offer integrated care. Tapping into how patients cope, react and believe about their pain is central to treatment and to life quality.[14] The Veteran's Administration understands this approach. As noted, "Veterans Affairs, meanwhile, is taking steps to reach out early to chronic pain patients, often through their primary care physicians, to coax them into increasing physical activity, sitting through cognitive behavioral therapy, and meditating." (add reference)

Western medicine has mostly endorsed, through reductionism shaped by the history of infectious disease interventions, a design meant to get less of or eliminate whatever sickness, disease o complication the patient reports. That path was what influenced dealing with infections and unwanted diseases and also what fueled medications for depression, anxiety, mood instability and chronic pain. Similar to the current opioid epidemic were the challenges associated with the introduction and use of anti-anxiety medications in the 1950's. Following the success of Librium to address anxiety, further research led to the development of another anxiolytic, that being Valium (trade name), also known as Diazepam. Due to its popularity, it became the most widely prescribed medication between 1969 and 1982. In 1978, sales peaked with more than 2.3 billion pills sold that year. It was known during this time as "mother's little helper" and then became more widespread within the rock and roll culture after being endorsed by the Rolling Stones. Even though Valium has been described as dangerous, habit-forming and over-prescribed, it remains one of the most widely prescribed psychoactive drugs in the United States. The intended purpose of this medication was to get rid of anxiety and the tensions, thoughts and sensations associated with fear, worry and inner turmoil. The desired impact of the medication was a worthy endeavor. Gatchel, a pain management researcher and professor at the University of Texas, Arlington notes "in the past, pain was viewed just as a physical issue, and the thought was, if you cut something out, the pain will go away but lo and behold, it doesn't in many cases, and sometimes the pain gets worse." (add reference)

In 1996, bolstered by the false claims of research from pain neurologist Russell Portenoy and others, opioid medications which had been mostly used for acute surgical intervention and end of life or palliative care, were determined to be appropriate for chronic non-malignant pain.[5] The doors were opened wide for pharmacological marketing opportunities, driven by the belief that medications and in many circle, a cure, had finally been developed to get rid of chronic pain.

The combination of unrealistic hopes, quick and dirty solutions and excessive prescribing fostered a perfect storm that makes the opioid epidemic our most significant public health crises. There have been more deaths associated with the opioid epidemic than the AIDS epidemic.

With the core of medical training and practice fueled by a history of infectious disease reduction or obliteration, it made sense that, within such a construct, getting rid of anxiety, depression and even chronic pain seemed appropriate and possible.

In a 2015 paper from the New England Journal of Medicine, two esteemed pain physicians and researchers, Jane Ballantyne and Mark Sullivan, courageously suggested that, quite possibly, the wrong metric for measuring pain (reducing pain severity) is not where the focus should be.[4] Instead, "a willingness to accept pain, and engagement in valued life activities despite pain, may reduce suffering and disability without necessarily reducing pain intensity."[24]

This, of course, is counter to what our culture and medical community promotes, recognizing the intense conditioning that has influenced opioid practice and use. Beliefs have developed that reinforce such thoughts as, “There must be a medication that can take my pain away” and “if I complain loudly enough, there will be a physician who will eventually give me what I need.”

Since 1999, a leading cognitive and behavioral science has emerged called Acceptance and Commitment Therapy (ACT). From this trajectory, another prolific cognitive intervention emerged, Dialectical Behavioral Therapy (DBT) from the work of Marsha Linehan, Ph.D. These acceptance-based interventions have shown that, by investing in greater awareness and willingness to experience rather than avoiding difficulty or unwanted challenges associated with either emotional dysfunction or chronic pain, that greater ability for relating to and living with the challenges mindfully are possible.[15] The skill of living with the perceived difficulty mindfully (with full awareness) allows the patient to ultimately be able to accommodate and respond compassionately rather than engage in a perpetual struggle.[22,24] This therapy is not focused on having less of something undesirable. This is a courageous direction and, since 2012, ACT has been fully endorsed by the American Psychological Association as an effective treatment for chronic pain. Integrating this treatment direction is a challenge when working in the biomedical industry that pursues a path of seeking less pain.[12]

The response to pain that reinforces the patient as primarily being a passive recipient of care does not move the patient in directions where re-wiring of the brain is essential for gaining skill at addressing the harm-alarm messages associated with pain. The re-wiring process is a skill learned by integrating methods associated with the relaxation response. Transient relief interventions may be required at the time of acute injury. However, as chronic pain becomes more evident, the focus of treatment resides squarely in the hands of the patient who must find methods that improve the capacity for being with pain without catastrophizing or investing in a struggle unlikely to win.

With findings revealed by neuroimaging, we are well aware that the classic sensory “pain matrix” brain region is also involved with emotion and reward. Consequently, the intensity or perceived severity of pain is more associated with emotional and psychosocial factors, not just nociception. This does not quite fit the current standard model of pain care. Rather, it supports a multi-modal approach where the primary goal of treatment is not just reduction in pain intensity. As Ballantyne and Sullivan state, “Multi-modal therapy encompasses behavioral, physical and integrated medical approaches. It is not titrated to pain intensity, but has a primary goal of reducing pain-related distress, disability and suffering. When it does that successfully, a reduction in pain intensity might follow or acceptance might make the intensity of pain less important to a person’s functioning and quality of life.”[4]

There have now been two generations of physicians and health practitioners who have been trained to promote pain control strategies that have been reinforced by an ideology promoted by the Joint Commission that pain relief is a right of treatment.

With the latest legal clarification and guidelines from the Center for Disease Control and from various medical boards, the use of chronic opioid therapy has now been significantly modified. Depending on the specific state or jurisdiction, the availability and use of the medications has been altered. In addition, because of the number of accidental deaths associated with opioid overdose, combining the use of opioid with other agents such as benzodiazepines and sleep agents has been restricted, if not completely banned. Physicians have been forced to shift their investment in chronic opioid therapy, especially as first line treatment, and to seek other options. This is complicated, especially because of conditioned beliefs and practices as well as unrealistic expectations from patient’s regarding the

abolishment of pain.

Cognitive behavioral interventions have been a mainstay in interdisciplinary pain treatment for fifty years, well-established and empirically-based. They have also been under-used, minimized and complicated by lack of parity of services between medical and psychological treatment.[10] This if further complicated by insurance barriers that over- emphasize the value of medical interventions and downplay the need for psychological services and skill development. For a generation, patients have been conditioned to believe that "their pain was not in their heads," that their complaint was serious and their doctors have to do something about it." Their doctors did do something about it. Interventional pain services emerged, pain psychologists exited from practice and chronic opioid therapy became the most serious public health crisis in history; the plague of the 21st century. The casualties are staggering and, in light of such, medical practice has been forced to change and encouraged to revisit tried and true clinical options. There are many factors that must be addressed that support greater access to care with appropriately trained pain or medical psychologists with cognitive behavioral skills provided without naiveté regarding biomedical services or medications. Beth Darnall, one of the leading pain scientists, theorists, clinical psychologist and professor at Stanford University Department of Anesthesiology, Perioperative and Pain Medicine simply notes, "too often, pain is treated as a purely biomedical problem. It is a biopsychosocial condition."

Cognitive Behavioral Therapy (CBT) and other non-drug treatments are underused for several reasons. Because of the fading of interdisciplinary pain services and two generations of medical providers who used chronic opioid therapy as first line treatment, many believed that the primary focus of treatment should be centered on pain severity and one's response to procedures and medications, often without any awareness of assessing for life quality or improved functioning. It is not unusual that, when medical interventions fail, the patient is simply informed that there is nothing else that can be offered, and is typically dismissed, feeling hopeless, helpless and abandoned. When a chronic problem is treated as emergent because of the perceived need for pain reduction, time pressure and patient demands prompt ineffective temporary solutions often perpetuating frustration.

In a recent publication in the Journal of Psychiatric Practice from November 2017, Muhammad Hassan Majeed, MD and Donna M. Sudak, MD reiterate the benefit of providing Cognitive Behavioral Therapy either as a stand-alone treatment or with other non-opioid therapies. As noted, "CBT improves pain-related outcomes along with mobility, quality of life, and disability and mood outcomes.[15] Compared with long-term use of opioids, CBT has dramatically lower risks and may, therefore, be worth pursuing." Most importantly, Drs. Majeed and Sudak note, "Consequently, greater consideration must be given to the use of alternative therapies…..particularly CBT."[15] In this seminal paper, it is recommended that patients with chronic non-malignant pain have a comprehensive evaluation that includes psychological aspects, along with education regarding the risks and benefits of any proposed treatment. Treatment alternatives with an emphasis on achievable and realistic goals are necessary. The central focus of treatment should include a reduction in suffering, which requires a shift in how one responds and thinks about his/her pain and personal experience, not just expecting a reduction in pain sensation. Being free from pain may not be a reasonable expectation or treatment goal. Rather improved functioning possibly even with chronic pain is more appropriate.

There are barriers that complicate access for obtaining appropriate comprehensive care from pain or medical psychologists. In 2012, the American Pain Society endorsed the need for pain services to be provided from an interdisciplinary perspective.[25] This style of integrative care recognizes the importance and value of mutual power within the treatment paradigm between the medical, psychological and rehabilitative providers. From the be-

ginning of treatment, thoughts, behaviors and emotions are identified as important and addressed concurrently, rather than after medical interventions have failed. Services are in collaboration and not sequentially offered when possible. The team of pain providers shares an inclusive philosophy, mission and purpose with shared objectives. The culture of this treatment approach reflects mutual respect and open communication. The blending of all involved disciplines helps create a common language, working together within a supportive work milieu. This is also the most effective approach for integrating biopsychosocial assessment and intervention. From the early definition of pain provided by the International Association of the Study of Pain (IASP), pain is a sensory and emotional experience. With the demise of chronic opioid therapy as first line treatment for chronic pain, it is essential to recognize that thoughts, emotions and behaviors influence the pain narrative. If treating pain severity was the most important consequence, opioid therapy was a realistic treatment. With the treatment evidence provided by the Cochrane Reviews, the benefit or lack of benefit from various procedures and interventional procedures has been clarified.[2]

With the demise of interdisciplinary pain treatment, many organizations have substituted the interdisciplinary style with multidisciplinary services. Typically, the service offers interventional medical options and physical medicine or rehabilitative options provided by physical therapy, however psychological services are often not available. This is at times because the services of an appropriately trained pain or medical psychologist was not available, or because the biomedical model was deemed as more important, more profitable or adequate by the health system or insurance payer source. Insurance coverage is often a barrier. As noted, in a recent Mayo affiliated publication, “Insurance coverage is still a battle. Many plans will pay for medical treatments such as surgeries, pills, and steroid injections that can run $2000 apiece. They’re not as keen to cover therapy, massage and meditation. It’s much more efficient for insurers to pay for a pill in a 15-minute office visit, Twillman said, instead of a pill, plus a psychologist, plus a chiropractor, plus acupuncture, plus yoga and massage. Slowly though, that’s changing. In large part because of the opioid crisis.” The treatment approach is usually hierarchical with a physician in the leadership role. Professional identities are clearly defined and team membership is secondary. The most subtle message communicated is that medical intervention does reduce a pain complaint, albeit transiently, and that the role of the physician is to control the patient’s pain. Services by the various disciplines are provided in parallel rather than as integrated. The various disciplines communicate typically by reading documentation in the medical record rather than by coordinated purposeful discussions. When the pain complaint is not addressed as desired or the pain generator identified, the patient can go elsewhere, seek more medical interventions and avoid whatever psychological complications or misinterpretations that may interfere with improved coping. Without having a voice that understands, evaluates and treats psychological concerns, a bias exists that reinforces that medical aspects of pain are what is most important and treatable. The bias is real and demands awareness and action in policy and practice.

The American Academy of Pain Medicine has represented physicians for years. However, it has recently opened its doors for medical and pain psychologists to obtain full membership. At their annual conference in March 2019 in Denver, they scheduled a day for psychologists to provide necessary training and to emphasize the importance of psychological intervention and presence in the organization. This was a symbolic gesture and represents that psychological assessment and treatment is first line treatment for chronic pain, and that whatever barriers exist or persist that interfere with accessing such comprehensive service, must be addressed.

As previously mentioned, the principles that recognize the structure of interdisciplinary pain management are proven. They have declined not because of ineffectiveness or research

evidence, but because of insurance, organizational and fiscal disparities. It is also because with the emphasis of pain treatment shifting toward interventional procedures and opioid analgesia reliance and minimizing of the biopsychosocial model of treatment, the purpose and function of medical or pain psychology was marginalized. Not to belabor the fact, however I have worked in pain medicine related services for thirty years and have observed the transitions that reflect the full array of pain services ranging from interdisciplinary care to multidisciplinary care, multimodal care and unimodal care. The various treatment models are associated with the various methods practiced to offer psychological services. As clinical director at the Elliot Hospital in New Hampshire, we obtained CARF accreditation as an interdisciplinary pain program; all team members had a voice at the table with a collective message. Other interventional programs I have been involved with focused primarily on the profits obtained from billing procedures, and questions regarding improvement were irrelevant- there was no measures used to assess improved functioning outcome. Mid-level providers managed medications and psychological influences were not addressed or treated unless identified as psychiatrically co-morbid. Another organization, an interventional practice that provided repeat procedures, did not provide outcome data and in fact requested psychological assessment for opioid risk and also for pre-surgical intervention related to implantable devices. The information provided in such documents was disregarded. The practice did four spinal cord stimulators each week, and the implantation took place no matter what the clinical or risk data revealed in the psychological evaluation. Identified risks were not acknowledged. One of the other pain organization that I was recently involved with was aware of the range of styles associated with pain treatment ranging from interdisciplinary to unimodal. During my interview, I gave the administration the white paper from the American Pain Society that defined interdisciplinary pain treatment (2012). In an introductory staff meeting, I asked what style of pain treatment would define this practice. One of the pain physicians, a trained interventionalist, stated that the preferred style of treatment would be “interdisciplinary”. Within a three year period, there was only one joint meeting. If there was shared information, I would take information to the two pain physicians. This practice was not mutual. They did not come to my office to share information. They practiced two days per week doing procedures typically doing 40 per day, and two days in clinic. Although they would say the practice was patient-centered, in actuality, patients were informed not to speak or ask questions at the time of procedures so not to delay the practice. The marketing department printed an advertisement touting the interdisciplinary pain program. It was not.

The American Academy of Pain Medicine has recognized that medical psychology has a place at the table. How the voice is heard and integrated is one of the challenges. A team approach with mutual respect and expressed value is necessary in order to best facilitate integrated work. There are identified qualities that best represent how to effectively offer integrative pain management services. From Turk’s paper regarding interdisciplinary pain management, important attributes are noted regarding a well-functioning interdisciplinary pain team. As follows:

- Shared philosophy, mission & objectives
- Patient and family centered
- Working together for common, agreed upon goals
- Integrated, interdependent approach
- Mutual respect and open communication, often in a team meeting format
- Frequent and effective direct, clear and reciprocal communication amongst team members as well as with primary care providers and referral sources

- Quality improvement efforts are ongoing and the responsibility of all team members
- Collaborative approach to clinical care, education quality improvement and research
- Deliver evidence-based multimodal treatments

The integrated style of treatment requires coordination, communication and collaborative involvement and all members are empowered to facilitate the required treatment goals and process. All aspects of the clinical matrix matter, and such interdependent values limit patient splitting behaviors and the hierarchy that implies that the medical intervention is most important. It is typical for pain patients to dismiss or avoid psychological awareness, and in many ways it is often easier to express pain complaints that appear like acute injury in order to get medical attention, rather than integrating self-care skills that require practice or cognitive modifying. It is not unusual that by the time a chronic pain patient has seen a medical or pain psychologist, they have already been exposed to multiple treatments including pain medications and psychotropic medications.

As previously mentioned, the role of the medical psychologist is trained and empowered to know the effectiveness of treatment, or lack thereof, including medications, surgical and interventional procedures. They are specifically trained to acknowledge how patient's beliefs, thoughts, emotions and behaviors influence outcome. Treatment outcome and expectations can contribute to greater co-morbid complications and reinforce the role psychologists play in the adjustment and acceptance process in pain management.

Although the availability of opioids is lessening in most practices, there are many patients who are maintained on chronic opioid therapy. How to manage opioid medications is as much a social issue as it was in the mid-1990s prior to the introduction of OxyContin. With the clinical pressures regarding opioid reduction that complicate patient care, for some patients, the idea of tapering off opioids prompts serious fear, anxiety and worry about pain and its impact. There are organizations that represent patients who protest about any consideration of reduction or the availability of opioids. There is a national dialogue regarding the practice of tapering and transitioning from opioids to non-opioids. Addiction practitioners have entered the arena offering medication assistance in dealing with the withdrawal aspects of opioid reduction. For many pain patients, if included in the decision to wean and concur that it is a necessary step and clinically sound, the wean is often uneventful. The role and involvement of the medical psychologist is necessary in the tapering process in order to assure the patient that adjustment is likely if the taper is slow and personal pain experience is respected. Treating pain patients embroiled in an opioid wean as psychologically weak or addicted often leads to divorce from the pain practice. The tapering process can be challenging and may require more counseling, patient education and time going at a slow pace to achieve the necessary wean.

The introduction or continued use of opioids requires an analysis of benefit to risk. It is not unusual for pain/medical psychologists to complete an Opioid Risk Assessment using validated measures to assess risks if to remain on the agent. There are several psychological tests used to help determine such a candidacy. Some of the measures identify and judge patient risk based on historical complications especially whether or not there has been a history of physical, sexual or emotional abuse, a history of alcohol or substance abuse and if already introduced to such agents, what evidence of life quality is observed. There are also measures that assess current use of opioids and their impact on daily functioning. The questions at hand are associated with an estimate whether the patient likely would misuse, abuse, divert or become addicted, or not being able to remain within the

tenets of an opioid agreement. Such as assessment may require interviewing family members or obtaining medical records to determine if the patient is capable of maintaining such an agreement. There are several risk measures that are valid and useful in clinical practice. The most recent validated measure is the Brief Risk Questionnaire (2015).

Jones (2015) has identified further what is essential within the role of a medical/pain psychologist. In additional to offering pharmacological and treatment opinion, grounded in the integration of acceptance-based psychotherapeutic principles, assisting the patient with pain psychoeducation, integrating self-calming and parasympathetic responding, reframing catastrophizing thought and defining values based influences- this is the essence and purpose of medical psychology intervention. For many years, the use of cognitive behavioral interventions have addressed ineffective thinking patterns along with teaching relaxation skills. The core principles identified by Jones (2015) are as follows:

- Chronic pain is more than tissue damage
- Pain gates affect how much signal gets to the brain
- Central processes influence how much pain is felt
- And how the pain is interpreted cognitively and emotionally (pain versus suffering)
- Behavioral interventions can be very helpful for chronic pain as is the full psychological spectrum.

Pain treatment, whether it be interventional, psychological or surgical, recognizes the challenges moving from acute to chronic are mostly related to time duration, knowing that most tissues heal within three to four months. Even with multiple interventions, there is the likely possibility of experiencing ongoing pain and that that treatment doesn't provide what is desired. The wisdom of Sullivan and Ballantyne encourage not primarily focusing on pain relief and that by following periods of grief and loss, with thoughfulness move toward positions of acceptance and awareness that allow for a non-judgmental or reactive stance toward one's pain.

Summary and Conclusions

The conversation to address the opioid crisis demands a response from mutually valued participants. Medical psychologists stand ready to be an integral part of this conversation. Organizations, insurance payers, health systems and medical providers can be barriers or facilitators in enabling the conversation, creating an atmosphere that balances the policies and practices that influence access and service. Interdisciplinary treatment needs cannot be addressed without scheduled, organized and intentional conversation. It is not unusual for chronic pain patients to have co-pays for medical appointments, multiple weekly physical therapy appointments and also the costs associated with laboratory fees. It is also not unusual that appointments with pain or medical psychologists are secondary since psychological interventions are deemed as less important. Not having the opportunity for an appointment because of fiscal constraints is also a subtle message of its lack of importance or lesser importance than other interventions.

Addressing psychological challenges requires investing in the acquisition of skills such as the relaxation response, and at this point, considered more difficult than just getting a new prescription. Resistance to psychological interventions becomes a treatment issue that can usually be tackled from a collaborative team approach when all tem members recognize and support psychological needs. Behavioral interventions are important for helping a patient become more active without any heightened fear. The solution is often not simply associated with pharmacological changes. For experienced psychologists and partic-

ularly medical psychologists, the hope was that, with opioid availability, functional status and life quality would improve. We know now that hope was misplaced. Caution and alternative therapies, along with non-opioid analgesics, have become a less risky path to pursue. Medical psychologists are not naïve about pharmacological interventions and are willing to assist patients in learning the psychological skills that contribute to improved functioning and pain tolerance.

Darnall reminds us of the psychological challenges associated with chronic pain. Such challenges are not unusual with chronic pain and, as many as half of those suffering, experience co-morbid complications such as depression and anxiety. As stated, "Psychological disorders and pain frequently co-occur and psychological factors are underappreciated and undertreated in the context of pain." It is established that pain-CBT is an effective, evidenced based therapy for pain reduction, catastrophizing, depression and disability. It is not unusual for chronic pain patients to ruminate about their pain and life experiences, responding with a sense of helplessness and opelessness and focusing on the perceived difficulties. This is known as pain catastrophizing. We know that pain catastrophizing is the most powerful predictor for back pain disability one year after new-onset back pain. This process is known to alter the structure of the brain and how it function, priming pain responsivity and attention to future pain. This form of ruminating can be addressed by integrating cognitive-behaviorl skills for self-monitoring and using effective calming skills. Pain catastrophizing is known to complicate responses to medical treatment, various interventions and shape the brain toward greater pain sensitivity and distress. With exposure to CBT and with greater self-management efficacy, the complications and distress associated with such fearful thoughts can be modified.[9]

In addition to evidence as shown from outcomes associated with pain-CBT, there is also particularly robust evidence associated with moving patients away from the struggle of overcoming chronic pain to greater willingness and acceptance. Such willingness to accept and move forward in a meaningful direction in the face of pain makes patient action the central goal of pain treatment. As Sullivan and Vowles state, "Restoring the capacity for meaningful action is what transforms someone with chronic pain from a patient into a person."[25] This is the essence of effective chronic pain treatment and psychological interventions are the tolls that facilitate such a transformation.

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Empowering Patient Management of Depression with Antidepressant Medications

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Prologue

A profound change occurred in mental health care in the United States when the federal government abandoned the incarceration model of mental healthcare as too expensive. Although there were several therapeutic reasons for treating patients in the least restrictive environment of their own community, money motivated the decision to move from hospital-based to the supposedly less expensive community-based care. Outpatient treatment of mental disorders was turned over to primary care doctors without specialty training and with very limited training with the use of psychotropic medications to manage mental conditions of patients. Beardsley[1] reported 70% of psychotropic medications were being prescribed by primary care doctors by 1988. This became the de facto community standard for the delivery of mental health services.

Antidepressant medication use for the treatment of depression has increased 65% since the year 2000 according to the Center for Disease Control in August 2017[2]. Antidepressant drug classifications are one of the three most frequently used medications in the United States. One of eight households reported a person using one of these antidepressant medications during the last month according to this CDC household survey. It is alarming to find that 68% of the people taking these medications had been using them for 2 years or longer with 25% taking them for 10 years or longer.

The National Comorbidity Replication data reported patients treated for depression by general medicine physicians received care that exceeded a minimum threshold of adequacy in less than 13% of the cases[3]. Meredith, et al found that less half of the depressed patients in the general medical sector received as much as 3 minutes of counseling[4]. Thus, patients seeking treatment for mental conditions from primary care doctors often received "monotherapy" with medications only being prescribed. Patients treated with antidepressant medications only are considered an undertreated but over medicated population!

A review of 1 million mental episodes treated by psychologists trained with the use of psychotropic medications and medical collaboration found medications were being taken by 68% of the patients at the start of psychotherapy and reduced to 22% during active psychotherapy[5]. This lowered rate of use of medications was reduced to 13% for patients remaining on a maintenance dosage. This represented a 80% reduction in potential side effects from medications. The rate of return for additional treatment within one year was 4% compared to a relapse rate of 15% within 30 days using a case management model of care.

The Therapy in America Survey[6] reported that 81% of those receiving mental treatment used psychotropic medications while only 34% were treated with psychotherapy and medications. It concluded, "Combined treatment produces not only faster and greater short-term benefits, but greater long-term benefits as well. Patients receiving combined treatment and Cognitive Behavior Therapy (CBT) have a lower relapse rate than do patients receiving medications alone. Patients receiving Interpersonal Therapy (IPT) and drugs had better long-term social adjustment than patients on drugs alone. In the treatment of patients older than 60 years, the combination of IPT and medication has been shown to reduce the

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rate of depressive relapse. In addition, compared with pharmacotherapy alone, combined medication and group therapy seems to reduce relapse after discontinuation of treatment." Despite published articles on the added value of combined psychotherapy and pharmacotherapy over either treatment used alone, antidepressant medications alone treated by primary care doctors still remains the most common treatment for depression. This model of care is vigorously promoted by the pharmaceutical industry advertising and made available by most health insurance plans. Recently, there have been renewed calls for Integrated Care for depression using combined treatment based upon meta-analyses[7,8]. Kamenov, Twomey, Cabello et al,[9] just published an open access, comprehensive, meta-analysis of the efficacy of psychotherapy, pharmacotherapy and their combination on functioning and quality of life. These studies of combined treatments document their efficacy and offer protections from unmonitored pharmacotherapy that is subject to hazards of polypharmacy from multiple prescribers.

Woodward[10] called for the need to "deprescribe" medications in order to reduce possible harmful side effects in medical care of the patient and made the following points:

1. Older people are frequently prescribed unnecessary or dangerous medications.
2. It is possible and, indeed, an obligation to, deprescribe, reduce, substitute or cease inappropriate medications.
3. Deprescribing should be planned and not overly hasty.
4. Deprescribing should be performed as a partnership between the patient and the prescribing team.
5. Regular patient review and support is required for successful deprescribing.

Scott, Hilmer, Reeve et al[11] developed a "Seven Step" protocol for prescribing doctors to reduce inappropriate polypharmacy in depressed elderly patients where polypharmacy occurs most frequently. Gupta and Cahill[12] updated and expanded on the works of Woodward and Scott et al with an Open Forum article for non-physician prescribers, such as physician- assistants and prescribing nurse practitioners and prescribing licensed psychologists. Their Deprescribing Psychotropic Medications protocol is as follows:

1. Choose the right time
2. Compile a list of all of the patient's medications
3. Initiate a discussion with the patient
4. Introduce deprescribing to the patient
5. Identify which mediation would be appropriate for a taper
6. Develop a plan for the patient to follow
7. Monitor and adapt, if necessary.

The above outline for prescribers for deprescribing are essential for medication management of patient care. Yet, it is unlikely these recommendations will be carried out routinely by primary care doctors due to time constraints in general medical practice. Patients cannot be expected to carry out self-management of deprescribing their medications without professional assistance and monitoring. Deprescribing medications requires expertise as specialty care just as much as the original prescribing of medication. This is especially true in recognizing polypharmacy and signs of nonadherence to treatment, treatment dropout or symptom relapse in patients.

An active role for the patient is also necessary to complete safe and effective deprescribing of antidepressant medications. A minimum list of the patient's responsibilities is: 1. Take medications as prescribed, 2. Report any changes in the effects of medications to the prescribing doctor, 3. Report any problems or inconvenience in obtaining or taking the medications as prescribed, and 4. Be alert to any behavioral changes.

Integrated care may be considered a best practices model for empowering patients to fulfill their role in managing depression and discontinuing the use of antidepressant medications:

1. Establish a therapeutic treatment team that includes a prescribing provider.
2. Create a patient-therapist therapeutic alliance between the patient and treatment team to assure 24/7 in carrying out treatment regimens.
3. Cooperate with your prescribing treatment team in planning for the use of psychotropic medications.
4. Jointly Review any agreed upon plan regularly and adjust the behavioral health support system as the patient's part of the treatment alliance.
5. Share in a review of all medication that includes alcohol use and over-the-counter drugs.
6. Remain alert and report positive effects of the medications as well as, any side effects.
7. Share any complaints, feelings of uncertainty or sense of failure of medications with your therapist.
8. Communicate with your therapist in planning a change or discontinuation of the medication regimen.
9. Develop a plan with your therapist on how to deal with any signs of relapse.

These integrated care procedures using the assistance and support by psychologists for patients to manage depression and antidepressant medications have been used safely and effectively. These recommendations are written from the standpoint of a "therapeutic alliance" between the patient and therapist. This is in sharp contrast to the model of Collaborative Care placing the patient in a passive role under the medication management of the prescriber with limited training in the best practices of combined care. The shortage of psychiatrists for the ongoing treatment of mental disorders required by integrated care has existed for over 40 years and is not improving. Attempts to resolve this shortage by the use of primary care doctors has been a national scandal. Use of a managed care model has neither improved access to mental care nor has it reduced federal costs of treating mental disorders.

The federal government has attempted to substitute health care resources without specialty training for treating mental disorders, such as physician- assistants and prescribing nurse practitioners, for treatment of mental conditions. What is untried in many States is the authorization of licensed psychologists to provide these vitally needed services that are in short supply. Currently, there are over 75,000 psychologists with such training that have been treating patients with mental disorders taking psychotropic medications. There are 4,000 more being trained each year. Five States have authorized licensed psychologists to treat patients with psychotropic medications independently. Thus, it is demonstrated that psychologists have been trained and are prescribing and deprescribing psychotropic medications safely and effectively. It is now time to recognize such licensed psychologists as physicians in Medicare regulations for the benefit of an underserved public with mental conditions.

Integration of psychotherapy and psychotropic medication for treatment of mental disorders is now being emphasized in the continuing education (CE) of licensed psychologists. Legislation for psychologists to prescribe psychotropic medications as independent practitioners has been well-received by the public. Seventeen additional States are seeking independent prescribing authority for psychologists for the benefit of patients. Authority for prescribing is also for the monitoring and deprescribing medications as a continuing process for patient recovery.

It is time for other States to develop local initiatives to support the national prescriptive efforts. Deprescribing can be a rationale for bolstering psychology's Medicare agenda. Procedures for deprescribing of psychotropic medications listed provide States without prescriptive authority an opportunity to train and certify this training for their members. Voluntary certification can provide de facto recognition of the skills and training of licensed psychologists in medication management of patients treated with psychotherapy. Such certifications could facilitate implementing Integrated Care in conjunction with prescribing colleagues. Voluntary certification could be bolstered by State psychology licensing boards recognizing such certifications by adopting these deprescribing procedures. State board endorsement of deprescribing procedures could bolster national psychology efforts to gain statutory recognition in Medicare standards.

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