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Clinical Assessment of Pediatric Bipolar Disorder in the Prepubescent Population

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Abstract

Purpose: Diagnosis of serious mental illness (SMI) in the prepubertal pediatric population is exceedingly challenging. There is ongoing controversy associated with the diagnosis of pediatric bipolar disorder (PBD), largely due to poor clinical consensus surrounding criteria particularly in the youngest cohort. Specificity of symptom identification is invaluable as it relates to available empirical evidence, and wider classification characteristics appear to detract from this precision. The aim of this project is to present the current evidence around the diagnosis of PBD before adolescent onset and to summarize best practice guidelines from an ethical and theoretical perspective (Bronfenbrenner's Bioecological Theory of Human Development). Edification of the current evidence with the intended outcome of increased knowledge/awareness of current PBD issues is the stated goal. **Methods:** The project was designed using a quality improvement (QI) approach with the aim of enhancing nursing knowledge of PBD using pre and post questionnaires. Acquisition of material was measured using a simple formula to predict learning gain (g). **Results:** This QI project included the development of a Toolkit based on best practice guidelines. Participants were registered nurse's working at a hospital in New England. Posttest scores revealed an average learning gain of 90%. Short-term goal of increased knowledge base was achieved. **Conclusion:** Nurses at a hospital in the Northeast enhanced their knowledge base and critical evaluation skills around issues of PBD, as well as consideration of multiple variables when considering a diagnosis of a SMI in a young child. The project was recommended to become a part of the nursing curriculum at the hospital site.

Keywords: pediatric bipolar disorder, prepubescent/prepubertal, quality improvement

Clinical Assessment of Pediatric Bipolar Disorder in the Prepubescent Population

The accurate identification of a serious mental illness (SMI) like bipolar disorder is clinically challenging with any age group, but particularly so for the child/prepubertal age cohort. The current criteria as recommended by the American Psychiatric Association ([APA], 2013) do not include a developmental component for identifying the symptomology and presenting features of prepubertal bipolar disorder, and making a diagnosis of pediatric bipolar disorder in this cohort remains controversial. Despite this paucity of agreement amongst researchers and pediatric bipolar disorder (PBD) specialists regarding its clinical boundaries, there has been a sharp upward trend by as much as 40-fold in the frequency of diagnosis (data collected between the years 1996-2004), with the highest rates affecting the youngest age group (5-13 years old) (Moreno et al., 2007; Blader & Carlson, 2007). More recent data indicates rates of PBD diagnosis within the United States fluctuate anywhere from 1% to 6.7% as a consequence of a broadening and lack of uniformity in diagnostic criteria (National Institute for Health and Clinical Excellence [NICE], 2014, p.41). Further, following discharge from the hospital, clinicians in the United States make a diagnosis of PBD at 12.5 times the rate as clinicians in England (James et al., 2014).

As a consequence of acquiring a SMI, treatment typically involves aggressive pharmacotherapy from more than one drug class (most commonly anti-psychotics, mood stabilizers/ anticonvulsants, and antidepressants), which necessarily includes children diagnosed with PBD (Jenkins & Youngstrom, 2016; Comer, Olfson & Mojtabai, 2010). Aggressive pharmacotherapy to treat a poorly defined SMI with imprecise clinical boundaries risks exposing children to gratuitous neurochemical interventions, and unnecessarily challenges the bioethical principles of nonmaleficence, beneficence, and justice (Beauchamp, 2010). Registered Nurses

are often the first clinicians to evaluate a patient upon admission to an inpatient, partial hospitalization, or outpatient program. Nurses thus play an important role in the initial shaping of clinical evaluation, and edification surrounding the current state of empirical evidence for PBD can aid in improved patient care. The critical ethical concerns associated with this clinical and diagnostic dilemma in the vulnerable population of prepubertal children are significant.

Background

National prevalence rates and statistics in the United States are not being routinely disaggregated to include the prepubertal child age-cohort (National Institute of Mental Health [NIMH], 2017). Available research to date tends to aggregate participant age in to broad categories such as ‘youth’ or ‘juvenile’. This lack of robust epidemiological data contributes remarkably to the ease with which impact and outcome data can be gathered. However, rates of diagnosis are significantly disparate when evaluated on an international scale. Compared to other developed countries the United States diagnoses children from a younger age cohort with greater frequency (Post et al., 2017; Clacey, Goldacre & James, 2015; James et al., 2014). Between 2000 and 2010 (Appendix A), hospital discharge rates per 100,000 children aged 5-9 years old in the United States were 27, compared to 0.22 in New Zealand, 0.14 in Australia, 0.03 in Germany, and 0.00 in England (Clacey, Goldacre & James, 2015). Moreover, one of the more widely cited analyses that purported to find no significant variation in rate of PBD diagnosis internationally did not include disaggregated data that included much of any prepubertal children (Van Meter, Moreira & Youngstrom, 2011).

There appears to be consensus that adolescents (ages 13 and older) can measurably display the hallmark symptoms of PBD once thought to be reserved largely for the adult population (McClellan et al., 2007). However, a critical point of contention surfaces in the

literature when distinguishing symptoms of mania in the pre-pubescent population. In the absence of a developmental component for PBD criteria in the APA's (2013) Diagnostic and Statistical Manual of Mental Health Disorders (DSM 5), clinical and research specialists in pediatric psychiatry have identified several phenotypes meant to characterize diagnostic parameters. These phenotypes are classically distinguished as *narrow* (strictly adherent to episodic nature of extreme departure from baseline mood as identified in the DSM 5), *moderate* (akin to the state of hypomania in bipolar type 2), or *broad* (subthreshold symptoms, that may meet criteria for unspecified bipolar disorder) (Leibenluft, Charney, Towbin, Bhangoo & Pine, 2003, p.431-32). Moreover, diagnostic stability across the lifespan is another ongoing point of contention and will be addressed in the ROL below.

Problem Statement

Increased rate of diagnosis for the SMI of PBD in the prepubertal age group (11 years and younger) remains controversial primarily due to its vague and expanding diagnostic criteria (and subsequent undermining of the operational definition of mania). This culminates in aggressive pharmacotherapy despite an absence of uniformity of evidence-based assessment and a lack of professional consensus of diagnostic parameters across settings and disciplines. This quality improvement (QI) project attempts to address this gap in knowledge by providing nurses with an educational presentation that will include a toolkit with access to reputable guidelines and recommendations.

Review of the Literature

An appraisal of the current evidence in the literature was obtained from the following electronic databases: Science Direct, PubMed, CINAHL, ProQuest Social Sciences, Springer Journals, Sage Journals, Up To Date, Google Scholar, and Wiley Journals, using the following

search terms: “pediatric bipolar disorder”, “prepubescent”, “prepubertal”, “evidence based assessment”, “evidence based practice”, “narrow phenotype”, “mania”, and “diagnostic criteria”. Search parameters were limited to include publication date by the year 2000, peer reviewed journals, English language, and this writer checked individual articles to ensure that population characteristics for each article included youth age groups that, if not restricted to 12 years and under, at least included this prepubertal age group within the definition of ‘youth’. Further, the search parameters have intentionally included primary source research papers that continue to fundamentally inform current practice guidelines, and as such require inclusion of publication as far back as the year 2000.

There are several authors who feature prominently in the literature and are included in this review because they are frequently cited by reputable sources, such as the National Institute for Health and Clinical Excellence ([NICE], 2014), the National Institutes of Health (NIH), and the American Academy of Child and Adolescent Psychiatry (AACAP). A total of 23 articles are herein reviewed from these criteria; the earliest having been published in 2004 (Youngstrom et al.) and the latest in 2018 (Youngstrom, Halverson, Youngstrom, Lindhiem & Findling). Included are the most recently published clinical assessment guidelines from the AACAP (2007) as well as the NICE (2014). One key barrier to the collection of empirical work on PBD includes the paucity of literature with the stated inclusion of the prepubertal age cohort, thus despite the publication search parameters going back as early as the year 2000, only 23 articles were fit for inclusion in this review.

Several themes emerged from the literature. First, there is disagreement regarding the validity of ‘irritability’ as a core feature of PBD. Though the AACAP (2007) and NICE (2014) unequivocally state the lack of specificity associated with this symptom in children, it remains a

fundamental component within the literature. Serra et al., 2017 even go as far as to state that irritability is a symptom that is nearly 100% sensitive for identifying mania “and therefore should be considered to be a bona fide symptom of mania” (p.389). The authors fail however to note the distinction between sensitivity and specificity; irritability is so nonspecific that “it appears analogous to ‘fever’ or ‘pain’” (Youngstrom, Birmaher & Findling, 2008, p.196) and “is not a useful differential diagnostic symptom” (Geller & Tillman, 2005, p.22). Further, the NICE (2014) is the only guideline to explicitly forbid ‘irritability’ as a core symptom, and instead recommends ‘euphoria’.

Another theme, extensively reviewed by a recurring set of authors, is the increased specificity and accuracy of diagnosis with the implementation of a Bayesian ‘actuarial’ approach (Jenkins & Youngstrom, 2016; Jenkins, Youngstrom, Washburn & Youngstrom, 2011; Jenkins, Youngstrom, Youngstrom, Feeny & Findling, 2012; Jensen-Doss, Youngstrom, Youngstrom, Feeny & Findling, 2014; Youngstrom et al., 2004; Youngstrom, Findling, Youngstrom & Calabrese, 2005; Youngstrom, Halverson, Youngstrom, Lindhiem & Findling, 2018; Youngstrom, Meyers, Youngstrom, Calabrese & Findling, 2006). Adoption of an actuarial approach with the implementation of a probability nomogram elicits the greatest improvement in reliability (Jenkins & Youngstrom, 2016; Jenkins et al., 2012; Youngstrom et al., 2018). Further, Jenkins and Youngstrom (2016) also used an actuarial approach to evaluate clinical bias during assessment and offer compelling evidence for the inverse relationship between cognitive bias and diagnostic precision. Authors Jenkins et al. (2011) point out several significant limitations associated with such an approach; current disagreement regarding PBD characteristics reduces the uniformity of data, specifically given the inconsistent use/adoption of either the narrow or broad phenotype (p.127).

There is general consensus among all of the 23 articles that screening instruments are only to be used as supplementary to clinical observation and data collection. However, there is some evidence supporting the benefits of a more structured approach to assessment. Screening instruments are, therefore, generally recommended as a means of corraling presenting symptoms. For example, while it is *not* appropriate to make a diagnosis of PBD based on elevated scores from the child behavior checklist (CBCL) (Diler et al., 2009), it is appropriate to consider ruling out a diagnosis of PBD if a child has a low score on the CBCL (Diler et al., 2009; Youngstrom et al., 2004; Youngstrom et al., 2005). There is also general consensus that making a SMI diagnosis such as PBD in the prepubertal age cohort should not be based on only one clinical assessment and that symptoms of mania or hypomania must be episodic rather than chronic in nature (AACAP, 2007; Axelson et al., 2006; Birmaher et al., 2009; Birmaher et al., 2006; NICE, 2014; Song, Yoon, Choi, Hong & Joung, 2010; Van Meter, Burke, Kowatch, Findling & Youngstrom, 2016; Van Meter, Moreira & Youngstrom, 2011; Youngstrom et al., 2008).

Despite a paucity of agreement on the definitive boundaries for diagnosis, there is considerable recognition for the distinction between narrowly and broadly defined phenotypes of PBD. To this end, Unspecified PBD, or PBD not otherwise specified (NOS), is recognized to fall within the confines of a broad phenotype because it is diagnostically considered subsyndromal, while adherence to the APA's (2013) definition of bipolar type 1 is identified as exemplary of the narrow phenotype (Axelson et al., 2006; Birmaher et al., 2009; Birmaher et al., 2006; Diler et al., 2009; Rajakannan, Zito, Burcu & Safer, 2014; Song et al., 2010; Van Meter et al., 2016; Van Meter et al., 2011; Youngstrom, et al. 2008; Youngstrom et al., 2005; Youngstrom et al., 2006).

The most referenced study to date regarding the longitudinal path and diagnostic stability of PBD is from the (still ongoing) Course and Outcome of Bipolar Youth (COBY) Study (Birmaher et al., 2006, 2009). The seminal COBY study finds that of those within the sample population who met criteria for subsyndromal PBD NOS, only 25% went on to have syndromal BP type 1 or 2 symptoms within a 2-year period (Birmaher et al., 2006, p. 181), while over 80% of subjects achieved symptom remission (Birmaher et al., 2009, p.799). The authors also acknowledge that, more so than other sample categories, more children in the NOS category were of prepubertal age. At follow up, four years later, still only 38.0% of the NOS category were found to have converted to BP 1 or 2 (of which 18.4% converted to bipolar 2, characterized by hypomania which is even more difficult to detect in children [NICE, 2014]) (Birmaher et al., 2009, p.801). Although the authors state unequivocally the statistical significance of these conversion percentages, neither of these two COBY studies actually provides a p-value coefficient to back up the claim for this particular assertion.

Several studies report decreased frequency of diagnosis of PBD with implementation of narrow phenotype criteria (Parry, Allison & Bastiampillai, 2018; Jensen-Doss et al., 2014; Song et al., 2010; Van Meter et al., 2011; Youngstrom et al., 2008; Youngstrom et al., 2005). When comparing the rates of bipolar disorder that are disaggregated into bipolar 1 (narrow) phenotype, the United States has a PBD rate of approximately 0.0-1.0% (Parry, Allison & Bastiampillai, 2018; Van Meter et al., 2011). Contrast that with the NOS or unspecified (broad) phenotype and the rate jumps to 6.7% (Parry, Allison & Bastiampillai, 2018; Van Meter et al., 2011). In a retrospective observational study looking at rates of diagnosis from 1999-2010, bipolar 1 rates dropped significantly, while the rate of PBD NOS increased from 2.6% to 74.0% (Rajakannan, Zito, Burcu & Safer, 2014, p.317). Further, in a community health setting, clinicians using the

narrow instead of broad criteria made far fewer PBD diagnoses (0.3% narrow compared to 9.0% broad) (Jensen-Doss et al., 2014, p.1159). Despite agreement as to the decreased rate associated with adopting narrower criteria, there is no consensus as to what meaning to assign to this.

However, in its guideline, the AACAP (2007, p.112) contends that there is concerted debate as to whether PBD should be classified separately and uniquely from adult bipolar disorder altogether.

Evidence Based Practice

The two most reputable guidelines available for reference include the AACAP guidelines (2007), and the National Institute for Health and Clinical Excellence (NICE) guidelines (2014). Both bodies reinforce that irritability is not a specific symptom as it relates to making a PBD diagnosis. However, as aforementioned, the NICE guidelines (2014) go one step further and replace irritability with euphoria, while forbidding the diagnosis of hypomania in children altogether. Since AACAP's guidelines were published in 2007 and have not yet been updated, this writer recommends adoption of the guidelines and recommendations by the NICE, which have been updated more recently and reflect a more comprehensive integration of the current evidence.

By virtue of the evidence supporting a significant increase in rate of diagnosis when implementing the broad phenotype criteria, this writer recommends use of the narrow phenotype. This recommendation is also definitively stated in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition ([DSM-5] APA, 2013): "Some researchers view severe, non-episodic irritability as characteristic of bipolar disorder in children, although both the DSM-IV and DSM-5 require that both children and adults have distinct episodes of mania or hypomania to qualify for the diagnosis of bipolar 1 disorder" (p.157). The fact that adoption of broader criteria results in greater prevalence of PBD, and necessarily requires a more general and

nonspecific symptomology, leads this writer to the logical conclusion that the narrower definition is the more ethical approach, and one that aligns with the NICE (2014) guidelines. As such, implementation of the narrow phenotype is recommended by the APA, AACAP and NICE.

Adoption of actuarial techniques (Bayesian as aforementioned) is well documented in medicine as a useful tool to enhance accuracy in diagnosis (Jenkins & Youngstrom, 2016; Jenkins, Youngstrom, Washburn & Youngstrom, 2011; Jenkins, Youngstrom, Youngstrom, Feeny & Findling, 2012; Jensen-Doss, Youngstrom, Youngstrom, Feeny & Findling, 2014; Youngstrom et al., 2004; Youngstrom, Findling, Youngstrom & Calabrese, 2005; Youngstrom, Halverson, Youngstrom, Lindhiem & Findling, 2018; Youngstrom, Meyers, Youngstrom, Calabrese & Findling, 2006). Given the vulnerability of this young age cohort as well as the risks associated with misdiagnosis, use of these actuarial methods should be implemented when seriously considering a PBD diagnosis in the prepubescent aged child. Actuarial methods also reduce errors associated with clinical bias (Jenkins & Youngstrom, 2016). An understanding of availability heuristics—defined as “the tendency to overestimate the frequency of an easily recalled event and underestimate the frequency of an ordinary or difficult to recall event...due to the recent surge of media coverage of PBD” (Jenkins, Youngstrom, Washburn & Youngstrom, 2011, p.122)—is another conceptual mental shortcut for providers to be educated about so as to avoid incorrectly assigning the meaning/etiology of a child’s behavior. For instance, when evaluating a five-year old child reportedly displaying signs of sexual behavior (self-stimulation in public as an example), instead of jumping to concerns of hyper sexuality (mania), a more appropriate consideration would be to evaluate contextual details of the behavior, recent exposure to trauma, and/or recent exposure to developmentally inappropriate sexual material (pornography). Furthermore, evaluation of signs and symptoms of post-traumatic stress disorder

(PTSD) are of critical importance not just for salient diagnosis, but also for the ultimate welfare of the child.

When evaluating for symptoms of PTSD using a developmental lens, health professionals must assess children who may be presenting with unusual changes in behavior, many of which overlap those of PBD. Temper tantrums, extreme irritability, difficulty concentrating, sleep disturbance, and play reenactment (violent or sexual in nature, and with or without externally visible signs of distress) are commonly seen in young children with a history of trauma (APA, 2013). Neurochemical changes, such as activation of the limbic-hypothalamic-pituitary-adrenal (LHPA) axis, are substantially documented within the literature as catalysts for behavioral activation and regulation (De Bellis & Zisk, 2014). To date, without an airtight history (which necessarily requires input from parents/family and/or educational professionals), psychiatry is unable to distinguish with enough certainty whether externalized disturbances (such as those overlapping symptoms aforementioned) in behavior are a manifestation of an underlying SMI versus exposure to traumatic events.

Finally, while structured and semi-structured interviews, including measurements and scales like the CBCL, can facilitate systematic evaluation of externalizing behaviors, they are no replacement for clinical assessment and judgment (Diler et al., 2009). Additionally, the diagnosis of PBD in a prepubertal child is strongly recommended to be made only in the context of more than one evaluation, with added concurrent collateral information from other sources (AACAP, 2007; Axelson et al., 2006; Birmaher et al., 2009; Birmaher et al., 2006; NICE, 2014; Song, Yoon, Choi, Hong & Joung, 2010; Van Meter, Burke, Kowatch, Findling & Youngstrom, 2016; Van Meter, Moreira & Youngstrom, 2011; Youngstrom et al., 2008).

Theoretical Framework/Model

One of the aims of this project was to reorient the conceptual components associated with identifying dysfunctional behavior in children. While psychiatry continues to reinforce the medical model (limited to biological alterations that can be collected and measured), the current state of mental health assessment and treatment requires a broader biopsychosocial lens. As such, Urie Bronfenbrenner's bioecological systems theory model (2006) is reviewed herein (Appendix B).

When Bronfenbrenner first designed the ecological systems theory/model, he envisioned a series of concentric circles with the inner most circle of the microsystem, progressing outwards followed by the mesosystem, exosystem and finally the macrosystem (Rosa & Tudge, 2013). This vision evolved into something more akin to the image in Appendix B, with the forces identified to have the most direct impact on growth and development (the microsystem), to include one's immediate environment (home), family, as well as unique/individual biological characteristics (2006). Considered to have almost equal direct impact on development is the adjacent mesosystem, which includes one's immediate social surroundings (school, place of worship, friends etc.). Less direct, though still influential and with varying degrees of impact (social determinants of health) are the outer layers of the exosystem (further removed social surroundings), and the macrosystem (cultural norms and behaviors). In keeping with the complexities of evaluating young children presenting with externalized behaviors (severe tantrums, outbursts) and/or significant mood lability, considering the contextual factors that make up a child's experience are of profound and critical importance.

Bronfenbrenner and Morris (2006) further operationally defined the complex interconnection between the environment and the child as a "proximal process" that is

necessarily affected by *person, context* and *time* (p.795). The proximal processes exerting effects on and receiving effects from the individual are viewed as the primary impetus affecting development and growth. All of these components make up a series of interconnected networks that serve to impact the individual and in turn are impacted by the individual. As Rosa and Tudge (2013) eloquently summarized, “This system presupposes that the four elements of which it is formed (process, person, context, time) simultaneously influence human beings’ developmental outcomes; their effects are not merely additive” (p.251). Quite simply, children are not developing in controlled environmental silos, rather their development is perpetually shaped by the immediate environment and the context(s) surrounding and impacting that environment. Failure to prioritize these elements in a young child’s profile, and assigning meaning of extreme behavior out of the child’s unique context and strictly from within the biological realm, risks a gratuitous disconnect from the bioethical precepts that necessarily inform practice in mental health assessment (Beauchamp, 2010).

Methods

The DNP project began with email communication with several hospital administrators, followed by face-to-face meetings with the Vice President of Patient Services and Chief Nursing Officer, the Clinical Development Specialist, and the Director of Pediatric Mood, Imaging and Neurodevelopment Research. Verbal agreement was obtained from the aforementioned hospital administrators for movement with the project on the hospital premises, followed by acquisition of exempt status from the hospital site’s independent IRB. Of note, the DNP student was required to secure an administrative sponsor as a condition of the IRB, and the VP/CNO of nursing at the time agreed to fulfill this role. Further, according to IRB policy, students must elect an employee with an advanced degree to be the Principal Investigator (PI), and this author’s

mentor, nursing's Clinical Development Specialist, agreed to fulfill this role. The budget for this project was small and details for all monetary spending can be found in Appendix G.

Goals, Objectives and Expected Outcomes

Improving the precision with which mental health providers can recognize PBD is advantageous, and enhances safe, effective, and patient-centered care (Institute of Medicine [IOM], 2001). The fundamental goal of this QI project was to enhance the evidence based knowledge of psychiatric registered nurse's surrounding the complex presenting symptoms of PBD, with the long-term conceptual aim of increasing critical evaluation of presenting symptoms while prioritizing nonmaleficence, beneficence, and justice as foundational bioethical precepts (Beauchamp, 2010). Included in the QI presentation was a review of overlapping differential diagnoses to consider, most importantly presenting symptoms associated with trauma. In addition, being mindful of the mental shortcuts and biases that evidence shows tends to negatively impact critical thinking was incorporated.

Knowledge acquisition was measured with the implementation of pre and post questionnaires. Pretests were administered promptly before participants engaged in the presentation, and posttests were administered immediately following. Posttest scores were measured using a simple learning gain formula (described in the following data analysis). The DNP student set a goal of attaining a minimum of 50% improvement in posttest scores, and this goal was accomplished with participants demonstrating a 90% overall improvement (Figure 2). The presentation addressed the following: current PBD diagnostic criteria (including awareness of narrow versus broad phenotypes), epidemiology and controversies (national/international diagnostic rate disparities), significant overlapping symptoms for differential diagnostic consideration, as well as how to access reputable resources for further edification, and finally a

review of common cognitive biases that can interfere with objective assessment. Table 1 provides a broad summary of the projected goals and objectives as well as the actual outcomes of this project.

Table 1.

Goals, Objectives and Outcomes

Goals	Objectives	Outcomes
Evaluate nurse's present knowledge about PBD and cognitive biases/heuristics.	Administration of anonymous pretest/questionnaire to participants.	5 nurse's participated in this presentation.
Deliver educational presentation and material using an interactive teaching style with a poster-board presentation.	Administration of presentation material. Participant objectives: identify & describe diagnostic parameters and PBD categories, common conditions with overlapping symptoms, and recognition of common cognitive biases.	A one-hour presentation was provided (including pre/posttest) to the participants.
Evaluate post-presentation knowledge.	Administration of anonymous posttest questionnaire to each participant following completion of presentation.	Posttests demonstrated a 90% improvement in scores among the majority of participants (see figure 2).

Project Design

This Quality Improvement project included a presentation along with provision of a toolkit and the distribution of pre and posttests for all participants. The project was originally supposed to take place on campus during a mandatory three-day nursing professional development conference, and the DNP student expected a minimum of 30 nurses (participants). However, an enormous change occurred secondary to the unprecedented global pandemic of the COVID-19 virus, and the entire conference was indefinitely postponed. Thus, the DNP student

met with administrative contacts at the hospital site once more, to arrange an alternative solution. As an alternative, the DNP student was granted a conference room and all previously expected equipment, but with only a guarantee of a very small number of nurses as potential participants. Consequently, this writer completed the one-hour presentation for a total of five nurses at a child and adolescent psychiatric hospital.

By enhancing the fund of knowledge for PBD, pre and post questionnaires demonstrated a measurable increase in nursing participant's command of information around current PBD diagnostic concerns (see Figures 1 and 2 in the forthcoming results section). Additionally, this writer reinforced the importance of evaluating for far more common differential diagnoses, specifically trauma (whether directly experienced or witnessed) related disorders and their pertinent overlapping presenting symptoms. The principle of parsimony was an underlying concept that also aided in taking a more developmental approach to understanding child behavior.

Project Site and Population

This project took place on site at a child and adolescent hospital in New England. Permission was obtained from the hospital sites institutional review board (IRB) to conduct this Quality Improvement Project. The population served at this hospital is strictly child and adolescent (infancy through 18 years), with extended age parameters offered to young adults receiving services for developmental disorders (adult services for developmentally disabled young adults do not typically pick up by the state until age 21). The site is considered a 'destination hospital' and the families serviced by this hospital come from all over New England and the greater United States. Services provided on site at this hospital include: acute/urgent psychiatric evaluation, child and adolescent inpatient and partial hospitalization programs, young

child partial hospitalization program, intensive outpatient programs (for mental health, as well as co-occurring substance use), and outpatient provider appointments. No patients and no patient health information (PHI) were involved or utilized for this project. The nursing participant's were selected entirely randomly based on their availability during a one-hour time slot and arranged with assistance from the DNP student's mentor via a hospital wide nursing email. Initial respondents to the email included a total of eight nurses. However, on the day of the presentation only five of the nurses were able to participate. The actual presentation took place on Wednesday March 18th, 2020 at 1pm.

Measurement Instruments

Anonymous pre and post self-administered questionnaires, developed by this writer (Appendix D & E) were the measurement tools implemented for this project. While formal validity of these questionnaires was not obtained, critical review by several hospital administrators, along with the hospital sites IRB committee approval, aided in establishing informal face validity. Anonymous self-administered questionnaires are a cost-effective, efficient means of collecting data (Polit & Beck, 2012). Further, distribution of questionnaires in-person (as was the case for this project) "has a positive effect on response rates" and allows for timely clarification of respondent questions (Polit & Beck, 2012, p.311). This author independently developed the questionnaires with the aid of available recommended resources. Regarding the specific and topical content of this project, there are no available instruments from which this writer could borrow questions. Thus, a comprehensive fusion of the literature and the goals of this project resulted in an identical 10-item questionnaire (not including eight separate demographic questions that were only included in the pretest). As per Polit and Beck (2012), this writer first created at least 50% more items than necessary (16 questions) allowing for the

iterative process of elimination and review of questions (p.354), with the end result of 10 items. The eight demographic questions within the pretest included the following style of questions: ratio/continuous, ordinal, and nominal/categorical. In the iterative phase of creating the identical pre/posttest, the DNP student had formulated categorical style questions (multiple choice). Once the content was established, the questions were simplified into dichotomous nominal (true/false). Polit and Beck (2012) recommend, and the IRB required, a cover letter (Appendix C) be included and attached to the pre and posttest. Regarding the wording and clarity of the questions, outside help was garnered from the aforementioned administrative professionals who offered critical evaluation and approval of the content for informal face validity.

Data Collection Procedures

Once informal face validity of the pre and posttests had been established, the plan for data collection was as follows. Upon arrival to the conference room, the DNP student handed each nurse an anonymous stapled packet (labeled numerically 1-5) that included the cover letter (explaining the purpose and anonymity of the pre/posttest)(Appendix C), along with the pretest (Appendix D) and the posttest (Appendix E). The aim of including the pre and posttest in the same packet was to successfully track each individual participant's acquisition of the material. Anonymity was maintained by fixing a number in the top right hand corner of each packet (1-5) as a form of identification. Participants were instructed to read the cover letter and complete the pretest. Following completion of the pretest, the DNP student revealed a 36x48 inch poster board (Appendix H, which also includes speaking notes) and provided an approximately 45-minute educational oral and didactic style presentation, with opportunities provided to ask questions for clarification. The participants were then instructed to finish the attached posttest and handed in their completed packet to this writer. Following, the DNP student reviewed each packet to

determine that all questions were complete. Finally, this writer secured each packet in a manila envelope, which was subsequently stored in a secured environment until review.

Data Analysis

Quantitative data was collected and placed on an excel spreadsheet for analysis. Demographic questions (numbers 1-8 of the pre-test) were formatted with the following levels of measurement: dichotomous nominal, categorical nominal, ordinal, and ratio/continuous. The educational pretest (questions 9-18) and posttest (questions 1-10) were all formatted with a dichotomous nominal level of measurement.

Before the cancelation of the anticipated nursing professional development conference day, the DNP student anticipated at least 30 participants and therefore projected completion of a parametric dependent paired groups *t* test in order to measure significance of knowledge acquisition in posttest scores. However, the DNP student had a total number of five participants and therefore had to resort to an alternative means of measuring knowledge acquisition. Thus, the DNP student used a simple formula originally developed for educational settings by Hake (Nissen et al., 2018) designed to measure posttest *normalized gain*, or learning gain, or **g** (p.3). The formula for **g** is as follows: $(\text{posttest score} - \text{pretest score} / \text{total possible score} - \text{pretest score}) \times 100$. Multiplying by 100 allows for a rounder percentage to be calculated, making the results visually easier to read. The learning gain, or **g**, has since been adopted for use in a variety of settings, including nursing, to evaluate for improvement in scores on posttests associated with continuing education (CE) (Brigham Women's Hospital Center for Nursing Excellence, 2013). Bivariate descriptive statistics are described in the following results and discussion sections. Demonstration of a measurable increase in discernment of the issues and controversy surrounding PBD diagnosis following implementation of the educational presentation was of

primary interest. In particular, the DNP student was concerned with educating the nurses about the available data regarding increased diagnostic rates of PBD, and more importantly what factors have contributed most significantly to this outcome. Also of interest were any descriptive factors associated with demographics including age, duration of mental health nursing experience, race, educational level, and pretest understanding of the material.

Results

The quality improvement project design took place on site at a child and adolescent psychiatric hospital in the Northeast, in a designated conference room within the main building during regular business hours. Participant recruitment occurred in the context of a global viral pandemic and the DNP's mentor (an on-site administrator) was able to facilitate last minute enrollment (over a six day period) of nursing participants via a hospital-wide email, resulting in five total nurses. For a brief summary of the project timeline please refer to Appendix I.

Participant Characteristics

The first eight questions on the pretest (Appendix D) were strictly intended to gather descriptive and demographic information of the nursing participants. Owing to the fact that such a small number of subjects were able to participate in this project, the demographic information is best described herein. All except for one nurse had a BSN as their highest level of nursing education, while one had a Master's level degree. All participants identified their gender as female. Four participants were Caucasian, and one was African American. None of the participants had a known family history of bipolar disorder, nor any identified offspring or intimate partners with bipolar disorder. All but one of the participants has worked professionally with children diagnosed with PBD in a clinical setting. The average age range was approximately 40 years, and the number of years each participant had been a licensed RN ranged

from 3 years to 21 years. Anecdotally, four of the five nurses informed the DNP student of their specialty certification in psychiatric nursing, though this information was not formally collected.

Results on Pre and Posttests

The participants demonstrated interest and were engaged with the material, asked several questions, and had opportunities to share experiences both professional and personal. The intended amount of time allotted for the entire duration of the presentation was approximately an hour. However, owing to initial questions regarding the content of the pretest, as well as the discussion that occurred following conclusion of the presentation, the presentation lasted about an hour and a half. The demographic questions in the pretest were used strictly to provide brief descriptive information of the participants, but were not included in the measurement of pre/posttest scores. Each correct response in the pre and posttest was awarded/assigned one point by the DNP student, with a maximum possible total score of 10. The average pretest score was 7.4 and the average posttest score increased to 9.8 (Figure 1).

Figure 1.

Pretest (Questions 9-18) & Posttest Scores (Questions 1-10)



To determine whether the presentation content resulted in a measurable improvement in posttest scores in the context of a very small sample size, the normalized gain (colloquially recognized as the *learning gain*), or **g** score, was computed. This formula is used to measure the efficacy of teaching material and is calculated as follows: $(\text{posttest score} - \text{pretest score} / \text{total possible score} - \text{pretest score}) \times 100$ (Nissen et al., 2018; Brigham and Women's Hospital, 2013). The **g** score was calculated and demonstrated a learning gain average of 90% (Table 2). Owing to the assigned steps in calculating the **g** score, when a participant scores 100% on the posttest, their learning gain is correspondingly going to be 100%. This signifies that the score on the posttest met the best possible outcome. To further clarify, table 2 provides the calculation formula for each participant; notice that if the numerator and denominator equal one, then the participant will have a learning gain of 100%.

Table 2.

Calculation of g Score Including Average Gain Achieved

Subject ID	Pretest Score	Posttest Score	Calculation	<u>Gain Score</u>	
				Percentage	Average
1	7	10	$(10-7/10-7)$ $\times 100 =$	100%	
2	7	10	$(10-7/10-7)$ $\times 100 =$	100%	
3	9	10	$(10-9/10-9)$ $\times 100 =$	100%	
4	6	10	$(10-6/10-6)$ $\times 100 =$	100%	
5	8	9	$(9-8/10-8)$ $\times 100 =$	50%	
					450/500 = 90%

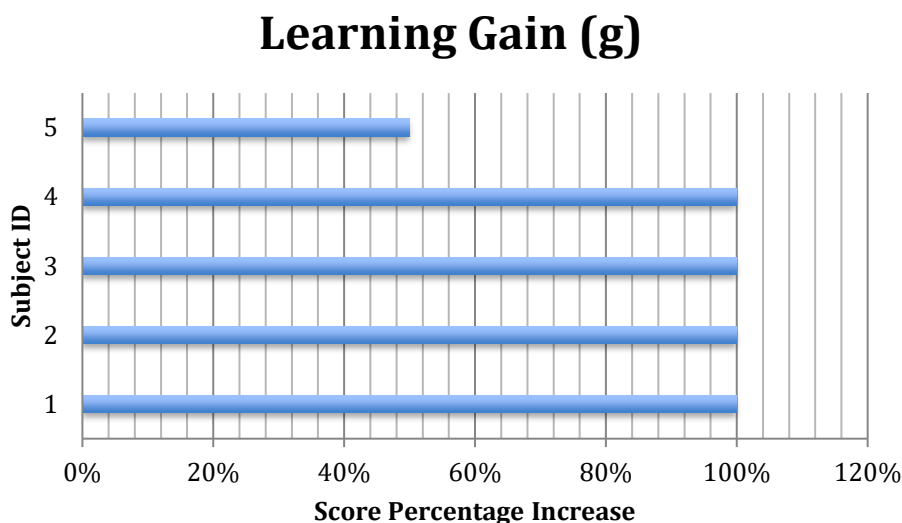
During a discussion at the end of the presentation nurses made several comments regarding their subjective learning experience and asked if this presentation could be considered for adoption into the regular curriculum for future nursing professional development days, along

with assigned CEU's. The presence of a nursing administrator during the presentation (one of the participants) facilitated the discussion as well and it was agreed that the DNP student would offer this presentation in the future in exchange for one CEU for those who participate. Anecdotally, the nurses shared their clinical experience working with children who have been exposed to traumatic events. Some shared the common observable behavior/symptom of hyperactivity and added that this also often overlaps with ADHD. Of note, this information was not formally reflected in the data, or specifically measured in the pre/posttest.

Of the five participants none scored 100% on the pretest. All participants saw an increase in their posttest scores, including four of the five participants scoring 100% on the posttest (figure 1). As discussed previously, the learning gain was simple to calculate and comparison of the pretest and posttest scores revealed one participant increasing her learning gain by 50%, and the rest increasing their gain to 100% (figure 2). Accordingly, the participants demonstrated a measurable improvement in their post-presentation knowledge. The average of these scores was calculated and equals 90% (Table 1), and is considered a **g** score of medium to high range (Nissen et al., 2018).

Figure 2.

Percentage Increase in Posttest Score



Pretest Response Themes. Each of the ten questions in the pre and posttest were of dichotomous nominal (true/false) formatting and the content of the pre and posttest were all designed to test the knowledge base of the participants. In regards to a shared gap in knowledge, there were several common themes associated with the participants pretest responses. For example, all but one of the participants answered questions 10 and 11 (pretest) incorrectly, while three participants answered question 18 (pretest) incorrectly. In other words, the majority of respondents incorrectly believed the following: there are APA diagnostic criteria for PBD that are unique from adult criteria (question 10), longitudinal studies are reflecting that most of the children diagnosed with PBD will go on as adults to have bipolar disorder (question 11), and that the United States is the least likely to assign PBD to young children compared to Germany, England, Australia and New Zealand (question 18). These three questions represented much of the essence of the presentation and reinforced the DNP student's purpose in reviewing the information.

Two participants responded incorrectly to question 14 on the pretest, which asks whether 'there are definitive screening instruments to make a diagnosis of PBD'. One participant incorrectly responded to question 12, where the participant is asked if 'mania presents as a *chronic* elevation in mood and/or irritability/anger' (emphasis included). The DNP student acknowledges that the specific wording of this question was intended to draw the readers' attention to the word *chronic*, which is why it was italicized; the question is false because mania presents instead as discreet and episodic (APA, 2013).

With respect to the correct responses, all five participants answered the following questions accurately: number nine, thirteen, fifteen, sixteen, and seventeen. Every participant commented aloud on question nine of the pretest (4000% increase in rate of PBD diagnoses

between the years 1996-2004 in the United States), making such statements as “well that’s so absurd it must be true”. Question 13 tested the participants’ ability to identify select overlapping behaviors that may present in children with exposure to trauma; it is true that ‘children presenting with severe temper tantrums and/or sexually inappropriate behavior may be demonstrating signs of post-traumatic stress disorder’. Question 15 asked participants’ whether ‘there is considerable agreement amongst researchers and specialists regarding the accurate diagnostic criteria for PBD’ (participants correctly responded that this is false). Question 16 asked if, according to recommended national and international guidelines, it is acceptable for a child to be diagnosed with PBD after only one evaluation (participants correctly responded that this was false). Lastly, question 17 asked whether ‘rates of diagnosis of PBD are the same when narrow criteria are being used as compared to the broader criteria’ (see Appendix D for the full wording of the question), and participants correctly responded that this is false. Of note, the participant who had the highest score on the pretest (9/10) also had the highest level of nursing education (MSN) in the group. Since the number of participants was small, it is impossible to determine from this sample size whether the participant with a MSN degree would have represented an outlier or not.

Posttest Response Themes. The posttests revealed four of the five participants scoring 100% (Figure 1). The one participant who did not score 100% on the posttest incorrectly responded to a question in the posttest (number six) that she had answered correctly in the pretest (number 14). As a consequence, this same participant demonstrated the lowest **g** score (learning gain) with a 50% increase, rather than a 100% increase like the other participants (Figure 2). Again, given the extremely small sample size, it is difficult to say whether this incorrect response is meaningful in any way.

Discussion

This project consisted of an educational training program that was provided to nurses at a hospital for children and adolescent psychiatric patients in the Northeast. Exposure to the presentation resulted in a 90% average increase in learning gain for the participants and a broad range of discussion topics were covered informally (not collected in the data). Participants reflected on their experience with children who have been exposed to traumatic events and the overlapping symptoms that are most commonly experienced as a consequence. The pretest also affirmed the DNP student's mission, which was largely focused on educating nurses about the current systematic barriers to accurately identifying PBD in prepubescent aged youth, as well as reinforcing the importance of critical thought when considering a SMI diagnosis in a child. How nurses report their findings in an initial assessment can greatly impact a provider's perspective when considering a diagnosis and treatment recommendations. Moreover, maintaining an objective position when working in psychiatry can be challenging given the cognitive heuristics that our brains are wired to commit. For instance, the participants particularly appreciated reviewing concerns around direct to consumer advertising, as well as confirmation bias as mental shortcuts that can have a negative consequence on objective assessment. Participants reported they were also interested to learn about the phenotypes associated with PBD, and that the broader phenotype results in more frequent diagnosis. None of the participants had previously heard of the narrow, moderate, or broad phenotypes of PBD. Further, this presentation was meant to provide nurses with a more comprehensive understanding of the necessary components that contribute to accurate diagnosis in psychiatry. Though registered nurses are not in the position to formally diagnose mental health conditions in the clinical setting, nurses are often spending quite a lot of time directly with the patients/clients and are thus situated to provide significant input

that can be instrumental to diagnostic decision making in the hospital setting. Therefore, enhanced confidence with the presentation material was achieved both quantitatively (as per learning gain), as well as qualitatively as per report by the nursing participants.

Concern was shared among the participants regarding the potential long-term consequence that an inaccurate diagnosis of a SMI can have on a child. Nurses commented that, seeing a diagnosis before meeting a child often does unintentionally influence how she interacts with the child. Subjectively, the participants agreed it was good practice to avoid making any assumptions about a child's behavior from his/her diagnosis especially at a young age since so many factors are involved and can transform over time. Ethical concerns from a broader perspective were also considered in this project. Implicit in the design and implementation was the fundamental component of asserting a holistic perspective when evaluating children presenting for mental health evaluation. In order to commit fully to the bioethical precepts of nonmaleficence, beneficence, and justice, health professionals are tasked with assessing the child from within a developmental, situational (family, school, neighborhood/community), and medical/physiological frame of reference. Nursing in particular is often the first line of assessment, especially in the hospital setting, and, importantly, must examine a child from within a contextual lens so as to best prioritize a plan of care. This means that presenting symptoms must first be evaluated for factors that are more common than PBD (think Occam's razor), including, for example, exposure to recent traumatic stressors, shifts in caregiving/attachment, and/or significant chronic stressors that may be impacting acuity of symptoms (e.g. homelessness or family member imprisoned). The inclusion of Bronfenbrenner's ecological system's model/theory facilitated discussion of the many components that can impact a child's development and behavior. As a consequence of this theory, and the image of the model on the

poster board, the participants had a lively discussion regarding social determinants of health and the influential impact that subtle but pervasive environmental shifts can have on developing children and their families.

Some limitations associated with this project include the notably small sample size. While the DNP student initially expected and planned to have a sample size of at least 30, the unforeseen global events of the COVID-19 pandemic interfered with that opportunity. Fortunately, the hospital site leadership was extremely helpful and supportive with finding a timely alternative, though resulting in a sample size of only five. The uncharacteristic conditions of the global pandemic clearly also impacted the number of participants who were both willing and available, as hospital-wide procedures were developing. Also worthy of scrutiny are the design of the test questions themselves, which were formatted exclusively in a dichotomous nominal format (true/false). True and false questions automatically give the participant a 50/50 chance of guessing the question correctly on the first attempt regardless of content comprehension. Echoing this, all of the participants informed the DNP student that the first pretest question was so extraordinary (reflecting the 4000% increase in frequency of PBD diagnoses in the United States between 1996-2004) that they had to assume it must be true (which was correct), though they were all previously unfamiliar with its content.

This QI project was originally designed to facilitate a much larger sample size, and was subject to an abrupt change in the context of a global health pandemic. All of the participants, including the DNP student, had to don surgical masks while on hospital grounds and this barrier within the context of all the stressors occurring simultaneous to the pandemic, absolutely presented as an additional challenge for all parties involved. It was in this hectic climate that the DNP student observed an in-vivo opportunity to emphasize the importance of maintaining

objectivity in our nursing assessments. In particular, how susceptible we are as human beings, especially in this context of increased hyper vigilance, to commit unintentional thinking errors that can lead to bias and subjectivity in practice. Since nurses often find themselves in a first-responder position across many settings in health, this presentation brought up those concerns that may be more unique to psychiatry, and even more so unique within the prepubescent age group. Reviewing the impact that nurses have on both children and families in a time of psychiatric crisis, in this context, proved to offer some solidarity in a time of uncertainty and vulnerability.

This project aimed to follow a quality improvement model with quantitative evidence of knowledge acquisition as its stated goal. The DNP student's future interests include expanding the participant pool to include health professionals across disciplines. Working directly with the providers who are responsible for formulating and substantiating a diagnosis of a SMI in a child is the long-term aim of the DNP student. Providers are tasked with working full time while staying apprised of the most current evidence to ensure optimal care. Reviewing the most up to date guidelines from within a biopsychosocial framework to facilitate critical self-reflection from a non-judgmental perspective can enhance provider confidence while reducing the associated risks of assigning undue clinical weight to presenting externalized symptoms/behaviors. With providers representing the potential future subject sample, the presentation would ultimately have to be updated and rearranged to reflect the practice standards and educational level of licensed psychiatric nurse practitioners, psychiatrists, and psychologists. However, the ethical aims of this project may be best suited for those professionals who formulate and bill for clinical diagnoses. Amending the format of the pre and post questionnaires would also be required so as

to avoid creating dichotomous nominal questions that leave ample room for correctly guessing a response.

Conclusion

The practice of psychiatry and mental health requires scrupulous attention to, and interpretation of, observable patient symptoms and behaviors. It also requires transparency and insight on behalf of the patient in the context of a trusting mutual rapport. The challenge of correctly identifying psychopathology in the child population is commensurate with the developmental level of the child and his/her presenting problems, and therefore adds another layer of complexity when considering diagnosis. We are not yet in a position to confidently assign pathological meaning to perplexing behaviors in the child age cohort, especially when considering more common underlying conditions. The current empirical evidence supporting a diagnosis of PBD in the prepubescent age group is not robust. The expanding diagnostic parameters of bipolar disorder to include subthreshold presentations, and thus the assignment of a SMI to subthreshold symptoms, are uniquely inappropriate in the setting of a developing child. As such, the risks are greater than the benefits, and mental health providers must follow the guidelines of the bioethical precepts of nonmaleficence, beneficence, and justice, especially with our most vulnerable patients. It was therefore the task of this project to enhance the knowledge base of nursing staff to help facilitate a shift in the critical evaluation of children for SMI, and in particular PBD.

The setting in which this project took place is committed to a broad vision as expressed in the acronym WE CARE (Appendix J), that encapsulates much of the ethical considerations aforementioned. In keeping with this vision, and in keeping with the IOM's (2001) vision for safe, effective, and patient-centered care, nurses are uniquely positioned to have a positive role in

reducing the chances for inappropriate diagnosis of PBD in the prepubescent population. Due to the very small sample size it is difficult to say whether this goal was achieved in a generalizable way. However, it was received favorably by project participants and the DNP student was asked to contribute this presentation as a component of the general nursing curriculum at the hospital site going forward, with the added incentive of providing nursing CEU's in exchange for participation. In order to better capture material content, the DNP student would consider altering the format of the questions in the future to multiple choice rather than true/false, and would add a Likert scale component that measures nurses' attitudes about the training. The participants were quite vocal with their subjective appreciation for the presentation following its completion, but their attitudes were not formally collected, which could have helped inform useful amendments to the material in future presentations.

Edification of the fundamental conceptual processes in mental health, including how diagnoses are formulated, is an important component of psychiatric nursing practice. In the absence of precise biological markers, mental health professionals are tasked with providing empathic yet objective assessment, which requires a considerable degree of self-awareness and an ability to evaluate each patient individually and without bias. A global tenet of nursing practice includes the ability to think critically, which requires a combination of evidence-based practice, and the ability to objectively reflect on past clinical experience to help meet patient needs. Enhancing nurse's comfort and exposure to reputable evidence-based literature, along with review of the diagnostic criteria actually being recommended for PBD helps to facilitate this critical thinking.

In conclusion, the stated aims of this project were met with the provision of an educational presentation for psychiatric nurses. Against the background of an evolving pandemic

and the consequent uncertainty it produced, and despite the barrier of providing education while donning a surgical mask, the atmosphere was otherwise relaxed and the small sample size likely contributed to the ease with which participants could raise questions. The nurses were largely unfamiliar with the content in the Toolkit and as evidenced by their post-presentation conversations with the DNP student, were interested in accessing and reading the material. The adoption of quality improvement projects in the mental health field is indispensable as a means of enhancing the quality of care being provided to child and adolescent patients and their families. As empirical evidence continues to grow and change, health professionals must position themselves to remain vigilant in the pursuit of best practices.

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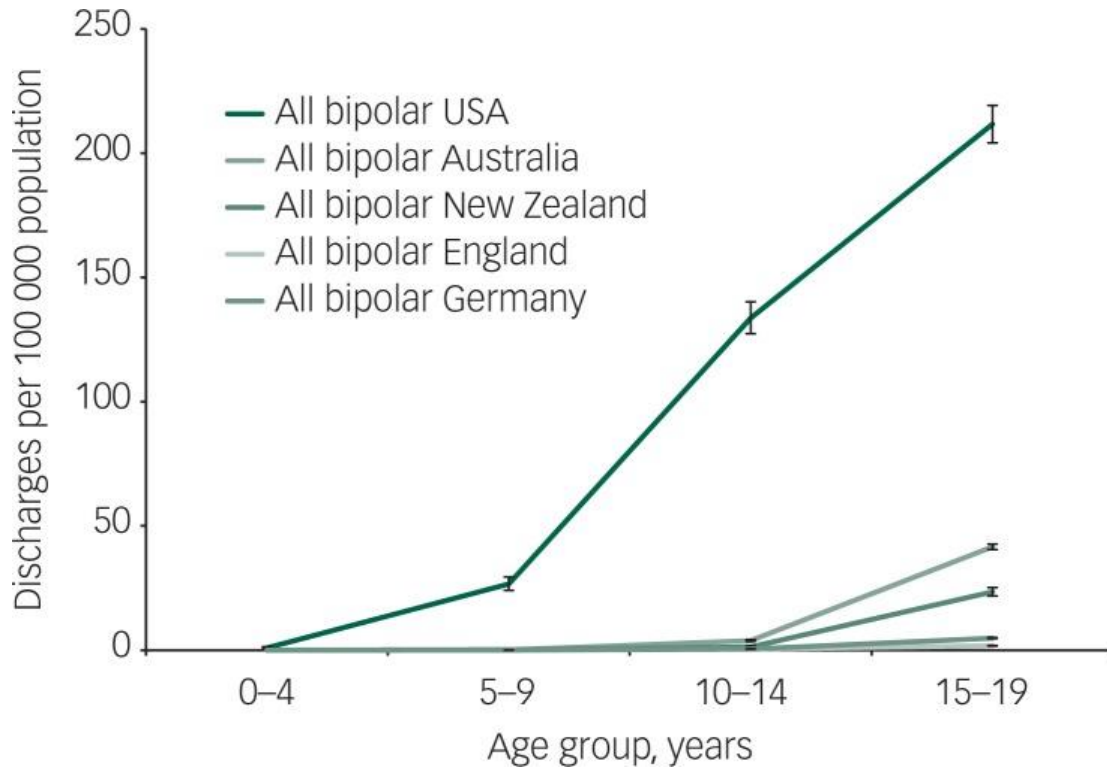
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Appendix A

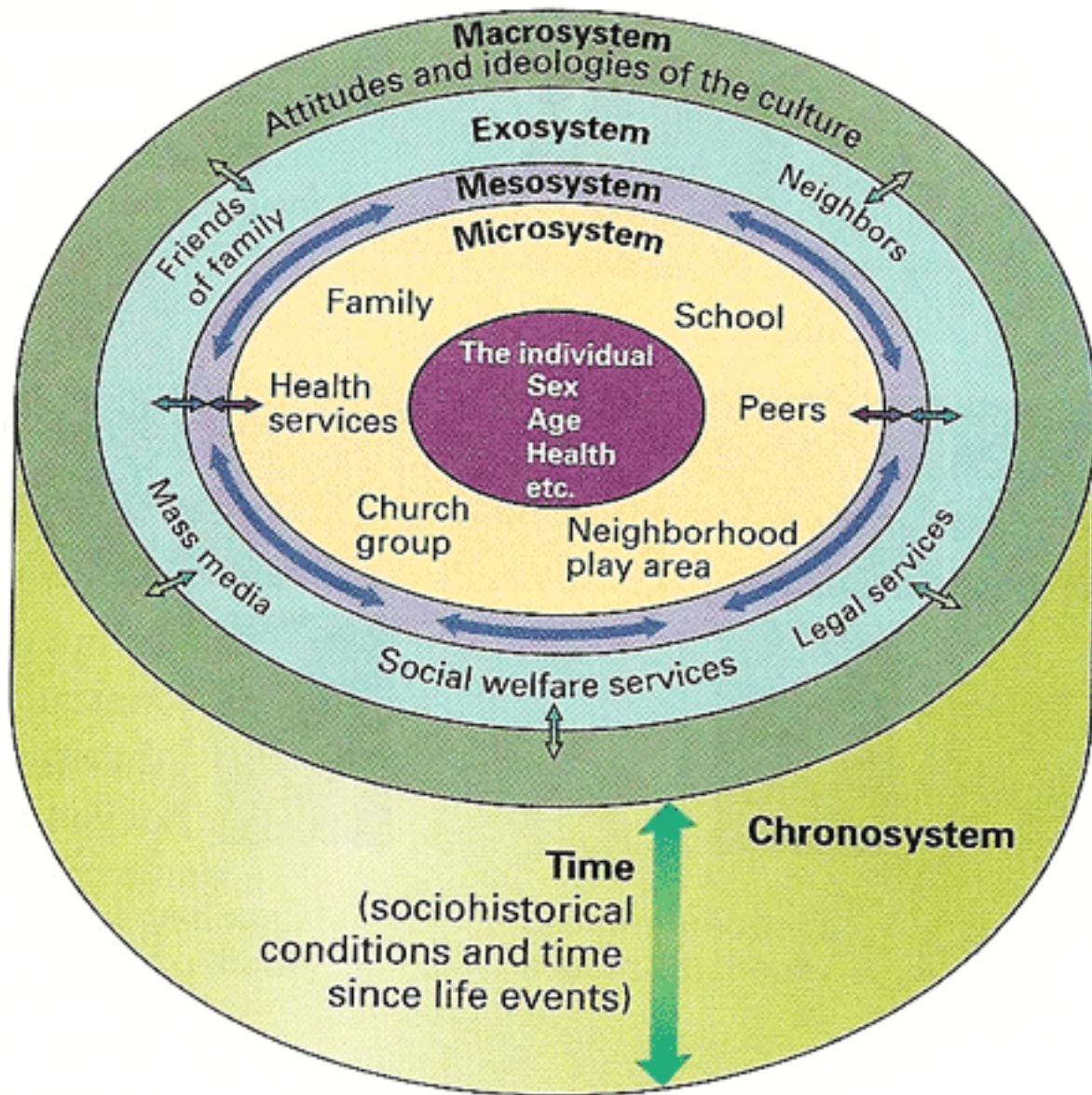
Hospital Discharge Rates 2000-2010



Retrieved from: Clacey, Goldacre & James (2015, p.169)

Appendix B

Bronfenbrenner's Ecological Systems Model



Retrieved from *Child Development: An Introduction*, 11th edition by J.W. Santrock, 2007 p.574

Appendix C

Participant Consent/Cover Letter

Informational Letter

To whom it may concern:

I would like to ask you to consider participating in a project, titled “Clinical Assessment of Pediatric Bipolar Disorder in the Prepubescent Population”. The principal investigator for this project will be Jacqueline Insana, MSN, RN-BC. The purpose of this project is to increase knowledge on pediatric bipolar disorder (PBD) among psychiatric nurses before and after a fifteen-minute education session. Participation in this project is voluntary and if you agree to participate, it will include the completion of an anonymous pretest, a fifteen-minute educational session, followed by an immediate completion of the same anonymous posttest. The total time to complete this activity will be approximately fifteen to thirty minutes. If you choose not to complete either the pretest or posttest you may still listen to all information presented as part of this project. The goal of this project is to provide education to psychiatric nurses to increase their knowledge on clinical boundaries and current controversies surrounding a diagnosis of PBD.

The pretest and posttest consist of ten questions. These questions are aimed at measuring the learning gained from the educational session. There are no benefits to participating in this project, however, you may increase your knowledge regarding PBD.

Participation in completion of the pretest and posttest is voluntary and you may withdraw at any time.

If you have any questions or concerns regarding the project, you may contact the principal investigator, Jacqueline Insana, MSN, RN-BC, 401-xxx-xxxx or email.

If you have any questions regarding your rights as a research subject, please feel to call the Research Protections director, Janice M., at 401-xxx-xxxx.

Thank you for taking the time to participate in this project.

Rachel Weitz, RN
DNP Student (Expected Graduation May, 2020)
rweitz@nursing.umass.edu
rweitz@lifespan.org

Appendix D**Participant Pretest**

1. Which age group do you belong to? (Circle)

20-30 31-40 41-50 51-60 61-70 71 or greater

2. What is your highest degree in nursing? (Circle)

ASN BSN Master's or beyond

3. What is your identified gender? _____

4. How many years have you been a RN? _____ Years

5. How many of those years have you worked exclusively with children or adolescents in mental health settings? _____ Years

6. What is your race/ethnicity? (Circle)

Black or African American Asian White Filipino/a Native American
Native Hawaiian/Other Pacific Islander Other Race

7. Do you, or any immediate family members (mother, father, siblings, grandparents, children/offspring, spouse) have a diagnosis of bipolar disorder? Yes No

8. In your nursing professional career at this hospital, have you provided care for children with a diagnosis of PBD? Yes No

9. True or False: Authors noted a 4000% increased rate in diagnosis of PBD in the United States, using national data from 1996-2004.

10. True or False: The American Psychiatric Association identifies unique/separate diagnostic criteria for bipolar disorder in children and adults.

11. True or false: Longitudinal studies are showing a significant percentage of children with PBD will go on to have an adult diagnosis of BD.

12. True or false: Mania presents as a *chronic* elevation in mood and/or irritability/anger.
13. True or false: Children presenting with severe temper tantrums and/or sexually inappropriate behavior may be demonstrating signs of post-traumatic stress disorder.
14. True or false: There are definitive screening instruments (measurements/tools) to make a diagnosis of PBD?
15. True or false: There is considerable agreement amongst researchers and specialists regarding the accurate diagnostic criteria for PBD?
16. True or false: It is currently acceptable according to national and international guidelines to make a definitive diagnosis of PBD after one initial evaluation/assessment?
17. True or false: Rates of diagnosis of PBD are the same when narrow criteria are being used as compared to the broader criteria?
18. True or false: The United States has significantly lower diagnostic rates of PBD in 5-9 year-old children as compared to the following other countries: Germany, England, Australia, and New Zealand.

Appendix E

Participant Posttest

1. True or False: Authors noted a 4000% increased rate in diagnosis of PBD in the United States, using national data from 1996-2004.
2. True or False: The American Psychiatric Association identifies unique/separate diagnostic criteria for bipolar disorder in children and adults.
3. True or false: Longitudinal studies are showing a significant percentage of children with PBD will go on to have an adult diagnosis of BD.
4. True or false: Mania presents as a *chronic* elevation in mood and/or irritability/anger.
5. True or false: Children presenting with severe temper tantrums and/or sexually inappropriate behavior may be demonstrating signs of post-traumatic stress disorder.
6. True or false: There are definitive screening instruments (measurements/tools) to make a diagnosis of PBD?
7. True or false: There is considerable agreement amongst researchers and specialists regarding the accurate diagnostic criteria for PBD?
8. True or false: It is currently acceptable according to national and international guidelines to make a definitive diagnosis of PBD after one initial evaluation/assessment?
9. True or false: Rates of diagnosis of PBD are the same when narrow criteria are being used as compared to the broader criteria?
10. True or false: The United States has significantly lower diagnostic rates of PBD in 5-9 year-old children as compared to the following other countries: Germany, England, Australia, and New Zealand.

Appendix F

Toolkit (Recommended Resources)

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: Fifth edition*. Washington, DC: American Psychiatric Publishing.
- Gerson, R., & Heppell, P. (Eds.) (2019). *Beyond PTSD: Helping and Healing Teens Exposed to Trauma*. Washington D.C.: American Psychiatric Association Publishing.
- Herman, J. (1992). *Trauma and Recovery: The Aftermath of Violence- From Domestic Abuse to Political Terror*. New York, NY: Basic Books.
- Leibenluft, E., & Dickstein, D. (2015). Chapter 62: Bipolar disorder in children. In Thapar, A., Pine, D.S., Leckman, J.F., Scott, S., Snowling, M.J., & Taylor, E. (Eds.). *Rutter's Child and Adolescent Psychiatry*, Sixth Edition. New York, NY: Wiley.
- McClellan, J., Kowatch, R., Findling, R.L., Bernet, W., Bukstein, O., ... Youngstrom, E. (2007). Practice parameter for the assessment and treatment of children and adolescents with bipolar disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46(1), 107-125.
- National Institute for Health and Clinical Excellence [NICE]. (2014). *Bipolar disorder: The NICE guideline on the assessment and management of bipolar disorder in adults, children, and young people in primary and secondary care*, (Updated Ed.). London, England: The British Psychological Society and The Royal College of Psychiatrists.
- Perry, B.D., & Szalavitz, M. (2006). *The Boy Who Was Raised As A Dog: And Other Stories From A Child Psychiatrist's Notebook: What Traumatized Children Can Teach Us About Loss, Love, and Healing*. New York, NY: Basic Books.

Van der Kolk, B. (2014). *The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma*. New York, NY: Penguin Books.

Appendix G**Budget Table**

Item	Cost
<u>Material:</u> Printing of project pre/posttests and toolkits on hospital site	No cost
Printing 36" x 48" Poster at Staples (from PowerPoint)	\$38.29
<u>Project Space</u> Room is located on hospital premises	No cost
<u>Excel Data Collection & Analysis</u> Included with Word Processing	No cost
Total Cost	\$38.29

Appendix H

Poster Board Presentation



Clinical Assessment of Pediatric Bipolar Disorder in the Prepubescent Population

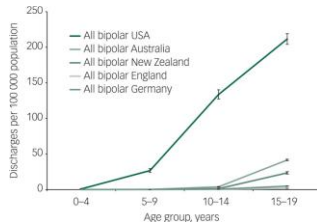
Rachel Weitz

INTRODUCTION

Diagnostic Criteria are not exclusive to pediatric population and are the same as a manic or hypomanic episode in adults APA (2013)

Manic episode:

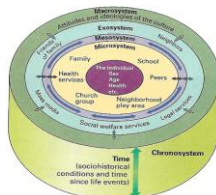
- A. A distinct EPISODIC (NOT CHRONIC) period abnormally and persistently elevated, expansive, or irritable mood and abnormally & persistently increased goal-directed activity or energy, last at least 1 week and present most of the day nearly every day (or any duration if hospitalization required).
- B. During this period of mood disturbance, three (or more) of following criteria are significantly present and are notably different from baseline behavior
 - Inflated self-esteem or grandiosity
 - Decreased need for sleep (e.g. feels rested after 3 hrs)
 - More talkative or pressure to keep talking
 - Flight of ideas or subjective feeling that thoughts racing
 - Distractibility as reported or observed
 - Increase in goal-directed activity (socially, work/school, sexually) or psychomotor agitation that is purposeless
 - Excessive involvement in activities that have a high potential for painful/ negative consequences (unrestrained shopping sprees, sexual indiscretions, or foolish business investments)
- C. The mood disturbance is sufficiently severe to cause marked impairment in social or occupational functioning or requires hospitalization to prevent harm to self or others, or with psychotic features
- D. The episode is not attributable to the physiological effects of a substance or another medical condition



THEORETICAL FRAMEWORK

Urie Bronfenbrenner: Bioecological Systems Theory Model

- Children are not developing in controlled environmental silos, rather their development is perpetually shaped by their immediate environment and the context(s) surrounding and impacting that environment



REVIEW OF THE LITERATURE

- 4000% (40 fold) increase in rate of PBD diagnosis in the United States particularly with age group 5-13 years (Moreno et al., 2007; Blader & Carlson, 2007)
- Providers in U.S. 12.5 x more likely to make PBD diagnosis compared to providers in England (James et al., 2014)
- NICE (2014) does NOT allow hypomania to be diagnosed in children, nor to use irritability as a fundamental symptom meeting criteria
- **Narrow vs. Broad Phenotype**
- Depending on specificity of diagnostic criteria rates in U.S. range from 1%- 6.7% due to broadening of criteria (NICE, 2014)

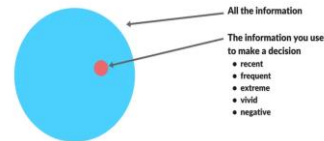
THE COURSE AND OUTCOME OF BIPOLAR YOUTH (COBY) STUDY

Birmaher et al., 2006, 2009
 Category of PBD NOS (broad and unspecific) assigned mostly to prepubertal age group with about 25% going on to develop bipolar type 1 or type 2 as young adults

COMMON OVERLAPPING SYMPTOMS & MISDIAGNOSES


- Post-traumatic stress disorder
- Attention Deficit Hyperactivity Disorder
- Major Depression Disorder(s)
- Anxiety-related disorders
- ◊ Of note: scales/measurements are not adequate tools for making a diagnosis of a serious mental illness (SMI); more than 1 evaluation required

The availability heuristic



Confirmation Bias

Confirmation bias is the tendency of people to favor information that confirms their beliefs or hypotheses. People display this bias when they gather or remember information selectively, or when they interpret it in a biased way. The effect is stronger for emotionally charged issues and for deeply entrenched beliefs. People also tend to interpret ambiguous evidence as supporting their existing position.



COGNITIVE BIAS



TALKING POINTS

“If the only tool you have is a hammer, everything looks like a nail”

The reason I want to share this information is because I have found anecdotally in my practice over time that many children who present with difficulty managing externalizing behaviors, like tantrums in younger children or aggressive reactivity in older children, had been assigned significant mental health diagnoses that tended to result in an increase in the pathologizing of behaviors, rather than an increase in evaluation for a confluence of environmental factors that

may, more likely, be playing a role in behavior. One of the alarming statistics that we can see in the literature is a dramatic increase in the frequency with which children are being diagnosed with bipolar disorder, owing to its understandably debilitating presentation and risk for long term complex health problems including suicidal ideation and attempts, this is considered a serious mental illness, with the same complexity and clinical severity as schizophrenia. Yet, recently we have seen an increased desire to assign mood lability and irritability in children and adolescents with diagnosable and treatable conditions including PBD. So much so, that in the United States we saw an increase by over 4000% in the diagnosis of PBD from data collected in a ten year period ending in 2004. Unfortunately monitoring this data long term has proved difficult because we do not disaggregate the age cohorts very well when we discuss “youth” and so we end up having less of an understanding about the specific diagnostic categories being used in young, prepubertal children. In my research I found reputable doctors who have been spear heading movements to consider evaluating children for things like ultradian cycling, the idea that a child might manifest bipolar disorder by displaying so many cycles alternating between mania and depression that they could have hundreds of cycles each day. A seminal study called the Course and Outcome of Bipolar Youth (COBY) found that within a two year period over 80% of the children diagnosed with PBD NOS had achieved complete remission. I don't know about you, but the idea of achieving total remission from a SMI is news to me. The concern with assigning a SMI to children with significant mood lability is rather obvious but includes at the very least an increased likelihood that we will administer powerful psychotropics to ease the perceived symptoms associated with mania. Now, in the DSM there are no distinguishing features assigned to children compared to adults, and while this seems funny it actually means that we have not yet figured out any way of distinguishing developmental patterns of change from pathological

patterns of change in the prepubescent age group. All of us in this room understand how important it is to consider a child's environment and developmental history when evaluating for mental health concerns, yet in practice when evaluating a child who needs help NOW we have a tendency to jump to conclusions that may be more easily treatable in the moment. Anyway, this leads me to my greater reason for wanting to do this project which is to reinforce the very real and significant impact that trauma has on children's development and how those very symptoms we see in PBD and even oppositional and attention deficit related disorders, can actually be signs that the child is struggling with integrating traumatic events in to their developing brains. When a child is exposed to a traumatic event, and depending on the child's immediate surroundings when the event occurs (i.e. looking at the diagram by Bronfenbrenner), a slew of responses can occur. What if a family member perpetrates this traumatic event for instance, then this child will internalize this experience and respond with something along the lines of either a reactive hyper aroused response, or a dissociative numbed response. All due to the survival strategy that may have made the most sense at the time, but when triggered in a benign environment like school would appear extremely concerning.

Interestingly then is that the United States has singled itself out as the country most likely to diagnose a child with PBD when compared to other "developed" countries like Germany, England and Australia. And this is true even when taking into account the difference in population (since the United States has a much greater population overall than the other countries). Also unique to this country, is that irritability is still allowed to be used a primary fundamental criteria when substantiating a diagnosis of PBD, which is explicitly not allowed in other countries. Also, one of the most reputable organizations in mental health, the National Institute for Health and Care Excellence (NICE) in the UK, which informs much of the world,

also states it does not recognize hypomania in children at all- this is definitely not the case in the United States unfortunately. NICE by the way is an organization that is tasked with developing evidence-based guidelines for use by health professionals, much like institutions in the U.S. including AACAP and the DSM. Instead of being privately funded though, the NICE guidelines are publicly funded more like the NIH. The NIH defers to the APA and DSM however for purposes of guidelines in mental health. In fact, in the U.S. in order to help children meet criteria for PBD, we have expanded the diagnostic criteria so that there is a range of potential presentation that includes anything from type 1 and the so called “narrow” criteria, that strictly adheres to the manic presentation in the DSM, compared to subthreshold presentation more like hypomania or irritability that is chronic in presentation, that we now consider “broad” or unspecified. Not to mention, the very real problem in this country of direct-to-consumer advertising, which contributes to parents understandably alarmed concerns about their child’s behavior and then reporting to health professional that their child is “manic”. Of note, we are the only country other than New Zealand that allows for this type of advertising. So, lastly, we do have some consensus here in the United States that a child or prepubescent age should have more than one evaluation before being assigned PBD, and also that there is no scale or measurement that accurately makes the diagnosis either. The symptoms of manic episode must be discrete, and a dramatic shift from baseline, but NOT chronic as this does not imply discrete episodes. Children are developing within many different substructures like the diagram shows here, all of which inform patterns of behavior, especially when a child is less likely to have the linguistic skills necessary to share their inner experience. So in conclusion, as first line evaluators, we should be always screening for trauma and looking for age appropriate means of screening for trauma.

Appendix I

Timeline Table 2019-2020

Task	March	April	May	August	Sept-Feb	March	April
Development of Pre & Posttest Material & Informal Face Validity	x	x	x				
Collaboration & Meetings with Site Management & Administrators (Subject Recruitment)		x	x			x	
Submit Proposal to Lifespan IRB			x				
Submit Proposal to UMass IRB				x			
Preparation of Poster Presentation, Packets, Educational Handout					x		
Project Implementation						x	
Analyze Outcomes & Posttest Data into Final DNP Project							x

Appendix J**WE CARE Vision Statement**

Wisdom garnered from education

Experience, competence and empathy. Expertise in nursing practice, research, leadership, and meeting the unique needs of every patient and family

Creating joy and meaning in our practice and community through the core belief in ourselves and in the innate dignity of every human being

Advocacy for our patients, families, our colleagues and ourselves

Reaching toward a body-mind-spirit integration and instillation of hope

Ethical treatment of a diverse patient population

Appendix K

UMass IRB

10/2/2019

UMass Amherst Mail - Human Subject



Rachel Weitz <relterman@umass.edu>

Human Subject

Iris Jenkins <iris.jenkins@umass.edu>
To: Rachel Weitz <rweitz@nursing.umass.edu>
Cc: Gabrielle Abelard <gabelard@umass.edu>

Wed, Sep 18, 2019 at 11:42 AM

Dear Rachel,

Thank you for submitting a Determination Form to our office for your project entitled, "Clinical Assessment of Pediatric Bipolar Disorder in the Prepubescent Population" (#19-148). We note that you have received a determination of Exempt from the site IRB. Our office accepts the determination made by the site IRB and requires no further UMass Amherst IRB review. You may begin your work.

Please let me know if you have any questions.

Thanks,

Iris

Iris L. Jenkins, Ph.D.
Assistant Director

Research & Engagement/Human Research Protection Office (HRPO)

University of Massachusetts Amherst

Mass Venture Center

100 Venture Way, Suite 116
Hadley, MA 01035

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<http://www.umass.edu/research/compliance/human-subjects-irb>

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