

BUILDING A PSYCHOTOPIC MEDICATION EDUCATION PROGRAM FOR
NEWLY HIRED NURSES IN BEHAVIORAL HEALTH

by

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A Professional Paper submitted in partial fulfillment
of the requirements for the degree

of

Master

of

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

March 2014

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ACKNOWLEDGEMENTS

I would like to acknowledge and thank my committee members, Dr. Wade Hill (chair), Chris Bates, and Kelli Begley; for their direction, support, wisdom and patience during the completion of this professional paper. Achieving a Masters in Nursing has been a dream come true and your support has been invaluable.

I would also like to thank my husband, John; and my twin boys, John and Gage; for your understanding and patience over the last three years while I spent endless hours in front of the computer or away from the family completing my clinical rotations. You all have stood by my side, brought me tea and heaters to keep warm, given me backrubs and head rubs when I was stressed, and gave me words of encouragement to keep going despite missing “mom time”. Your belief in me is amazing and without your support, I would not be graduating.

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ABSTRACT

Nursing orientation programs exist to educate and prepare newly hired nurses for their positions. Nurses who are hired to a behavioral health facility often have no previous experience in psychiatry or with medications used to treat psychiatric patients. These medications carry specific risks and adverse effects that can lead to serious, life threatening complications if patients are not monitored or properly educated about potential side effects. Education on medications for nurses during orientation can easily be overlooked. The purpose of this project was to develop and implement a comprehensive training program about psychiatric medications to deliver to newly hired nurses in a child and adolescent behavioral health facility. The project was created from evidenced-based neuroscience research on psychiatric medications, adverse medication syndromes, and movement disorders associated with the use of psychotropic medications. The ninety minute training module included a posttest and an evaluation form. After implementing the program, the nurses expressed an enhanced knowledge base of medications used in psychiatry, an increased awareness of how to monitor for medication side effects or adverse events, and more confidence with teaching patients about their medications. The effectiveness of the program strongly suggested a permanent place for this training during orientation in a behavioral health facility, and one that would include the role of a psychiatric nurse practitioner as an educator and mentor to the behavioral health nurses.

CHAPTER 1

INTRODUCTION TO THE PROJECT

Introduction

The nursing profession is a dynamic discipline in which a nurse can work in a variety of clinical and non-clinical areas with their nursing degree. Upon graduation from a nursing program, Registered Nurses (RN's) and Licensed Practical Nurses (LPN's) share a common set of practice standards, as well as a base of responsibility and accountability as defined by a general scope of practice (Montana State Board of Nursing, 2008). Nurses are taught basic skills in nursing school, including education on medication administration that they are expected to perform in any job within the field of nursing. After graduation, they can branch off into specialties and subspecialties in the nursing profession. One example of a specialty area in nursing would be psychiatry; an example of a subspecialty of this area would be child and adolescent psychiatry.

Educational programs and nursing competencies are developed by each facility to meet their standards of practice under the general scope of practice requirements. Specific educational programs for nurses in psychiatry may include training on mental illness; safety; de-escalation techniques; restraint and seclusion; behavioral assessments; suicide prevention; and psychotropic medications. Nursing competencies are established to test knowledge of an educational area and demonstrate ability to perform a task or function. Being competent means one is able to do a task or function well and effective. It is essential to develop and implement educational programs and nursing competencies

that meet the core needs of that facility and show ability of the nurses to perform specific nursing tasks effectively.

In behavioral health, psychotropic medications are commonly used. Classes of psychotropic medications include stimulants; antidepressants; antipsychotics; mood stabilizers; and anxiolytics. These medications carry specific risks and adverse effects that can lead to serious, life threatening complications and permanent damage. An education program on psychotropic medications is not only important to enhance a nurses knowledge base on specific classes of medications administered to behavioral health patients, but it is essential to know about monitoring for adverse effects for patient safety, and teaching the patients about their medications. Therefore, a need exists for this type of highly skilled training on psychotropic medications and a competency demonstration. Developing such a program is dependent on the facility to create and implement with all nurses at their facility upon hire.

Background and Significance

Adverse Drug Events (ADE's) are considered any situation in which harm or injury occurs to a patient as a result of normal dose and usage of a medication. Psychotropic medications have a high association with ADE's, and many serious drug events involve children younger than age 17 (Brauser, 2010). "The high number of serious adverse drug reactions in the pediatric population should be a concern for health care professionals" (Brauser, 2010). The categories with the largest reported ADE's are stimulants at 42%, antidepressants at 31% and antipsychotics at 25.4% (Brauser, 2010).

According to Safer (2011), children have more biological vulnerabilities to ADE with psychotropic medications than adults. Common ADE's seen with children and adolescents include changes in affect, weight, blood pressure, heart rate, heart rhythm, metabolism, and growth; rashes; gastrointestinal problems with nausea, vomiting, diarrhea and constipation; dystonia; tics; activation; sedation; and sialorrhea.

The goal of decreasing ADE's is critical when administering medications and to provide safe medication use in patients (Thomas, Boggs, DiPaula and Siddiqi, 2010). If nurses can become more aware of the potential for ADE's with specific psychotropic medication classes, and have more education regarding early response to ADE's, it can lead to safer use of medications with patients. The impact of a limited psychotropic medication educational program for nurses on hire to a behavioral health facility can be devastating with regard to ADE's.

The past practice at a children's behavioral health facility in southwest Montana for nursing orientation on psychotropic medications has included a self-study packet of information on psychotropic medications, adverse reaction syndromes, and movement disorders. This was followed up with a short presentation about classes of medications used in psychiatry. The nurse then takes a 35 question test, requiring at least 90% to pass in order to be considered competent to give medication on the nursing units. Since a majority of the newly hired nurses come to this facility without previous psychiatric experience, they are learning the basics about psychiatric nursing in addition to children's psychiatric nursing care, especially related to administering psychotropic medications and the potential side effects and adverse reactions. Having a more comprehensive training

program or module on psychiatric medications upon hire is essential to better prepare nurses for medication administration on the clinical units.

Statement of the Problem

Many nurses are hired to a behavioral health facility without previous experience in mental health, or they are new graduates who have no previous nursing experience. General medication education is taught in nursing school, with limited emphasis on psychotropic medications. Upon hire to a psychiatric hospital, the basic orientation covers everything from dress code to infection control and workplace safety. There is additional training and orientation for RN's and LPN's such as nursing competency skills, restraint and seclusion training, and behavioral assessments. However, only a fraction of orientation time may be dedicated to psychotropic medication education, and some of the medication training may be a self-taught situation where the nurse is given information about medications with a post-test to evaluate learning.

Given the nature of the complexities of psychotropic medications and potential for adverse drug effects, it can be problematic to expect a nurse to be competent on administration of psychotropic medications without a formalized teaching program. The program would need to include an education module, a competency test (post-test), and an evaluation of the program. Such a formalized teaching program on psychotropic medications does not exist at many behavioral health facilities, and such a program does not exist at the child and adolescent behavioral health facility in southwest Montana.

Purpose

The purpose of this project is to develop a training program on psychotropic medications for newly hired nurses at the children's behavioral health facility in southwest Montana. Having a more comprehensive training program on psychiatric medications upon hire is crucial to better prepare nurses for safe medication administration of psychotropic medications and an enhanced knowledge about ADE's in order to intervene early.

Organization of the Remainder of the Project

Chapter 1 discussed the background related to adverse drug events and the importance of psychotropic medication programs in behavioral health facilities. Chapter 2 will review the literature on the role of neurotransmitters; psychotropic medications by classes; movement disorders; medication side effects; and adverse medication syndromes. Chapter 3 will discuss the psychotropic medication module in detail from program development to implementation and evaluation. Chapter 4 will provide a summary of the findings of the project, and Chapter 5 will discuss implications of psychotropic medication programs for behavioral health nurses and recommendations for future programs.

CHAPTER 2

REVIEW OF LITERATURE

Introduction

In order to organize the educational program, research included methods of delivery for educational systems. When choosing a method of delivery, it is important to look at different learning styles as well as the target audience. People can learn from face to face lectures, handouts and reading materials, visual cues, question and answer sessions, or a combination of those listed. Choosing a target audience that is familiar with the classroom type learning style (didactic) but also the question and answer learning style (dialectic) is important to enhance the understanding of the topic at hand (Kern, 2012). In addition, using the latest technology is important to exemplify the presentation.

This project used a combination of styles to include didactic, where the active teacher is presenting information to the student in a face to face format; dialectic, where the question and response portion drives the student and teacher to have a better understanding of the key concepts (Kern, 2012); and a power point presentation to provide visual cues and enhance the written material.

In order to gather information on psychotropic medications for the medication module, research included brain neuroscience, and the five main classes of psychotropic medications to be discussed in the educational module. The five main classes are: 1) stimulants, 2) antidepressants, 3) antipsychotics, 4) mood stabilizers, and 5) anxiolytics.

Medication syndromes and movement disorders are also included in the research for the education module. This literature review will focus primarily on the available research related to neurotransmitters, the five main classes of medications, movement disorders and Extrapramidal Symptoms, Serotonin Syndrome, and Neuroleptic Malignant Syndrome. All of the above will be covered in more detail in this chapter.

Search Methods

The literature review utilized electronic databases such as CINAHL®, Medline and PubMed for journal articles and peer reviewed articles; drug reference guides; and other sources specific to the topic of psychotropic medications. Key word searches used the following terms: neurotransmitters, stimulants, antidepressants, antipsychotics, mood stabilizers, anxiolytics, movement disorders, extrapyramidal symptoms, serotonin syndrome, neuroleptic malignant syndrome, program development, and evaluation tools.

Neurotransmitters

Research on neurotransmitters is extensive. Neurotransmitters are chemicals in the nerve cells (neurons) of the brain that relay messages to adjoining neurons through synapses. Neurotransmitters are responsible for communicating vital information throughout the brain and body, and can have a profound effect on mood, sleep, metabolism, concentration, and digestion (Wright, 2003). There are hundreds of types of neurotransmitters in the human body, but the ones frequently discussed that are associated with neurotransmitter imbalance and mental illness is the category of the

classic neurotransmitters (Higgins and George, 2007; Wright, 2003). The classic neurotransmitters are separated into two main groups: Amino Acids and Monoamines. According to Higgins and George (2007), the amino acid neurotransmitters include glutamate, γ -aminobutyric acid (GABA), and glycine. The monoamines are divided into subgroups: catecholamines (dopamine (DA), norepinephrine (NE), and epinephrine) and indoleamines (serotonin and melatonin). Each neurotransmitter is described by their function of inhibitory or excitatory in the brain, with glutamate making up more than half of the excitatory neurons (Higgins and George, 2007). The monoamines are the minority in the brain; however, they play a substantial role with psychotropic medications.

Neurotransmitters can be depleted or out of range by a number of factors including stress, poor diet, genetic predisposition, drug use (prescription and recreational), alcohol use and caffeine use. “An estimated 84 percent of the population has some degree of neurotransmitter deficiency or imbalance.” (Wright, 2003) The use of psychotropic medications can optimize neurotransmitter function and help to treat those suffering from mental disorders such as anxiety, depression, schizophrenia, and mood disorders.

Classes of Psychotropic Medications

The bulk of the medication education module consists of relaying information on the five main classes of psychotropic medications. These classes are: 1) stimulants, 2) antidepressants, 3) antipsychotics, 4) mood stabilizers, and 5) anxiolytics. For each class of medication, research include indication and target symptoms; side effects and

potentially life threatening adverse reactions; and other information such as teaching points, precautions, warnings, and monitoring.

Stimulants

Stimulants are commonly used to treat Attention-Deficit Hyperactivity Disorder (ADHD), which is the most common behavioral disorder in children. It is estimated that between 4% and 12% of all school-aged children, and between 2% to 4% of adults have ADHD (Biederman, 2003). Symptoms of ADHD can interfere with functioning at home, school, or with activities of daily living, and can include short attention span, inability to sit still, hyperactivity and impulsivity (Biederman, 2003).

Stimulants work by blocking the reuptake of dopamine and norepinephrine in the prefrontal cortex (Leahy and Kohler, 2013; Stahl, 2011) and can have short, intermediate or long acting properties. Common side effects with stimulant include decreased appetite, weight loss, headaches, gastrointestinal effects, trouble sleeping and jitteriness (Lippincott Williams and Wilkins, 2012; Mosby, 2010).

Antidepressants

Antidepressants are used to treat depressive disorders and other conditions such as anxiety disorders, Obsessive-Compulsive disorders, and trauma- and stressor-related disorders (American Psychiatric Association, 2013). According to Nordqvist (2012), an estimated 13.3 million people in the United States were using antidepressants in 1996; this jumped to an astounding 27 million users by 2005. Symptoms of depression include feelings of hopelessness or helplessness, decreased energy, changes in sleep and appetite,

lack of enjoyment of activities (anhedonia), and thoughts of suicide (Leahy and Kohler, 2013).

Antidepressants commonly used in adults and children are Selective Serotonin Reuptake Inhibitors (SSRI's) and Serotonin-Norepinephrine Reuptake Inhibitors (SNRI's). SSRI's all share a pharmacological feature which is the potent inhibition of serotonin reuptake into the presynaptic axon terminal leading to an antidepressant effect (Stahl, 2011). SNRI's have a dual action of blocking the reuptake of both serotonin and norepinephrine, but also are unique in that they have a third action on dopamine in the prefrontal cortex giving SNRI's a triple boosting action on efficacy and treatment of depressive disorders (Stahl, 2011). SSRI's and SNRI's are usually the first line of treatment for depression because they are considered safer than the older antidepressants with fewer side effects (Nordqvist, 2012; Stahl, 2011). Side effects of SSRI and SNRI antidepressants include headache, upset stomach, sleep disturbances, dizziness, feelings of restlessness or agitation, increasing suicidal ideation and sexual side effects (Leahy and Kohler, 2013; Lippincott Williams and Wilkins, 2012; Mosby, 2010).

Other antidepressants used include Tricyclic Antidepressant (TCA's), MAOI's, and atypical antidepressants; however, these are used with less frequency due to the potential for serious side effects and adverse reactions.

Antipsychotics

Antipsychotics are used to treat many conditions including severe psychiatric disorders such as schizophrenia and bipolar disorder, but also used to treat symptoms of depression, anxiety, insomnia, and severe aggression (Friedman, 2012). The class of

antipsychotic medication is divided into two categories: typical agents, also known as first-generation antipsychotics (FGA), and atypical agents, also known as second-generation antipsychotics (SGA) (Leahy and Kohler, 2013; Stahl, 2011).

In general, antipsychotic medications block a specific dopamine receptor in the brain known as the D2 receptor (Tung and Procyshyn, 2007). FGA block the D2 receptors inside the mesolimbic pathway in the brain, but also block D2 receptors outside the mesolimbic pathway leading to potential side effects of tremors, akathisia (inner feeling of restlessness), muscle spasms, and tardive dyskinesia (Tung and Procyshyn, 2007). SGA block the D2 receptors as well as a specific subtype of serotonin receptor (5HT2A), which causes fewer side effects as seen with the FGA (Tung and Procyshyn, 2007). However, there are side effects associated with the SGA that include weight gain, diabetes, elevated lipid and cholesterol, and movement disorders such as dystonia and dyskinesia (Friedman, 2012; Stahl, 2011; Tung and Procyshyn, 2007)

Mood Stabilizers

Mood stabilizers are used to treat mood disorders such as mania, bipolar and depression based on their anti-manic effects, antidepressant effects, and prevention of recurrence qualities (Stahl, 2011; Young, 2004). Lithium is considered the gold standard (Young, 2004) for treatment of bipolar disorder for its anti-suicide effects and the prevention of mania recurrence. However, many anticonvulsants such as valproic acid, carbamazepine, lamotrigine, and oxcarbazepine are now commonly used to treat mood disorders because of their mood stabilizing properties and for their efficacy in different phases of bipolar disorder (Stahl, 2011).

Once used as high-dose monotherapy (Stahl, 2011), Lithium is more commonly used today in combination with other medications to effectively treat mood disorders. Lithium's mechanism of action is not well understood, but it creates a balance between inhibitory and excitatory neurotransmitters in the brain. Lithium carries a high profile of side effects to include gastrointestinal symptoms (nausea, diarrhea, and abdominal pain); weight gain; alopecia; tremor; sedation; changes in cognition and gait; and decreased cognition (Leahy and Kohler, 2013; Lippincott Williams and Wilkins, 2012; Mosby, 2010). There also can be severe, long-term adverse effects on the kidneys and thyroid (Stahl, 2011) that can cause hypothyroidism and renal failure. Lithium requires routine monitoring of serum drug levels and patient education to avoid toxicity.

Anticonvulsants have varied mechanisms of actions in the brain, and common side effects include sedation, tremor, alopecia, ataxia, gastrointestinal symptoms and vision changes (Lippincott Williams and Wilkins, 2012). There can also be severe adverse life threatening effects with anticonvulsants. Valproic acid can cause hepatotoxicity, pancreatitis, hyperammonemia, and suicidality (Leahy and Kohler, 2013). Carbamazepine can cause hepatic failure, renal failure, cardiac conduction disturbances, and hematological disorders such as anemia, leukopenia, and thrombocytopenia (Leahy and Kohler, 2013). Lamotrigene can be associated with a rare but life threatening Stevens-Johnson rash (Lippincott Williams and Wilkins, 2012; Mosby, 2010). Oxcarbazepine can lead to clinically significant hyponatremia (Leahy and Kohler, 2013). With the potential for adverse effects from mood stabilizers, patients require medication

education about side effects and ongoing monitoring (serum levels) to watch for serious adverse effects.

Anxiolytics

Anxiolytics are used to treat symptoms of anxiety and Anxiety Disorders such as Generalized Anxiety Disorder, Social Anxiety Disorder, Panic Disorder, Phobia, Obsessive-Compulsive Disorder (OCD) and Post-Traumatic Stress Disorder (PTSD) (American Psychiatric Association, 2013). There are different classes of medications used to treat anxiety disorders, each with a distinct risk and benefit associated with the medication. The most commonly used anxiolytics are benzodiazepines, which have relatively few side effects including drowsiness, loss of coordination, and mental slowing, and can relieve symptoms within a short period of time (Schiffman, 2011). However, people can develop a tolerance and dependence on these medications when taken long-term, and must be used with caution. For this reason, they are no longer the first line treatment for anxiety disorders (Stahl, 2011).

Movement Disorders and Extrapiramidal Symptoms

There are two classifications of movement disorders: dystonia and dyskinesia. According to Sanger et al. (2003), dystonia refers to intermittent or sustained involuntary contractions of the muscles that cause stiff or twisting motions, abnormal postures, or repetitive movements. Dystonia can be acute or non-acute; examples include jaw and facial contortions; stiff neck (torticollis); elbow, wrist and finger flexion; foot-in turning or ankle eversions; difficulty swallowing; tongue darting; or eye rolling. According to

Grosset and Grosset (2004), dyskinesia refers to rhythmic involuntary movements that can include rapid and jerking, slow and writhing, twisted and distorted, or violent movements of the limbs. Dyskinesia is a term to describe disorders including akathisia, bradykinesia and chorea. Akathisia refers to an inner feeling of restlessness and/or a subjective feeling of a need to move the limbs. It can be a frequent and early side effect of antipsychotics, starting within two weeks of initiation of the medication (Grosset and Grosset, 2004). Bradykinesia refers to slow body movements such as shuffling gait or decreased arm swing with ambulation, and chorea refers to violent jerky movements of the limbs caused by an effect of dopaminergic excess (Grosset and Grosset, 2004).

Extrapyramidal Symptoms (EPS) or side effects describe movement disorders that happen during the early phases of treatment with antipsychotic medications induced by the blockade of dopamine. These symptoms can be mild to severe or life threatening, and can happen within hours or days of taking an antipsychotic medication. Tardive Dyskinesia (TD) describes movement side effects that occur late in treatment with antipsychotic medications. Classic manifestations of TD include rhythmic, involuntary movements of the tongue, face, jaw, neck, upper arms, trunk or legs (Grosset and Grosset, 2004). Symptoms that persist for more than six months are considered permanent.

Serotonin Syndrome and Neuroleptic Malignant Syndrome

Serotonin Syndrome is a potentially life threatening reaction that results from the use of SSRI's. According to Boyer and Shannon (2005), there are three key features of

Serotonin Syndrome. The first feature is a predictable course related to excess serotonergic receptors from a specific combination of SSRI's and other medications; change in the dose of a medication; or overdose of a SSRI medication. The second feature is the clinical manifestations of mental status changes, autonomic hyperactivity, hyperthermia, and neuromuscular abnormalities all consistent with too much serotonin in the system. The third feature is the range of symptoms from mild to lethal.

In contrast, Neuroleptic Malignant Syndrome (NMS) is a rare but life threatening reaction to antipsychotic medications. Tonkonogy (2011) states that although first generation antipsychotics are most frequently associated with NMS, all antipsychotic agents can precipitate this syndrome. The classic symptoms in NMS are characterized by hyperthermia, severe muscular rigidity, altered mental status, and autonomic dysfunction (Tonkonogy, 2011). NMS is similar to Serotonin Syndrome in that they both have altered mental states, autonomic dysfunction, muscular rigidity and hyperthermia, but the key difference for the diagnosis of Serotonin Syndrome is the history of medications used with serotonergic properties and the absence of severe muscular rigidity.

CHAPTER 3

METHODS

Program Development

Understanding that a problem exists within the children's behavioral health facility during orientation for nurses, the next task was to develop a process to educate the newly hired nurses and incorporate psychotropic medication education into the current orientation program. Consults were done with key members of the organization including the Director of Nursing, the Chief Pharmacist, and the Education Coordinator. The ideas brought forth to the Director of Nursing centered on the problem of lacking psychotropic medication education during orientation for newly hired nurses, and the need for a better understanding of psychotropic medications for safe administration, and patient teaching. Meeting with the Chief Pharmacist was necessary to bridge the gap between what is already being discussed with the nurses in orientation on psychotropic medications and the areas that need to be further developed. Lastly, a discussion was held with the Education Coordinator on the logistics of inserting a training module during the busy orientation week for newly hired nurses. Once the idea of the medication education program was approved, the next step was to develop the program.

The process for developing a training course consists of a task analysis and program design. Pradhan (2002) states that a task analysis should include the identification of a target audience, listing the responsibilities and tasks of the target audience, and selecting the learning objectives for the skills and knowledge that is to be

taught. For this education program, the target audience has been identified as newly hired RN's and LPN's at the behavioral facility. The tasks to be performed are medication administration and patient education on medications. The learning objectives included:

1. Develop a greater understanding of psychotropic medication and the role of neurotransmitters.
2. Identify target symptoms for medications.
3. Define psychotropic medication indications, mechanism of actions, side effects, and adverse effects.
4. Understand movement disorders and adverse medication syndromes.
5. Successfully pass the medication test by a score of at least 90%.

A program design consists of organizing the skills and knowledge into a detailed session plan and suitable teaching units (modules) to deliver the information (Pradhan, 2002). The amount of time allotted for each training session was determined to be 90 minutes. For the teaching units, a PowerPoint® presentation was determined to be the most proficient tool to deliver the module. PowerPoint® slides (see Appendix A) were developed based on the literature review of 1) neurotransmitters; 2) the medication classes; 3) movement disorders and Extrapyrarnidal Symptoms; 4) Serotonin Syndrome; and 5) Neuroleptic Malignant Syndrome. In order to tailor this program specifically to Shodair Children's Hospital, the presentation addressed medication information on children and adolescents, and medications commonly used with children at this behavioral health facility (see Appendix A).

The last steps of developing a training program were to review and finalize the training materials (Pradhan, 2002) including handouts, a posttest, and evaluation forms. Since the medication information was to be presented in a relatively short amount of time, handouts on medication classes and movement disorders/medication syndromes (see Appendix C and D respectively) were created to accompany the presentation to give additional references to the nurses.

A medication test (see Appendix B) was developed to evaluate individual learning of the module, and the nurse must successfully pass the medication test upon completion of the module as stated in the learning objectives. The 35 question medication test was based on the information presented to the target audience. The test included a number of questions on each medication class and several questions on other medication information directly from the presentation (see Table 1).

Table 1. Medication Test Question Types.

Question Type	Number of Questions (n=35)
Antipsychotics	7
Stimulants	6
Antidepressants	6
Anxiolytics	5
Mood Stabilizers	4
Other	7

Lastly, a Program Evaluation Form (see Appendix E) was developed to assess the effectiveness of the medication education program, the information presented, and the instructor. Using a Likert Scale questionnaire, the learner would address the following questions after the presentation using scale of 1 (strongly disagree) to 5 (strongly agree):

1. The psychotropic medication module was informative and enhanced my knowledge base on medications.
2. The medication test was in line with the material presented.
3. The medication module instructor was knowledgeable and able to answer my questions.

The PowerPoint® presentation and assembly of the training materials were created over a six month period of time in 2012-2013, finalizing the module in January of 2013. At that time, a meeting was held with the Education Coordinator at the children's behavioral health facility to discuss the program implementation for any newly hired nurse. Times to present the psychotropic medication module were then included into the orientation process for future nurses hired to the facility. The main conference room was chosen as the most suitable presentation area with adequate lighting and a large screen to project the PowerPoint® slides. In February of 2013, a nurse was hired to the children's behavioral health facility and the program was ready to begin.

Program Implementation

The psychotropic education program was implemented from February of 2013 to October of 2013. Nine presentations were given with a total of 15 nurses who completed the training, including eleven RN's and four LPN's. The trainings were held at the children's behavioral health facility in the main conference room via PowerPoint® presentation over 90 minutes. At the start of each presentation, the nurses were given the following: 1) copies of the PowerPoint® slides printed with three slides per page to

encourage note taking; 2) handouts on medication classes, movement disorders and adverse medication syndromes; and 3) writing utensils. Before the presentation commenced, the nurses were asked about past experience in behavioral health and with psychotropic medications to gauge the level of educational and learning needs.

During each presentation, the nurses were encouraged to be interactive and ask questions at any time. The conclusion of the presentation included a specific question and answer portion to discuss any of the material presented or general questions related to psychotropic medications given at the behavioral health facility.

At the completion of the presentation, the nurses were instructed to complete the 35 question medication test. The medication test was scored and given back to the nurse immediately upon finishing, requiring a score of at least 90% to pass the medication module. The final step was to complete the program evaluation form encouraging feedback about the education module, the medication test, and the instructor.

Program Modifications

After the first teaching session, it was noted that minor modifications were needed to the presented slides. First, the colored bullet points on the slides that were not solid were difficult to see on the large projector screen. Second, some of the icons on the stimulant chart were missing when a different computer was used to bring up the saved presentation. Third, the pictures for Serotonin Syndrome and Neuroleptic Malignant Syndrome needed to be larger to see the fine print. Lastly, a slide needed to be added on neurotransmitter type and function to better explain the concept of neurotransmitters.

CHAPTER 4

RESULTS

Summary of Findings

Outcomes of the psychotropic medication education program can be separated into objective and subjective findings. Objective findings include the medication test scores, analysis of the medication test questions, and the data collected on the evaluation form. Subjective findings from the education program include verbal comments to the instructor after the presentation, feedback from the Director of Nursing, and a discussion amongst the nurses on the unit about the educational program. This chapter will describe the objective and subjective findings in further detail.

Objective Findings

The medication test was scored at one point for each question, with a maximum of 35 points to be achieved on the test. A score of 90% or greater (or 32 out of 35 questions correct) was needed to achieve a successful passing grade. Of the 15 nurses who completed the module and took the test, 14 passed the test with a grade of 91% or higher (see Table 2). One nurse scored an 86%, which was below the 90% passing grade.

Table 2. Medication Test Scores.

Questions Correct	% Correct	n=15
35/35	100%	7
34/35	97%	0
33/35	94%	6
32/35	91%	1
31/35	86%	1

The nurse who scored an 86% was required to go over some of the key concepts in the presentation, review the incorrect test questions with the instructor, and successfully answer the incorrect questions. This took an additional 15 minutes of time for that presentation, making the total time 105 minutes as opposed to the other presentations completed over 90 minutes.

A medication test item analysis was completed on all the medication tests given. For each question that was incorrect, the following was noted on the analysis form: 1) item number; 2) description or type of question; 3) number of answers that were correct out of the 15 participants; 4) the percentage correct for that item; and 5) the incorrect answer(s) selected. A medication test item analysis table was generated (see Table 3).

Table 3. Medication Test Item Analysis.

Item #	Description	Answers Correct	%	Incorrect Answer Selected
10	Antidepressants	14/15	93%	A
12	Antidepressants	13/15	86%	C = 2x
15	Stimulants	13/15	86%	A,B
17	Stimulants	14/15	93%	C
18	Antipsychotics	14/15	93%	B
22	Antidepressants	13/15	86%	A = 2x
27	Anxiolytics	14/15	93%	C
29	Antidepressants	13/15	86%	A
30	Other – Medication Syndromes	14/15	93%	A
31	Anxiolytics	14/15	93%	A
32	Other – Melatonin	14/15	93%	A
34	Other – Benadryl	14/15	93%	A
35	Other – Cogentin	10/15	67%	A = 5x

There were 13 questions that were incorrectly answered by the participants over the 15 medication tests given. To further analyze the test questions, each incorrect response was broken down into the type of question and calculated using the number of

people who scored the answer correctly out of the total number of participants. In addition, the incorrect responses were added to the analysis to see if there were any patterns with the incorrect answers chosen. Of these 13 questions, 12 of them showed the answer being selected correctly at 86% to 93% of the time. Item number 35 stood out with only 10 out of 15 participants (or 67% of the time) getting this question correct.

From the item analysis, there were three distinct patterns. First, the description of the incorrect question types showed that questions on antidepressants and questions in the “other” category were the two highest categories of questions that were commonly missed. From the table, however, it was clear that each of the questions in the antidepressant and “other” category had the same incorrect answers chosen. This would suggest that the question wording may need to be changed, or that the concepts need to be further elaborated in the presentation.

The second pattern was with the highest number of incorrect responses for question number 35, which was the last question on the medication test. All five of the participants who missed this question, chose the same incorrect answer. This could suggest that the correct answer was poorly worded, the information in that question has to be re-evaluated during the presentation, or that a test taker is mentally exhausted by the end of the test to have the last question be challenging and difficult.

The third pattern noted from the table was the within the item numbers itself. The medication test had 35 questions. Questions that were incorrectly answered came from seven of the last eight test questions (item numbers 29 through 35). This was an interesting finding suggesting mental exhaustion and lack of material retention was a

similar finding to the high percentage of those missing the last question. This could also suggest that the test was too lengthy or the information in the presentation was given too quickly to understand and absorb for application through the end of the test.

Data collected from the evaluation form consisted of numbered responses and written feedback after the presentation had ended. For the numbered responses, participants were asked to score questions about the medication module, the medication test, and the instructor. Each participant rated the questions on a scale of 1 (strongly disagree) to 5 (strongly agree), and were encouraged to leave written feedback on the form relating to the most and least beneficial aspects of the module, and any other comments they would like to share. In total, 15 evaluations were returned. The average scores for each question with comments are included in the table (see Table 4).

Table 4. Program Evaluation Form Summary.

Question #	n	Average Score	Comments
1	15	4.9	“The module was well done and professionally presented.”
2	15	4.8	“I’m familiar with psychotropic medications, but I learned lots of new information.”
3	15	5	“Instructor was well prepared and insightful.”

Subjective Findings

After the medication education presentation was finished, many of the nurses expressed how valuable and needed the information was for their position, and comments were made to the instructor about the presentation being thorough and organized. Using the medication test as an indication of success, all the nurses were able to demonstrate

medication knowledge from the presentation; furthermore, 14 of the 15 participants passed the medication test without any additional teaching.

The Director of Nursing contributed to the positive feedback by telling the presenter that the module had great information for the nurses, and information on medication education had been severely lacking from orientation in the past. Because of the quality of the presentation, she asked to have a shortened version of the medication module created to present to other front line staff such as the Mental Health Technicians, Education staff, and Allied Therapy staff so they can have some basic knowledge about medications, including signs and symptoms of adverse effects or medication syndromes.

On the clinical units, the nurses requested to have the medication handouts be available for reference. As a result, the handouts (see Appendix C and D) were enlarged to an 11 x 14 inch size and laminated copies were placed in each of the four medication room for all the nurses.

In general, feedback from the presentation was positive and encouraging, and even some of the seasoned nurses expressed interest in attending one of the future medication module presentations to better enhance their knowledge about psychotropic medications.

CHAPTER 5

DISCUSSION

Overview

Orientation programs are designed to provide general training according to the facility requirements as well as training on specific position information in order to provide high quality, safe, and competent patient care (Edmunds, 2010). For a behavioral health facility, education on psychotropic medications for newly hired nurses should be an essential part of the orientation program. The past practice for medication education for newly hired nurses at the children's behavioral health facility in southwest Montana has been limited. Only a fraction of time was dedicated to this type of education in orientation, yet the nurses were expected to be competent on knowledge of psychotropic medications, administration of medications, and monitoring for adverse effects without a formalized training program.

The focus of this project was to develop a comprehensive psychotropic medication education program to be taught to any newly hired nurse during orientation. The program combined research on brain neuroscience, classes of psychotropic medications, adverse medication effects and syndromes, and methods of educational delivery with a PowerPoint® presentation and training material such as slides, handouts, posttests, and evaluation forms for a comprehensive educational experience.

The program was successfully implemented over a period of nine months to 15 newly hired nurses. Evaluation of the data suggested that the program was an effective

learning tool that better prepared the nurses for their clinical work on the units, and that a program of this magnitude needs to continue to be implemented at this behavioral health facility during orientation to benefit the newly hired nurses and their patient care.

Implications for Behavioral Health Nurses

The results of this project have implications for behavioral health nurses. Orientation programs in behavioral health facilities can be over-focused on all the necessary steps to complete the entire orientation process that they can lose sight of the importance of training for individual roles. An individual role for a behavioral health nurse is the knowledge of psychotropic medications and medication education for patients. Looking at the orientation process from a nursing knowledge and safety perspective, a comprehensive psychotropic medication education program is needed for nurses. Implications for nursing practice, patient safety, and policy development will be discussed in this section.

Nursing Practice

Nurses who have a greater understanding of medications they give and teach their patients will encourage a patient to ask questions and share any concerns they might be having related to the medications. When a patient sees a nurse as a resource, it can help promote adherence to psychotropic medications. Adherence to medications with children and adolescents can lead to overall improvements in effectiveness of the medications and treatment (Eisenmann, 2012). A comprehensive program on medication education will allow the nurse to be prepared with evidence-based practice information to decide what a

patient should know about their medications and if the patient is receiving adequate information regarding their medications (Eisenmann, 2012). To provide a more comprehensive training program, the facility can consider utilizing an advanced practice nurse, such as a psychiatric nurse practitioner, to educate the newly hired nurses about medications. In this role, the psychiatric nurse practitioner would also function as a mentor to the behavioral health nurse providing advanced knowledge in practice as well as general support to the nurses administering and educating patients on psychotropic medications. Having a successful medication education program provided by a psychiatric nurse practitioner would not only promote patient education, but can enhance patient care.

Patient Safety

The number of psychotropic medications has increased significantly in the past few decades making more options available, but at the same time creating complicated treatments for patients using multiple psychotropic medications. The use of a combination of medications can make drug interactions more likely and increase the risk of adverse effects (Demler, 2012). Nurses who possess an enhanced knowledge of psychotropic medications as part of the medication education program can better assess for side effects from different medication classes and intervene early with treatment to lessen or eliminate adverse outcomes. Being prepared for emergent interventions as taught in the training program can significantly reduce painful, frightening experiences or permanent damage as a result of the medications.

Policy Development

Providing adequate nursing orientation is the first step towards providing a safe environment and as a result, improving the quality of care delivered to the patients. Having guidelines for nursing orientation will provide both employers and nurses a direction regarding training for individual roles, and ensure that all nurses receive a consistent and adequate orientation. These guidelines would identify the best practices and set the standard for an orientation program. In a behavioral health facility, having a policy on orientation for nurses to include psychotropic medication education would be considered a best practice. Nursing orientation in behavioral health facilities is dependent on the practice of the individual facility and the policies each have developed. At the children's behavioral health facility, there is no specific policy on psychotropic medication education during orientation. This project has set the stage for guidelines that can be made into policy for nursing orientation on medication training all newly hired nurses.

Recommendations

There are a few recommendations for the current psychotropic medication education program as a direct result of the evaluation of the program. First, because of the inconsistent responses on the last eight test questions, changes are suggested to the placement of the questions in the test and/or the way the information is presented in the module. Second, question number 35 needs to be re-evaluated and either re-written or discarded due to the low percentage of those who answered this correctly. Third, the

evaluation form can be expanded to seek more information about the presentation, the presenter, and the program. The current evaluation form has three basic and rather vague questions. For the most effective evaluation tool, reaction criteria in the form of multiple self-report measures tend to represent a learner's affective and attitudinal responses to the training program (Arthur, Bennett, Edens, and Bell, 2003). Therefore, questions need to be added to the evaluation form to determine whether the learning objectives were achieved, if the material was relevant, if the content met the needs of the learner, if the facilities were adequate, how the trainer can improve, and if the training was effective.

One of the biggest oversights with this project was the failure to create a pretest to go along with the posttest. A pretest is a learning tool given prior to the training to gauge the knowledge base of the learner and help prepare the student to think about the material to be presented. To evaluate the effectiveness of learning after the training, a pretest must be administered to compare the level of knowledge before and after the module to adequately measure the learning that takes place as a direct result of the training program. A recommendation for the future medication training at the children's behavioral health facility is to develop and include a pretest with the psychotropic medication module.

A final recommendation from the subjective feedback of the program is to develop a basic version of this module to present to front line clinical staff that is involved with patient care in an ancillary role. These workers include Mental Health Technicians, Education staff and Allied Therapy staff that are constantly observing, monitoring, and interacting with the patients. If they have a basic knowledge of

medications and side effects, they can alert the nurse to any changes they observe, thus allowing the nurse to intervene early to treat potentially harmful side effects.

Conclusion

Many psychiatric nurses are hired into a psychiatric facility with little knowledge or experience with psychiatric medications. Developing a comprehensive training program for newly hired nurses is not only essential to provide basic information on psychotropic medications, but also required for assessment and monitoring of adverse effects as well as patient teaching. A successfully implemented training program will enhance the nurse's knowledge base of medications, strengthen their confidence with medications and teaching, and provide a competency for safe medication administration.

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APPENDICES

APPENDIX A

PSYCHOTROPIC MEDICATION MODULE

Psychotropic Medication Module

Overview of Psychotropic Medications

Psychotropic Medication Module: Learning Objectives

By the end of this module, you will:

- Have a greater understanding of psychotropic medications and the role of neurotransmitters
- Be able to discuss target symptoms for medications
- Show knowledge of psychotropic medication indications, mechanism of actions, side effects and adverse effects
- Understand movement disorders and adverse medication syndromes
- Successfully pass the medication test

Psychotropic Medication Module: Overview

Overview

- ❖ How do psychotropic meds work?
- ❖ 5 Main classes of medications
- ❖ Movement Disorders
- ❖ Medication Syndromes
- ❖ Other medication commonly used here
- ❖ Medication test

What are Psychotropic Medications?

- Medications that can affect:
 - Mood
 - Thoughts
 - Behaviors
 - Emotions
 - Processing of information
 - Perception of surroundings
- Act on the Central Nervous System (CNS)
- Used to treat emotional and behavioral disorders
- Help control *symptoms* in order to maximize function

How Do Psychotropic Medications Work?

- Neurotransmitters
 - Brain chemicals
 - Communicate info in brain/body
 - Synapse
 - Vital for basic functioning
 - Affect mood, sleep, concentration
- Classified by *Excitatory* and *Inhibitory*

Neurotransmitters: Type & Function

Type	Neurotransmitter	Function
Amines	Norepinephrine Epinephrine Dopamine Serotonin Histamine	Excitatory Excitatory and inhibitory Inhibitory
Amino Acids	GABA Glycine Glutamate Aspartate	Inhibitory Inhibitory Excitatory Excitatory
Acetylcholine	Acetylcholine	Excitatory
Others: Neuropeptides - oxytocin, endorphins, vasopressin Purines - adenosine, ATP Lipids and gases - nitric oxide, cannabinoids		

Excitatory Neurotransmitters

- ▶ Stimulate the brain!
 1. Dopamine → **movement/cognition/pleasure**
 - Memory, learning, attention
 - Motivation (drive to get things done) and reward
 - Increased: psychosis (hallucinations, delusions, thought disorder) or focus issues
 2. Norepinephrine → **alertness/energy**
 - Responsible for stimulation in the body & helps make Epinephrine
 - High levels = anxiety, increased BP/HR
 - Low levels = low energy, decr. focus, sleep issues
 3. Epinephrine → **reflective of stress**
 - regulates heart rate/blood pressure
 - Long term stress leads to depleted levels

Inhibitory Neurotransmitters

- ▶ Calm the brain & create balance!
 1. Serotonin (5HT) → **stabilize mood**
 - Balance excessive excitatory firing (stimulation) in the brain
 - Regulates mood, sleep/wake cycle, pain, cravings, digestion
 - Low levels are associated with decrease immune function and mood changes including depression
 2. GABA → **"nature's valium"**
 - Puts the breaks on the brain from over firing
 - Low levels - can lead to seizures
 3. Dopamine → **movement/cognition/pleasure**
 - Both Inhibitory and Excitatory; helps w/depression & focus
 - Low levels - affects movement and attention

Target Symptoms

- ▶ Psychotropic medications are used to treat "target" symptoms
- ▶ Presenting problem, chief complaint or behaviors

Target Symptoms

	anger / aggression	irritable	Depressed mood	Difficulty w/ focus, concentrate	Worthless-ness / SI	Insomnia or sleep issues	Anxiety	Hyperactive / restless
Depression		X	X	X	X	X	X	
PTSD	X	X	X	X		X	X	
Obsessive-Compulsive Disorder		X					X	X
Bipolar	X	X	X	X	X	X		X
Anxiety Disorder	X	X	X	X		X	X	
Oppositional Defiant Disorder	X	X						X
ADHD	X	X		X				X

Medication "classes"

- ▶ 5 main classes:
 1. Stimulants
 2. Antidepressants
 3. Antipsychotics
 4. Mood Stabilizers
 5. Anxiolytics
- ▶ Other classes:
 - Those used frequently here
 - Don't fit into above categories
 - Examples: Clonidine, DDAVP, Melatonin, Benadryl, Cogentin

Stimulants

Stimulants: Indication and Target Symptoms

- ▶ **Indication**
 - Used to treat Attention Deficit Hyperactivity Disorder (ADHD)
- ▶ **Target Symptoms**
 - Difficulty with focus and concentration
 - Short attention span
 - Fidgety, restless
 - Impulsive
 - Hyperactive
 - Interrupts, blurts things out

Stimulants: Action

- ▶ **Short Acting** (Immediate Release)
 - Duration of action: 2–6 hours
 - Act right away but do not last long
 - Usually taken 2 or 3 times a day
- ▶ **Intermediate** (Sustained Release)
 - Duration of action 4–8 hours
 - Older delivery systems, less effective than short acting
- ▶ **Long Acting** (Extended Release)
 - Duration of Action: 10–12 hours
 - Take longer to act but last longer
 - Taken once a day

Stimulants: Examples

- | Short Acting | Intermediate | Long Acting |
|---------------|------------------------|------------------|
| ▶ Ritalin ★ | ▶ Ritalin SR ★ | ▶ Ritalin LA ★ |
| ▶ Methylin ★ | ▶ Methylin ER ★ | ▶ Adderall XR ☼ |
| ▶ Metadate ★ | ▶ Metadate ER ★ | ▶ Metadate CD ★ |
| ▶ Dexedrine ☺ | ▶ Dexedrine Spansule ☺ | ▶ Concerta ★ |
| ▶ Adderall ☼ | | ▶ Vyvanse ☾ |
| ▶ Focalin ▲ | | ▶ Focalin XR ▲ |
| | | ▶ Daytrana Patch |

Key:
 ★ Methylphenidate ☺ Dextroamphetamine
 ☼ Amphetamine ▲ Dexmethylphenidate
 ☾ Lisdexamfetamine

Stimulants: How do they work?

- ▶ Increase dopamine levels in the brain
- ▶ **Review:**
 Dopamine = neurotransmitter associated with movement, cognition, pleasure, mood and *attention*

Stimulants: Side effects

- ▶ **Common Side Effects:**
 - Decreased appetite
 - Weight loss
 - Headaches
 - Stomach aches
 - Trouble getting to sleep
 - Nervousness/jitteriness
- ▶ **Adverse reactions or severe/life threatening effects:**
 - Increased blood pressure and heart rate
 - Growth reduction
 - Sudden cardiac death in those with pre-existing heart conditions

Other treatments for ADHD

- ▶ **First line** → Stimulants
- ▶ **Second line** → Anti-hypertensives
 - Adults – treat HTN; Children – causes sedation in sm. doses
 - Clonidine (Catapres), Kapvay = Long acting Clonidine
 - Guanfacine (Tenex); Intuniv = Long acting Guanfacine
 - **Side Effects:** Dry mouth, headache, sedation, orthostatic hypotension, fatigue
- ▶ **Others:**
 - **Non-stimulant ADHD medication**
 - Atomoxetine (Strattera) – a selective norepinephrine reuptake inhibitor (SNRI) works on noradrenergic system (compared to stimulants – dopaminergic system); gradual onset with max effect taking up to 3 weeks; some antidepressant effects
 - **Antidepressants**
 - Bupropion (Wellbutrin) – in the aminoketone class; thought to act on norepinephrine and dopamine receptors; depression and attention issues

Antidepressants

Antidepressants: Indication and Target Symptoms

- ▶ **Indication**
 - Used to treat symptoms of depression and other conditions such as anxiety disorders, dysthymia, ADHD, OCD, PTSD, insomnia, and eating disorders.
- ▶ **Target Symptoms of Depression (SIGECAPS)**
 - Sleep issues (insomnia or hypersomnia)
 - Interest decreased (anhedonia)
 - Guilt, hopelessness or worthlessness
 - Energy – low/fatigue
 - Concentration or focus issues
 - Appetite changes or change in weight
 - Psychomotor agitation or retardation
 - Suicidal Ideation

Antidepressants

- ▶ Roughly 30 different kinds
- ▶ 5 main categories:
 1. **Selective Serotonin Reuptake Inhibitors (SSRI's)**
 2. **Serotonin & Norepinephrine Reuptake Inhibitors (SNRI's)**
 3. **Tricyclic Antidepressants (TCA's)**
 4. **Monoamine Oxidase Inhibitors (MAOI's)**
 5. **Noradrenaline & Specific Serotonergic Antidepressants (NASSA's) or "Atypicals"**

Antidepressants: SSRI's

- ▶ **Examples:**
 - Citalopram (Celexa)
 - Escitalopram (Lexapro)
 - Fluoxetine (Prozac)
 - Fluvoxamine (Luvox)
 - Paroxetine (Paxil)
 - Sertraline (Zoloft)

Antidepressants: SSRI's

- ▶ **Most commonly prescribed antidepressants**
 - Effective in treating depression
 - Fewer side effects, work faster
 - Safer if overdose occurs
- ▶ **How do they work?**
 - Block the reuptake (absorption) of serotonin
 - Increases ability to receive and send messages in the brain
 - Influences mood

Antidepressants: SSRI's

- ▶ **Common Side Effects**
 - Nausea, upset stomach, constipation or diarrhea
 - Headaches
 - Weight changes (loss or gain)
 - Insomnia
 - Dry mouth
 - Sweating
 - Irritability/restlessness/tremor
 - Dizziness
 - Sexual side effects
- ▶ **Adverse Reactions or severe/life threatening effects**
 - Increase in depression and suicidal thoughts, especially with children/adolescents
 - Suicide risk higher during first 1–2 months of starting SSRI
 - Warning signs: increase in anxiety, insomnia, hostility or extreme agitation

Antidepressants: SNRI's

- ▶ Examples:
 - Duloxetine (Cymbalta)
 - Venlafaxine (Effexor)
 - Desvenlafaxine (Pristiq)

Antidepressants: SNRI's

- ▶ Newest class of antidepressants
 - Used more use in adults; not usually prescribed in children (side effects/stimulating)
 - 2nd choice if SSRI's have not worked
- ▶ How do they work?
 - Block the reuptake (absorption) of Serotonin and Norepinephrine
 - Increases ability to receive and send messages in the brain
 - Influences alertness and energy

Antidepressants: SNRI's

- ▶ Common Side Effects
 - Nausea, upset stomach
 - Headaches
 - Weight changes (loss or gain)
 - Insomnia
 - Vivid or explicit dreams
 - Drowsiness
 - Dizziness
 - Anxiety
 - Increase in blood pressure and/or pulse
- ▶ Adverse Reactions or severe/life threatening effects
 - Thoughts of suicide
 - Anxiety/Panic attacks
 - Hypertension

Antidepressants: TCA's

- ▶ Examples:
 - Amitriptyline (Elavil)
 - Doxepin (Sinequan)
 - Nortriptyline (Pamelor)
 - Imipramine (Tofranil)
- ▶ How do they work?
 - Block reuptake of 5HT, NE and some DA
- ▶ Side effects:
 - Blurred vision, urinary retention, constipation, dry mouth, dizziness, drowsiness, increased pulse
- ▶ Life threatening effects:
 - Lethal in OD's (toxicity at 10x normal dose) with fatal heart arrhythmia

Antidepressants: MAOI's

- ▶ Examples:
 - Phenelzine (Nardil)
 - Tranylcypromine (Parnate)
 - Isocarboxazid (Marplan)
 - Selegiline (EMSAM, Eldepryl)
- ▶ How do they work?
 - Inhibit the action of monoamine oxidase (brain enzyme) that breaks down neurotransmitters
- ▶ Side effects:
 - Blurred vision, edema, weight changes, rash, anxiety, insomnia, drowsiness, headache, dizziness, arrhythmia, fainting, BP changes
- ▶ Life threatening effects:
 - Interactions with many drugs and foods containing Tyramine → HTN, internal bleeding, stroke and death

Antidepressants: Atypicals

- ▶ Used in children to help with sleep issues rather than depression
- ▶ Examples:
 - Mirtazapine (Remeron)
 - Tetracyclic antidepressant
 - Common SE: drowsiness, dizziness, increase appetite, weight gain, increased triglycerides
 - Precaution: can lower WBC count
 - Trazodone (Desyrel)
 - Antidepressant that does not "fit" into a category; cheap!
 - Common SE: drowsiness, dizziness, hypotension, fainting, arrhythmia
 - Precaution: can cause Priapism @ higher doses
- ▶ Warning: monitor for any changes in mood, behavior, anxiety, panic, irritability, restlessness, agitation or thoughts of suicide

Other Information About Antidepressants

- ▶ May take up to 3 weeks to get a response
- ▶ Should never abruptly stop taking
 - Dizziness, headaches, nausea
- ▶ Wean off slow (exception = Prozac)

Antipsychotics

Antipsychotics: Indication & Target Symptoms

- ▶ "Neuroleptics"
- ▶ Indication
 - Used to treat mental disorders such as Psychosis, Schizophrenia, Bipolar Disorder, Major Depression, Tourette's Syndrome, OCD and Personality Disorders
- ▶ Target Symptoms
 - Psychosis
 - Hallucinations
 - Severe anger or aggression
 - Depression
 - Anxiety
 - Insomnia

Antipsychotics: Examples

- ▶ 2 groups: Typical & Atypical
- ▶ Typical (First generation or FGA)
 - Chlorpromazine (Thorazine)
 - Haloperidol (Haldol)
 - Perphenazine (Trilafon)
 - Fluphenazine (Prolixin)
- ▶ Atypical (Second generation or SGA)
 - Aripiprazole (Abilify)
 - Quetiapine (Seroquel)
 - Olanzapine (Zyprexa)
 - Risperidone (Risperdal)
 - Ziprasidone (Geodon)
 - Paliperidone (Invega)
 - Clozapine (Clozaril)

Antipsychotics: How do they work?

- ▶ Block the action of Dopamine in the brain
 - Increase in Dopamine → hallucinations, delusions, thought disruptions or disorders
- ▶ Typical:
 - Block action of Dopamine receptor (D2)
 - More likely Parkinsonian side effects & movement disorders
- ▶ Atypical:
 - Block D2 receptors and specific Serotonin receptor 5HT2A
 - Less likely Parkinsonian & movement side effects
 - More likely weight gain & metabolic issues (diabetes, lipid disorders)

Antipsychotics: Side Effects

- ▶ Common Side Effects
 - Drowsiness
 - Dizziness
 - Blurred vision/difficulty voiding, constipation/dry mouth (*)
 - Tremors/stiffness
 - Uncomfortable restlessness (akathisia)
 - Weight gain, diabetes, lipid disorders
 - "Metabolic Syndrome"; associated with Atypicals
 - Agranulocytosis
 - associated with use of Clozaril
- ▶ Adverse Reactions or serious/life threatening effects
 - Risperdal - increased Prolactin levels
 - Movement Disorders - Dystonia & Dyskinesia
 - Extrapyramidal Symptoms (EPS)
 - Serotonin Syndrome
 - Neuroleptic Malignant Syndrome

Movement Disorders

2 major classifications:

- Dystonia
- Dyskinesia

Movement Disorders: Dystonia

- ▶ Dystonia = involuntary sustained or intermittent contractions of the muscles that cause stiff or twisting motions, abnormal postures and/or repetitive movements
- ▶ Examples of dystonia:
 - Jaw and facial contortions
 - Stiff neck (torticollis)
 - Elbow/wrist/finger flexion
 - Foot in-turning or ankle eversion
 - Difficulty swallowing
 - Tongue darting
 - Eye rolling (oculogyric crisis)

Movement Disorders: Dyskinesia

- ▶ Dyskinesia = involuntary hyperkinetic movements that include jerky movements, slow or writhing movements, rhythmic twisting patterns or distorted/violent movements of the limbs
- ▶ Examples of Dyskinesia:
 - Akathisia (inner feeling of restlessness and inability to sit still)
 - Bradykinesia (slowing of voluntary movements like shuffling gait or decreased arm swing with walking)
 - Akinesia (lack of any movement)
 - Resting tremor
 - Drooling
 - tics

Extrapyramidal Symptoms (EPS)

- ▶ Describe movement disorders that happen during the early phases of treatment with antipsychotics
- ▶ Can be mild to severe or life threatening
- ▶ Can happen within hours or days of taking an antipsychotic drug
- ▶ Tardive Dyskinesia (TD) - movement disorders that occur late in treatment with antipsychotics
 - Random, bizarre movements of the tongue, face, limbs, trunk, hips
 - Symptoms persisting more than 6 months are considered permanent

Serotonin Syndrome

- ▶ Potentially life threatening reaction
- ▶ Involves use of SSRI's and SNRI's
- ▶ Key features:
 1. Predictable course from excess serotonin
 2. Clinical manifestations:
 - Mental status changes (agitation, confusion, delirium)
 - Autonomic hyperactivity (tachycardia, mydriasis, sweating, N/V/D, rapid changes in BP)
 - Neuromuscular abnormalities (hyperreflexia, clonus, hypertonicity, shivering)
 - Other: hyperthermia (up to 104-105°F from muscular hypertonicity)
 3. Range of symptoms (mild, moderate, severe, lethal)

Neuroleptic Malignant Syndrome

- ▶ Rare but life threatening reaction
- ▶ Involves use of antipsychotic medications
- ▶ Higher incidence with 1st generation (Typical)
 - 90% of the time, occurs within 10 days of starting neuroleptics
- ▶ Classic symptoms:
 - Hyperthermia (temp above 100.4°F)
 - Severe muscular rigidity - "lead pipe"
 - Altered mental status (confusion, agitation)
 - Autonomic dysfunction (tachycardia, BP changes, sweating, incontinence, tachypnea)
 - Other: tremor, increased CPK, increased WBC's, metabolic acidosis

Other Information About Antipsychotics/Clozaril

- ▶ Atypical antipsychotics are more commonly used in children
- ▶ Very individualized!
- ▶ Start slow, usually wean off if need to change
- ▶ Clozaril
 - ❖ Weekly blood work (CBC) & close monitoring
 - ❖ Registry list
 - ❖ Usually used when other treatments fail

Mood Stabilizers

Mood Stabilizers: Indication and Target Symptoms

- ▶ **Indication**
 - Used to treat mood disorders, primarily bipolar disorder treating the mania, depression, a combination of both, prevention or long term maintenance
- ▶ **Target Symptoms**
 - Depressed mood
 - Hyperactivity/restlessness
 - Anger/aggression/irritability
 - Insomnia or sleep issues
 - Feelings of worthlessness or thought of suicide
 - Difficulty with concentration and focus
 - Elevated or expansive mood
 - Grandiosity, delusions, hyper sexuality
 - Excessive involvement in pleasurable activities

Mood Stabilizers: Examples

- ▶ **Gold Standard:**
 - Lithium (eskalith or lithobid)
- ▶ **Antiepileptic drugs (AED's):**
 - Depakote (divalproex, valproate)
 - Tegretol (carbamazepine)
- ▶ **Newer AED's:**
 - Lamictal (lamotrigine)
 - Neurontin (gabapentin)
 - Topamax (topiramate)

Mood Stabilizers: How do they work?

- ▶ **Lithium**
 - Salt (Greek word Lithos = stone)
 - Acts on the neurotransmitter Glutamate
 - Too much = mania, Too little = depression
 - Stabilizes glutamate receptors
 - **Reduces suicide risk, prevents mania**
- ▶ **Antiepileptic (Anticonvulsants)**
 - Make nerve cells in the brain less excitable
 - Less hyperactivity, less likely for mania or depression
 - Depakote → anti-mania qualities

Mood Stabilizers: Lithium

- ▶ **Common side effects**
 - Hand tremor
 - Increased thirst
 - Increased urination
 - N/V/D/cramps
 - Weight gain
 - Muscle weakness
 - Hair loss
 - Decreased thyroid function
- ▶ **Adverse reaction/life threatening effects**
 - "Lithium toxicity" includes persistent symptoms of:
 - Diarrhea, vomiting, abdominal cramps, severe tremors, poor coordination/difficulty walking, fainting, confusion, slurred speech, lethargy, seizures or coma

Mood Stabilizers: Depakote

- ▶ **Common side effects**
 - Shakiness/tremors
 - N/V/indigestion
 - Headache
 - Drowsiness
 - Weakness
 - Dizziness
 - Hair loss
- ▶ **Adverse reaction/life threatening effects**
 - Liver toxicity → elevated LFT's, hyperammonemia
 - Elevated ammonia levels see cognitive SE's, strange behavior
 - Pancreatitis

Mood Stabilizers: Tegretol

- ▶ **Common side effects**
 - Dizziness
 - Drowsiness
 - N/V
 - Unsteadiness
- ▶ **Adverse reaction/life threatening effects**
 - Anemia
 - Leukopenia
 - Thrombocytopenia
 - Unusual bruising/bleeding, fever or infection

Mood Stabilizers: Lamictal

- ▶ **Common side effects**
 - Dizziness or drowsiness
 - Blurred vision or double vision
 - Headache
 - Coordination problems
 - Dry mouth
 - N/V/Constipation
 - Insomnia
- ▶ **Adverse reaction/life threatening effects**
 - Serious rash: Stevens Johnson Syndrome (SJS) or Toxic Epidermal Necrolysis (TEN)

Other Information About Mood Stabilizers

- ▶ **Patient education!**
 - Mood stabilizers may effect metabolism, liver, kidneys, thyroid, CNS
 - Lithium – encourage hydration!!
- ▶ **Lab work**
 - Those on Lithium, Depakote and Tegretol should have routine lab levels
 - Labs are drawn *prior* to the dose of the medication in the morning

Anxiolytics

Anxiolytics: Indication and Target Symptoms

- ▶ **Indication**
 - Used to treat symptoms of anxiety and Anxiety Disorders such as Generalized Anxiety Disorder, Panic Disorders, phobias, OCD, or PTSD
- ▶ **Target Symptoms**
 - Irritability
 - Uneasiness or jumpiness
 - Feelings of apprehension
 - Rapid or irregular heartbeat
 - Sweating
 - Stomach ache or nausea
 - Feeling faint or lightheaded
 - Difficulty breathing or hyperventilating
 - Sleep issues

Anxiolytics: Examples

- ▶ **Benzodiazepines**
 - Ativan (lorazepam)
 - Klonopin (clonazepam)
 - Xanax (alprazolam)
 - Valium (diazepam)
- ▶ **Other (non-addictive)**
 - Buspar (buspirone)

Anxiolytics: How do they work?

- ▶ **Benzodiazepines**
 - Enhances the effect of GABA (inhibitory neurotransmitter that calms the brain)
- ▶ **Buspar**
 - Like SSRI's - blocks the reuptake of serotonin; however, it only affects one specific subtype of serotonin receptor (less side effects)
 - May take 4-6 weeks to reach maximum efficacy
 - Side effects similar to SSRI's

Anxiolytics: Side Effects

- ▶ **Common Side effects of Benzodiazepines**
 - Drowsiness
 - Loss of coordination
 - Fatigue
 - Confusion
- ▶ **Used with Caution**
 - Highly addictive
 - Reduce anxiety quickly
 - Can cause tolerance (need more of the drug to work)
 - Withdrawal syndrome, can cause seizures and death
 - Inhibit formation of new memories
 - No longer 1st line treatment for anxiety disorders

Other Information About Anxiolytics

- ▶ Used in Combination with other meds and psychotherapy to treat Anxiety Disorders
- ▶ Occasionally used as a muscle relaxant in children
- ▶ Mostly see Ativan and Clonazepam used here

Other Medications Commonly Used Here

DDAVP (desmopressin)

- ▶ Man-made form of the hormone Vasopressin (ADH) from the Pituitary that affects water conservation
- ▶ **Indication:** Used to treat bed-wetting
- ▶ Side effects (mild): headache, nausea, tingly feeling in the face

Melatonin

- › Hormone made by the pineal gland that helps control sleep/wake cycles; affected by light
- › Supplement
- › Indication: Used to treat jet lag or sleep problems
- › Side effects: sleepiness, lower body temperature, vivid dreams, morning grogginess

Benadryl (diphenhydramine)

- › Antihistamine
- › Indication: Used to relieve symptoms of allergy/allergic reaction, hay fever or the common cold. It can also be used to help people relax and fall asleep
- › Side effects: sleepiness or hyperactivity

Cogentin (benztropine)

- › Anticholinergic (blocks acetylcholine)
- › Indication: Used to treat symptoms of Parkinson's disease or involuntary movements (EPS) as a result of antipsychotic medications **STAT!!**
- › Side effects: drowsiness, dizziness, constipation, nausea, blurred vision, dry mouth, difficulty urinating

Any Questions?

APPENDIX B

MEDICATION TEST

1. The benzodiazepines are not usually prescribed for long-term management of anxiety for which of these reasons?
 - A. They can cause seizures.
 - B. They have a potential for addiction and tolerance.
 - C. They take up to 3 weeks to reach a maximum effect.

2. An antipsychotic medication is **most often** used to alleviate which of these symptoms?
 - A. Psychosis and Hallucinations.
 - B. Depressed mood.
 - C. Hyperactivity.

3. An acutely psychotic patient has been given multiple doses of Chlorpromazine (Thorazine) intramuscularly over the last 72 hours. Which of the following is NOT a side effect from use of Typical antipsychotics?
 - A. Blurred vision, difficulty voiding, constipation, and dry mouth.
 - B. Decreased WBC's.
 - C. Uncomfortable restlessness (akathisia).

4. A young male patient has been receiving haldol, an antipsychotic medication for almost a week. He is complaining that his neck is becoming very stiff and he feels his head twisting to one side. After reassuring the patient, the nurse would be most correct making which of these statements?
 - A. "This may be a side effect from your medication. I will notify the Doctor right away and give you something to help relieve these symptoms."
 - B. "If you lie quietly for about a half hour, your symptoms will subside."
 - C. "The best thing to do is to take your mind off your symptoms by returning to your activity."

5. A patient is to be observed for abnormal involuntary movements from use of antipsychotic medication. Which of these symptoms on the AIMS exam should alert the nurse?
 - A. Painful muscle spasms with ambulation.
 - B. Motor tics, facial tics and blurting out obscenities uncontrollably.
 - C. Wormlike movements, protrusion of the tongue or drooling.

6. A patient who just started the typical antipsychotic Thorazine 3 days ago is showing signs of fever, severe musculature rigidity, confusion and tremors. Which of these actions should the nurse take?
 - A. Obtain an order from the physician for a medication to relieve dystonia.
 - B. Ask the physician to order an antibiotic.
 - C. Notify the physician of these possible indications of neuroleptic malignant syndrome (NMS).

7. Which of these instructions would be given to a patient on Lithium therapy?
 - A. Drink at least six to eight glasses of fluids per day.
 - B. Increase the intake of foods and beverages that are high in potassium.
 - C. Avoid eating heavily spiced foods.

8. Which of these side effects are common during the initiation of treatment with Carbamazepine (Tegretol), but usually subside within a few days?
 - A. Myalgia and excessive salivation.
 - B. Dizziness, drowsiness and nausea.
 - C. Heat sensitivity and increased appetite.

9. When a depressed patient is treated with an antidepressant, the patient should be monitored carefully for:
 - A. Increased prolactin levels.
 - B. Increasing thoughts of suicide.
 - C. Excessive sweating confined to the upper torso.

10. Which of these occurrences would indicate a therapeutic response to an antidepressant medication?
 - A. Decreased interest in activities.
 - B. Improved concentration and energy level.
 - C. Insomnia.

11. Which of the following medication require routine lab levels?
 - A. Lithium and Depakote.
 - B. Prozac and Zoloft.
 - C. Seroquel and Risperdal.

12. Which of these side effects occur frequently with the use of the antidepressant Fluoxetine (Prozac)?
 - A. Headache and nausea.
 - B. Elevated Liver Function Tests (LFT's) and hyperammonemia.
 - C. Weight gain, elevated glucose levels, increased triglycerides (Metabolic Syndrome).

13. Clonidine (Catapres) and Guanfacine (Tenex) are often used in children as a second line of treatment for which disorder?
 - A. Hypertension.
 - B. ADHD.
 - C. Anxiety Disorder.

14. A patient being treated with Valproic Acid (Depakote) is starting to act very strange and display agitation, confusion and psychotic behaviors. You can suspect which is the cause?
 - A. Hyperkalemia.
 - B. Hyperammonemia.
 - C. Hyperthyroidism.

15. A patient being treated with Clonidine (Catapres) should be monitored for:
 - A. Hypothyroidism.
 - B. High blood pressure.
 - C. Low blood pressure.

16. Serotonin is a neurotransmitter that:
 - A. Stimulates the brain.
 - B. Is associated with movement, cognition and pleasure.
 - C. Regulates mood, sleep/wake cycle, pain, cravings and digestion

17. Which of the following statements about stimulant action is false?
- A. Short acting (Immediate release) stimulants are usually taken once a day.
 - B. Intermediate acting (Sustained release) stimulants are usually less effective than short acting.
 - C. Long acting (Extended release) stimulants have a duration of action of 10-12 hours.
18. A patient is prescribed Quetiapine (Seroquel). During dosage titration (initial 3 to 5 days) the patient will often be observed to have:
- A. Increased aggression.
 - B. Increased energy.
 - C. Increased sleepiness.
19. Which of the following side effects **most** impact a patient being treated with Adderall?
- A. Decreased appetite and stomach aches.
 - B. Photosensitivity and rash.
 - C. Weight gain and sedation.
20. Which of the following mood stabilizers can result in a serious or life threatening rash?
- A. Carbamazepine (Tegretol).
 - B. Lamotrigine (Lamictal).
 - C. Neurontin (Gabapentin).
21. Which of the following is true for Citalopram (Celexa)?
- A. It is an MAOI (Monoamine Oxidase Inhibitor).
 - B. It is a TCA (Tricyclic Antidepressant).
 - C. It is an SSRI (Selective Serotonin Reuptake Inhibitor).

22. A patient is being discharged with a prescription for Venlafaxine (Effexor). Which of the following instructions should be given?
- A. Limit foods containing Tyramine.
 - B. Notify your physician if you experience loss of appetite, excessive diarrhea, increased pulse or BP, or increased feelings of anxiety.
 - C. It's acceptable to stop this medication abruptly if it is not working.
23. A non-stimulant medication that may be used instead of Ritalin is:
- A. Adderall.
 - B. Concerta.
 - C. Strattera.
24. Which of the following best describes the therapeutic action of Lorazepam (Ativan)?
- A. It is an anxiolytic.
 - B. It is an anticonvulsant.
 - C. It is an antihistamine
25. Which of the following is a benzodiazepine with a slightly longer duration of action?
- A. Clonidine.
 - B. Clonazepam.
 - C. Cymbalta.
26. Which of the following statements is true for Risperidone (Risperdal)?
- A. It can elevate the blood pressure.
 - B. It can elevate serum prolactin levels.
 - C. It can decrease blood sugar levels.
27. Which statement is true about anxiolytics?
- A. They are usually used in combination with other medications and psychotherapy to treat anxiety disorders.
 - B. They are never used in children.
 - C. Common side effects include hyperactivity and enhancing formation of new memories.

28. Which of the following should the nurse be monitoring in a patient taking stimulants?
- A. Photosensitivity
 - B. Temperature.
 - C. Blood pressure and pulse.
29. Serotonin Syndrome, a very dangerous and potentially fatal medication side effect, is generally caused by which of the following conditions?
- A. Abruptly stopping therapy with an SSRI (Selective Serotonin Reuptake Inhibitor).
 - B. A combination of two or more drugs, one of which is a selective serotonin medication (SSRI or SNRI).
 - C. Prescribing an SSRI (Selective Serotonin Reuptake Inhibitor) for a diabetic patient.
30. Which statement is true about the key differences between Serotonin Syndrome and Neuroleptic Malignant Syndrome (NMS)?
- A. With Serotonin Syndrome, it is a sudden, non-predictable course from use of SSRI's and SNRI's.
 - B. With NMS, there is severe muscular rigidity and history of recent use or dose change with antipsychotic medications.
 - C. Serotonin Syndrome is associated with a high fever and NMS has no symptoms of a fever.
31. Which of the following non-addictive medication is useful in treating anxiety disorders?
- A. Klonopin.
 - B. Valium.
 - C. Buspar.
32. Which of the following statements about Melatonin is incorrect?
- A. It is a synthesized hormone that helps control sleep/wake cycles.
 - B. It is commonly used in children to treat sleep problems.
 - C. It has a side effect of increasing body temperature and decreasing REM.

33. Desmopressin Acetate (DDAVP) is an:
- A. Anticonvulsant.
 - B. Antidiuretic
 - C. Antidepressant.
34. When administering Benadryl (diphenhydramine), which can be expected:
- A. A side effect of hyperactivity.
 - B. Nausea, vomiting and diarrhea.
 - C. It will relieve symptoms of allergy/allergic reaction or insomnia.
35. Cogentin (benztropine) is commonly used to treat what condition?
- A. Anticholinergic side effects (“mad as a hatter, red as a beet, hot as a hare, dry as a bone”).
 - B. Psychosis.
 - C. Acute dystonias (EPS) from antipsychotic medications

APPENDIX C

MEDICATION REFERENCE HANDOUT

<p style="text-align: center;">Stimulants</p> <p>Short Acting</p> <ul style="list-style-type: none"> Ritalin, Methylin, Metadate, Dexedrine, Adderall and Focalin <p>Intermediate</p> <ul style="list-style-type: none"> Ritalin SR, Methylin ER, Metadate ER, Dexedrine Spansules <p>Long Acting</p> <ul style="list-style-type: none"> Ritalin LA, Adderall XR, Metadate CD, Concerta, Vyvanse, Focalin XR, Daytrana patch <p>Side Effects:</p> <ul style="list-style-type: none"> Decreased appetite, weight loss, stomachaches, headaches, trouble getting asleep, nervousness/jitteriness <p>Monitoring:</p> <ul style="list-style-type: none"> Heart Rate and Blood Pressure, and appetite <p>Other meds for ADHD:</p> <ul style="list-style-type: none"> * Clonidine & Tenex (antiHTNsives) - Check BP, watch for orthostatics 	<p style="text-align: center;">Antidepressants</p> <p>SSRI's:</p> <p>Celexa, Lexapro, Prozac, Luvox, Paxil, Zoloft</p> <p>SNRI's:</p> <p>Cymbalta, Effexor, Pristiq</p> <p>Side effects:</p> <ul style="list-style-type: none"> Nausea, upset stomach, headaches, weight changes, insomnia, dry mouth, dizziness. With SNRI's - anxiety, increase in BP/HR <p>Others:</p> <p>Wellbutrin - used for depression and ADHD Buspar - used for depression and anxiety. Similar SE to SSRI's Remeron - caution on decreased WBC Trazodone - caution on Priapism</p>
<p style="text-align: center;">Antipsychotics</p> <p>First Generation "Typicals":</p> <ul style="list-style-type: none"> Throazine, Haldol, Prolixin <p>Second Generation "Atypicals":</p> <ul style="list-style-type: none"> Abilify, Seroquel, Zyprexa, Risperdal, Geodon, Invega <p>Side Effects:</p> <p>Drowsiness, dizziness, blurred vision, difficulty voiding, constipation, dry mouth, tremors/stiffness, akathisia, increase prolactin levels with Risperdal</p> <p>Monitoring: EPS, AIMS, weight gain with 2nd generation, metabolic syndrome</p>	<p style="text-align: center;">Mood stabilizers</p> <p>Lithium</p> <ul style="list-style-type: none"> Side effects: hand tremor, increased thirst and urination, N/V/D/ Cramps, weight gain, weakness, decrease thyroid function Caution: "lithium toxicity" - persistent sx of D/V/ cramping, tremors, poor coordination, fainting, confusion, slurred speech, seizures. Do routine lab levels! Therapeutic range = 0.8-1.2. Toxicity = > 2 <p>Depakote: Side effects include shakiness, tremors, N/V, headache, weakness, dizziness. Caution with elevated LFT's and ammonia levels. Do routine lab levels! Therapeutic range = 50-125. Toxicity = > 200</p> <p>Tegretol: Side effects include dizziness, drowsiness, N/V. caution on anemia, leukopenia, thrombocytopenia. Do routine lab levels!</p> <p>Lamictal: Side effects include dizziness, drowsiness, blurred/double vision, HA, dry mouth, N/V/C, insomnia. Caution on rash!</p>

APPENDIX D

MOVEMENT DISORDERS AND MEDICATION SYNDROMES

HANDOUT

<p style="text-align: center;">Dystonia/Dyskinesia</p> <p>Dystonia = involuntary sustained or intermittent contractions of the muscles that cause stiff or twisting motions, abnormal postures and/or repetitive movements</p> <p>Examples:</p> <ul style="list-style-type: none"> • Jaw and facial contortions • Stiff neck (torticollis) • Elbow/wrist/finger flexion • Foot in turning or ankle eversion • Difficulty swallowing, tongue darting <p>Dyskinesia = involuntary hyperkinetic movements that include jerky movements, slow or writhing movements, rhythmic twisting patterns or distorted/violent movements of the limbs</p> <p>Examples:</p> <ul style="list-style-type: none"> • <u>Akathisia</u> - inner feeling of restlessness, inability to sit still • <u>Bradykinesia</u> - slow mvmts, shuffling gait, decr arm swing • <u>Akinesia</u> - lack of any movement • Others - resting tremor, drooling, tic, eye rolling 	<p style="text-align: center;">Extrapyramidal Side Effects (EPS)</p> <ul style="list-style-type: none"> • Describe movement disorders that happen during early phases with treatment of antipsychotics. • Can happen within hours or days of taking an antipsychotic drug <p>Acute dystonia:</p> <ul style="list-style-type: none"> • Stiff and twisted neck (Torticollis) • Tongue or jaw dystonia • Oculogyric crisis • Body arching (Opisthotonus) <p>Treatment: use of Cogentin PO or IM stat!</p>
<p style="text-align: center;">Serotonin Syndrome</p> <p>3 key features:</p> <ol style="list-style-type: none"> 1. Predictable course with excess serotonin 2. <u>Clinical symptoms:</u> <ul style="list-style-type: none"> - Mental status changes - Autonomic hyperactivity - Neuromuscular abnormalities - Hyperthermia (up to 104-105°F) 3. Range of symptoms from mild to lethal <p style="text-align: center;">**Key is use of SSRI/SNRI and fever**</p>	<p style="text-align: center;">Neuroleptic Malignant Syndrome (NMS)</p> <ul style="list-style-type: none"> • Rare, but life threatening, involves the use of antipsychotics, especially First Generation typicals. • <u>Clinical symptoms:</u> <ul style="list-style-type: none"> - Hyperthermia (temp >100.4) - Severe muscular rigidity - Altered mental status - Autonomic dysfunction - Other: sweating, increased CK, increased WBC, metabolic acidosis <p style="text-align: center;">**Key is use of neuroleptics**</p>

APPENDIX E

PROGRAM EVALUATION FORM

Program Evaluation Form

We would like to take a few minutes to ask you some questions about your orientation. Please be constructive in your feedback, whether positive or negative. We strive to make continuous improvements in our orientation process. Your feedback will be valuable in achieving this goal. Please rate on a scale from 1 (strongly disagree) to 5 (strongly agree).

1. The psychotropic Medication module was informative and enhanced my knowledge base on medications. 1 2 3 4 5
2. The medication test was in line with the material presented. 1 2 3 4 5
3. The medication module instructor was knowledgeable and able to answer my questions. 1 2 3 4 5

What was most beneficial today? _____

What was least beneficial today? _____

Suggestions and other comments? _____