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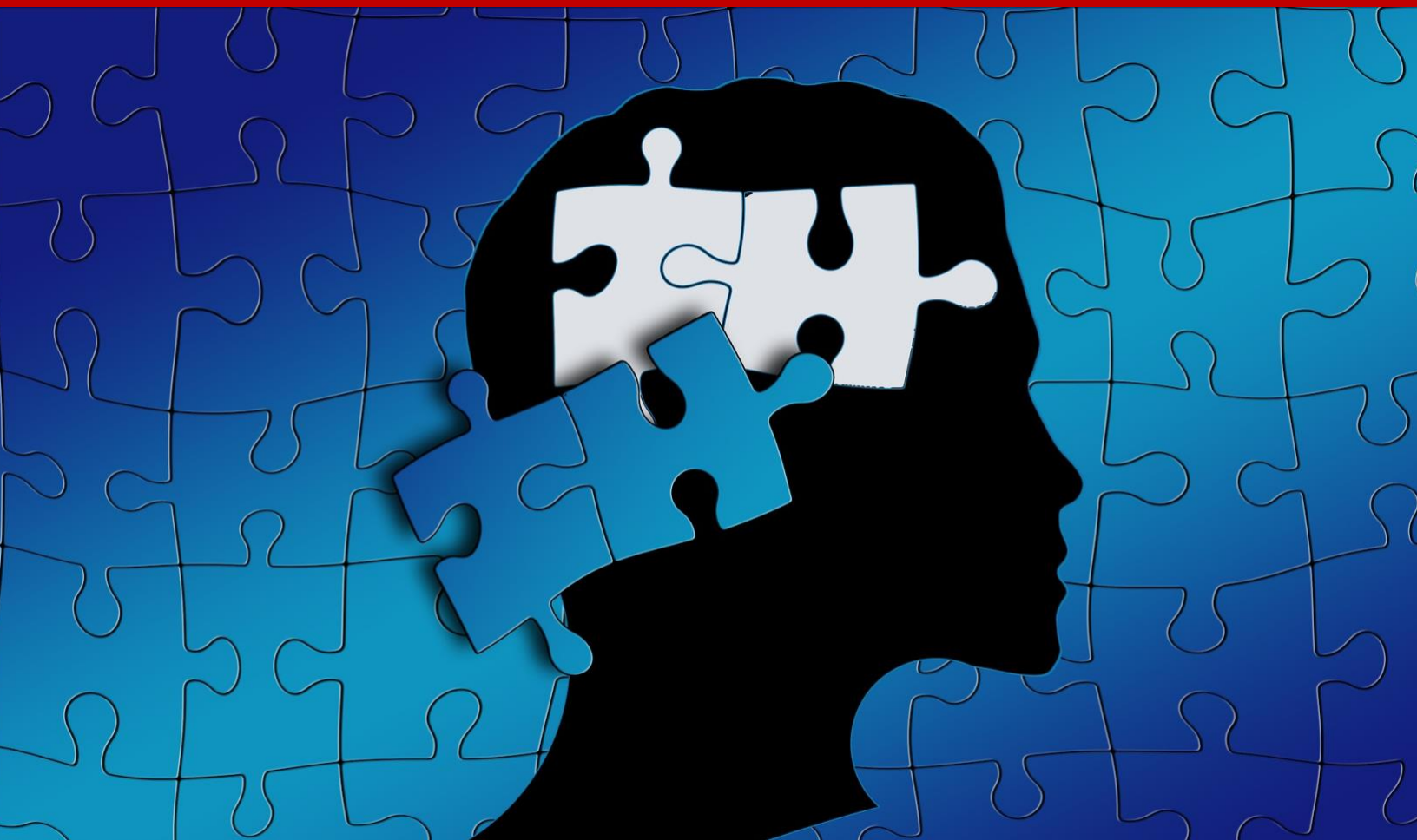
Autism: Identification and Treatment



Introduction

The number of individuals with diagnosed autism spectrum disorder (ASD) is on the rise.[1] As a result, it has become essential for health care professionals to possess insight into ASD to best serve patients. This course will review information regarding ASD and the treatment of ASD to provide health care professionals with the necessary insight to administer safe and effective health care to those patients with ASD.

Section 1: Autism Spectrum Disorder (ASD)

According to materials provided by the Centers for Disease Control and Prevention (CDC), about 1 in 59 children has been identified with autism spectrum disorder (ASD).[1] Therefore, it is very likely that a health care professional will encounter patients with ASD. That being said, to best serve patients with ASD, health care professionals should possess an understanding of ASD and its presentation. This section of the course will provide insight into ASD. The information found in this section was derived from materials provided by the CDC and the United States Department of Health & Human Services as well as the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).[1,2,3]

What is autism spectrum disorder?

Autism spectrum disorder (ASD) may refer to a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns.

Health care professionals should note that ASD typically affects the structure and function of the brain and nervous system. Health care professionals should also note that ASD lasts the course of an individual's life.

Why is autism referred to as a spectrum disorder?

Autism is referred to as a spectrum disorder because there is wide variation in the type and severity of ASD symptoms.

Health care professionals should note that the major symptoms of ASD fall into the following categories: social skill symptoms, communication symptoms, unusual behavior symptoms, and "other" symptoms.

What are the social skill symptoms associated with ASD?

The social skill symptoms associated with ASD may be some of the first type of symptoms that may come to mind when considering ASD.

The social skill symptoms associated with ASD include the following:

- An individual does not respond to his or her name by 12 months of age
- An individual does not point out interesting objects by 14 months of age
- An individual appears to be very independent for his or her age
- An individual often appears to be in his or her "own world"
- An individual often appears to "tune out" other individuals
- An individual avoids eye-contact
- Prefers to play alone
- Does not share interests with others
- Only interacts to achieve a desired goal or outcome
- Has flat or inappropriate facial expressions
- Does not understand personal space boundaries
- Avoids or resists physical contact
- Is not comforted by others during distress
- Has trouble understanding other individual's feelings or talking about his or her own feelings

Health care professionals should note that the aforementioned social skill symptoms associated with ASD go beyond just making an individual appear shy or resident; instead they often lead to dramatic problems that impact everyday life.

What are the communication symptoms associated with ASD?

The communication symptoms associated with ASD include the following:

- An individual exhibits delayed speech and language skills
- An individual appears to hear sometimes, but not other times
- An individual exhibits echolalia (the term echolalia may refer to reparative speech patterns; respective word use)
- An individual often reverses pronouns (e.g., says “you” instead of “I” when engaged in a conversation and/or discussion)

- An individual uses language in unusual ways
- An individual may lack the capacity to put words into sentences
- An individual often cannot fully articulate what he or she wants
- Gives unrelated answers to questions
- Does not point or respond to pointing
- Uses few or no gestures (e.g., does not wave hello or goodbye)
- Talks in a flat, robot-like, or sing-song voice
- Does not pretend in play (e.g., does not engage with toys)
- Does not understand jokes, sarcasm, and/or teasing

Health care professionals should note the following: individuals with ASD may have different communication skills; some individuals may be able to speak very well, while others may not be able to speak at all.

What are the unusual behavior symptoms associated with ASD?

The unusual behavior symptoms associated with ASD include the following:

- An individual may line up his or her toys or other objects in a specific way; spends a lot of time lining things up or putting things in a specific order
- An individual may play with his or her toys the same way every time
- An individual may appear to like parts of objects (e.g., wheels, book covers, picture frames)
- An individual may appear to get "stuck" doing the same things over and over and can't move on to other things
- Is very organized
- Often gets upset by minor changes
- Has obsessive interests
- Has to follow certain routines
- Exhibits respective motions (the term repetitive motion, as it relates to ASD, may refer to any action that is consistently repeated for no apparent reason;

examples of respective motions may include the following: hand flapping, arm flapping, body rocking, and/or consistently spinning oneself in circles)

Health care professionals should note the following: individuals with ASD often thrive on routine; a change in routine may cause individuals with ASD to become very upset to the point where they appear to lose control of themselves or have a "meltdown."

What are the "other" symptoms associated with ASD?

The "other" symptoms associated with ASD include the following:

- An individual may appear to stare at nothing or wander around
- An individual may prefer to walk on his or her toes
- An individual appears to be oversensitive to noise
- An individual may appear overly uncooperative and/or overly resistant
- Does not like to climb things, such as stairs
- Hyperactivity (very active)
- Impulsivity (e.g., acting without thinking)
- Short attention span
- Aggression
- Causes self injury
- Often displays a lack of self control (i.e., often has "meltdowns" or tantrums)
- Displays unusual sleeping habits
- Often displays unusual moods or emotional reactions
- Lack of fear or more fear than expected
- Unusual reactions to the way things sound, smell, taste, look, or feel
- Displays unusual eating habits

Health care professionals should note the following: the unusual eating habits often associated with ASD may range from limiting a diet to only one type of food/one food to pica. Pica may refer to an eating disorder characterized by the need to eat objects with little to no nutritional value such as ice, grass, dirt, rocks, hair, and/or paper.

When do individuals typically begin to exhibit ASD symptoms?

The symptoms of ASD often appear early in development; many individuals show symptoms of ASD by 12 months to 18 months of age or even earlier. However, some individuals may not show symptoms of ASD until 24 mouths of age.

The early signs and symptoms of ASD include the following:

- Problems with eye contact
- Little to no response to his or her name
- Problems following another individual's gaze or pointed finger to an object
- Poor skills in pretend play and imitation
- Problems with nonverbal communication
- Delayed speech and language skills
- Displays unusual reactions to the way things sound, smell, taste, look, or feel

How does ASD affect development?

ASD may cause an individual to develop at different rates in different areas (i.e., an individual with ASD may not develop in the same manner when compared to other individuals without ASD.) For example, an individual with ASD may have delays in language, social, and learning skills, but their ability to walk and move around may be comparable with other individuals their age; or an individual with ASD may display above average problem solving skills but may lack the ability to make friends. In essence, ASD may prevent an individual from developing in a well rounded manner.

Health care professionals should note that ASD may affect some individual's ability to reach age-related developmental milestones (the term age-related developmental milestone may refer to any significant change typically associated with growth and aging; age-related developmental milestones traditionally vary depending on the stage of development, for example, the age-related developmental milestones associated with a 2 month old infant include the following: a 2 month old infant should begin to smile at people, pay attention to faces, and react to sound). A failure to consistently reach age-related developmental milestones may be another indication of ASD.

How may patients with ASD present?

Patients with ASD may present with a range of ASD symptoms that differ in both type and severity. For example, one individual with ASD may possess average intelligence, have little interest in other people, use limited verbal language, experience intense receptive motions such as hand-flapping, under-react to pain and overreact to sounds; while another individual with ASD may have slightly below average intelligence, a mild interest in other people, over-react to pain, very good gross motor skills, and posses a weaknesses in fine motor skills. Essentially, individuals with ASD may present with a broad array of different ASD symptoms which posses varying degrees of intensity.

Health care professionals should observe patients with ASD and/or patients with suspected ASD to distinguish their specific symptom ranges. Determining a patient's symptom range may help health care professionals address an individual's specific needs or requirements. Determining a patient's symptom range may also foster the administration of safe and effective health care and aid in diagnosis.

How is ASD diagnosed?

The diagnostic process for ASD typically involves two major stages or steps, which include developmental screening and a comprehensive diagnostic evaluation.

Developmental screening - developmental screening is often the first step to diagnosing ASD. Developmental screening may refer to the process of determining if an individual is progressing at a desired rate (e.g., is a child learning basic skills when he or she should). Additional information regarding developmental screening may be found below.

- The developmental screening process may be conducted by various health care professionals in a variety of settings, including school environments.
- The essential elements of a typical developmental screening include: a parent interview, a child interview, and the use of a related questionnaire and/or the use of a specific developmental screening tool.
- Examples of specific developmental screening tools include the following: Ages and Stages Questionnaires (ASQ), Communication and Symbolic Behavior Scales (CSBS), Parents' Evaluation of Developmental Status (PEDS), the Modified Checklist for Autism in Toddlers (MCHAT), and the Screening Tool for Autism in Toddlers and Young Children (STAT).

- ***Ages and Stages Questionnaires (ASQ)*** - the ASQ is a parent-completed questionnaire, which screens communication, gross motor skills, fine motor skills, problem-solving, and personal adaptive skills. The ASQ results are either viewed as pass or fail.
- ***Communication and Symbolic Behavior Scales (CSBS)*** - the CSBS is a parent-completed checklist, often one page in length, and typically used to screen communication and symbolic abilities up to the 24-month level.
- ***Parents' Evaluation of Developmental Status (PEDS)*** - the PEDS is a parent-interview single response form used for all ages, which screens for developmental and behavioral problems needing further evaluation.
- ***Modified Checklist for Autism in Toddlers (MCHAT)*** - the MCHAT is parent-completed questionnaire designed to identify children at risk for autism in the general population.
- ***Screening Tool for Autism in Toddlers and Young Children (STAT)*** - the STAT is an interactive assessment, which consists of 12 activities designed to screen play, communication, and imitation skills.
- The American Academy of Pediatrics (AAP) recommends that all children be screened for developmental delays and disabilities during regular health care professional visits at: 9 months, 18 months, and 24/30 months (health care professional should note that additional screening might be needed if a child is at high risk for developmental problems due to preterm birth or low birth weight). Additionally, all children should be screened specifically for ASD during regular health care professional visits at 18 months and 24/30 months.
- If a health care professional determines, through a developmental screening, that a patient may, potentially, have ASD, he or she may recommend that the patient move to the second stage or step of the ASD diagnostic process, which consists of a comprehensive diagnostic evaluation.

Comprehensive diagnostic evaluation - a comprehensive diagnostic evaluation, as it relates to ASD, may refer to a diagnostic procedure used to determine if an individual meets the criteria necessary for ASD diagnosis. Additional information regarding comprehensive diagnostic evaluations may be found below.

- A comprehensive diagnostic evaluation may include: a parent interview, a child interview, and the use of a diagnostic tool.

- Examples of diagnostic tools that may be used for ASD include: the Autism Diagnosis Interview - Revised (ADI-R), the Autism Diagnostic Observation Schedule, the Childhood Autism Rating Scale (CARS), and the Gilliam Autism Rating Scale - Second Edition (GARS-2).

- ***Autism Diagnosis Interview - Revised (ADI-R)*** - the ADI-R is a clinical diagnostic instrument for assessing autism in children and adults (health care professionals should note that the ADI-R is appropriate for children and adults with mental ages of approximately 18 months and above). The instrument focuses on behavior in three main areas: reciprocal social interaction, communication and language, and restricted and repetitive, stereotyped interests and behaviors.

- ***Autism Diagnostic Observation Schedule*** - the Autism Diagnostic Observation Schedule is a semi-structured, standardized assessment of social interaction, communication, play, and imaginative use of materials for individuals suspected of having ASD. The observational schedule consists of four 30-minute modules, each designed to be administered to different individuals according to their level of expressive language.

- ***Childhood Autism Rating Scale (CARS)*** - the CARS is a brief assessment suitable for use with any child over 2 years of age. CARS includes items drawn from five prominent systems for diagnosing autism; each item covers a particular characteristic, ability, or behavior.

- ***Gilliam Autism Rating Scale - Second Edition (GARS-2)*** - the GARS-2 is a scale which may be used in diagnosing autism in individuals ages 3 through 22. The GARS-2 may also be used to estimate the severity of a child's disorder.

- Health care professionals should note that the diagnostic tools found above are used in conjunction with the DSM-5 to diagnose ASD.

How is the DSM-5 used to diagnose ASD?

The DSM-5 provides standardized criteria for ASD diagnosis. An individual may be diagnosed with ASD if he or she meets the related DSM-5 criteria found below.

DSM-5 ASD diagnostic criteria:

A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive, see text):

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.

2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.

3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

Specify current severity: Severity is based on social communication impairments and restricted repetitive patterns of behavior.

B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypes, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take the same route or eat the same food every day).

3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or preservative interest).

4. Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/ temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

Specify current severity: Severity is based on social communication impairments and restricted, repetitive patterns of behavior.

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities or may be masked by learned strategies in later life).

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

Note: Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder.

Specify if:

- With or without accompanying intellectual impairment
- With or without accompanying language impairment
- Associated with another neurodevelopmental, mental, or behavioral disorder
- With catatonia
- Associated with a known medical or genetic condition or environmental factor

What are the severity levels associated with ASD?

Typically, there are three severity levels associated with ASD; Severity Level 1, Severity Level 2, and Severity Level 3.

Severity Level 1 is the least severe level associated with ASD. Individuals with Severity Level 1 ASD may exhibit the following: difficulties initiating social communication, a decreased interest in social interaction, inflexibility of behavior that causes significant interference with functioning in one or more contexts, an inability to switch between activities, and problkems with organization and planning. Health care professionals should note that individuals with Severity Level 1 ASD often require support.

Severity Level 2 is more severe when compared to Severity Level 1. Individuals with Severity Level 2 ASD may exhibit the following: marked deficits in verbal and nonverbal social communication skills, social impairments, limited initiation of social interactions, reduced or abnormal responses to social overtures from others, inflexibility of behavior, difficulty coping with change, obvious restricted/repetitive behaviors that often interfere with function, and difficulty changing focus or action. Health care professionals should note that individuals with Severity Level 2 ASD traditionally require substantial support.

Severity Level 3 is the most severe level associated with ASD. Individuals with Severity Level 3 ASD may exhibit the following: severe deficits in verbal and nonverbal social communication skills which often cause severe impairments in functioning, very limited initiation of social interactions, minimal responses to social overtures from others, inflexibility of behavior, extreme difficulty coping with change, and great distress/difficulty changing focus or action. Health care professionals should note that individuals with Severity Level 3 ASD traditionally require very substantial support.

Health care professionals should note a patient's level of ASD, when applicable, so they may address any specific needs or requirements an individual patient may have.

What conditions are typically associated with ASD?

Unfortunately, an array of physical and mental-health conditions frequently accompany ASD. The physical and mental-health conditions that frequently accompany ASD include the following: epilepsy, attention-deficit/hyperactivity disorder (ADHD), anxiety, depression, bipolar disorders, and avoidant/restrictive food intake disorder. Specific information regarding each of the aforementioned conditions/disorders and how they relate to ASD may be found below.

Epilepsy - Epilepsy may refer to a disorder that causes seizures. Epilepsy can be very common in ASD patient populations. An individual with ASD associated epilepsy may experience the following: unexplained staring spells, involuntary movements, unexplained confusion, severe headaches, sleepiness, disrupted sleep, and unexplained changes in abilities or emotions. Health care professionals should work to identify patients with ASD associated epilepsy so they may receive effective monitoring and treatment.

Attention-deficit/hyperactivity disorder (ADHD) - ADHD may refer to refer to a type of brain disorder which is marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development. ADHD may also be very common in ASD patient populations. Symptoms associated with ADHD may include the following: an inability to maintain focus, an inability to maintain

sustained mental effort for long periods of time, a capacity to consistently make mistakes, disorganization, forgetfulness, and restlessness. Health care professionals should note the following when considering ASD associated ADHD: symptoms of ADHD may overlap with those of ASD; as a result, ADHD can be difficult to distinguish in someone on the spectrum.

Anxiety - Anxiety may refer to a mental health disorder characterized by prolonged periods of persistent, excessive worry about a number of events or activities, which causes clinically significant distress or impairment in social, occupational, or other important areas of functioning. There are several types of anxiety disorders. The most common type of anxiety disorder is referred to as generalized anxiety disorder. Generalized anxiety disorder may refer to a mental health disorder characterized by excessive anxiety and worry occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance), which is difficult to control and leads to clinically significant distress or impairment in social, occupational, or other important areas of functioning. Symptoms of generalized anxiety disorder may include: excessive anxiety, excessive worry, restlessness, persistent feelings of being keyed up or on edge, easily fatigued, difficulty concentrating, mind feeling blank at times (mind going blank), irritability, muscle tension, and sleep difficulties.

Individuals suffering from generalized anxiety disorders may present in a variety of different states. They may appear anxious, worried, fearful, terrified, troubled, distracted and/or helpless. Also, they may report experiencing sleep problems and/or muscle tension and stiffness. Additionally, they may exhibit behaviors that may seem odd or inconsistent with other patient populations. Individuals potentially suffering from generalized anxiety disorders may also display body language indicating anxiety, worry, tension, and/or fear such as: consistently moving limbs, rubbing hands together, shaking, appearing tense or stiff as well as excessive finger nail biting and/or lip biting.

Health care professionals should note the following when considering ASD associated anxiety: anxiety can be triggered by different activities, including activities that were previously considered enjoyable. Health care professionals should also note the following: individuals with ASD may also experience social anxiety disorder. Social anxiety disorder may refer to an anxiety disorder characterized by irrational and excessive anxiety, worry, and/or fear regarding social situations.

Major depressive disorder - Major depressive disorder may refer to a form of depression that occurs most days of the week for a period of two weeks or longer leading to clinically significant distress or impairment in social, occupational, or other

important areas of functioning. Symptoms of major depressive disorder may include: depressed mood, a loss of interest in previously enjoyable activities, appetite changes, weight changes, sleep difficulties, psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to think or concentrate, feelings of worthlessness or excessive guilt, and suicidality.

Individuals suffering from major depressive disorders may present in a variety of different states. They may appear untidy or disheveled. Also, their personal hygiene may be lacking. Additionally, they may appear troubled or distracted. Furthermore, individuals suffering from major depressive disorders may exhibit behaviors that may seem odd or inconsistent with other patient populations and may display body language indicating a depressed mood (e.g., moving slowly, head tilting down, arms crossed, and slouching).

Health care professionals should note the following when considering ASD associated depression: depression rates for individuals with ASD rise with age and intellect. Health care professionals should also note that ASD associated depression may lead to suicidal ideation. Suicidal ideation may refer to thoughts of suicide and/or thoughts of planning suicide. Health care professionals should be very aware that individuals suffering from ASD associated depression may be suicidal. Health care professionals should make every effort to identify the potential for suicide and prevent patient suicide when applicable. Additional information regarding suicide and suicide prevention may be found in Figure 1.

FIGURE 1: INFORMATION REGARDING SUICIDE AND SUICIDE PREVENTION

Suicide may refer to a death caused by self-directed injurious behavior with any intent to die as a result of the behavior.

A suicide attempt may refer to a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior. A suicide attempt may or may not result in injury.

Suicide is highly prevalent and one of the leading causes of death in the United States.

Suicide rates vary by race/ethnicity, age, and other population characteristics. The population groups with some of the highest rates of suicide in the United States include non-Hispanic American Indian/Alaska Natives and non-Hispanic Whites.

Research indicates that suicide, like other human behaviors, has no single determining cause. Suicide may occur in response to multiple biological, psychological, interpersonal, environmental and societal influences that interact with one another, often over time.

Specific risk factors that may lead to suicide include the following:

- ***Individual issues such as:*** a history of depression and other mental illnesses, hopelessness, substance abuse, certain health conditions, previous suicide attempt(s), violence victimization and perpetration, and genetic and biological determinants.
- ***Relationship issues such as:*** high conflict or violent relationships, sense of isolation and lack of social support, family/ loved one's history of suicide, financial and work stress.
- ***Community issues such as:*** inadequate community connectedness, barriers to health care (e.g., lack of access to providers and medications).
- ***Societal issues such as:*** availability of lethal means of suicide, unsafe media portrayals of suicide, stigma associated with help-seeking and mental illness.

Suicide is often connected to other forms of violence. Exposure to violence (e.g., child abuse and neglect, bullying, peer violence, dating violence, sexual violence, and intimate partner violence) is associated with increased risk of depression, post-traumatic stress disorder (PTSD), anxiety, suicide, and suicide attempts.

Women exposed to partner violence are nearly five times more likely to attempt suicide as women not exposed to partner violence.

Suicide can be prevented. Suicide prevention is best achieved by a focus across the individual, relationship, family, community, and societal-levels and across all sectors, private and public.

Suicide prevention strategies may include the following:

- ***Strengthening economic supports*** - attempts to strengthen economic supports in order to prevent suicide can include measures to strengthen household financial security and housing.
- ***Strengthen access and delivery of suicide care*** - attempts to strengthen access and delivery of suicide care can include measures to cover mental health conditions in health insurance policies, efforts to reduce provider

shortages in underserved areas and system changes that introduce safer suicide care.

- ***Create protective environments*** - attempts to create protective environments can include measures to reduce access to lethal means among persons at risk of suicide, the introduction of organizational policies and culture as well as community-based policies to reduce excessive alcohol use.
- ***Promote connectedness*** - attempts to promote connectedness can include peer programs and community engagement activities.
- ***Teach coping and problem-solving skills*** - attempts to teach coping and problem-solving skills can include social-emotional learning programs and parenting skill and family relationship programs.
- ***Identify and support people at risk*** - attempts to identify and support people at risk can include gatekeeper training, crisis intervention, treatment for people at risk of suicide and treatment to prevent re-attempts.
- ***Lessen harms and prevent future risk*** - attempts to lessen harms and prevent future risk can include safe reporting and messaging about suicide.

Health care professionals may participate in one or all of the aforementioned strategies to prevent suicide.

Bipolar disorder - Bipolar disorder may refer to a mental health disorder characterized by shifting periods or episodes of extreme mood disturbances, which include mania/ hypomania and may cause significant interference in daily life. Symptoms of bipolar disorders may include the following: inflated self-esteem, grandiosity, decreased need for sleep, pressured speech, racing thoughts or flight of ideas, distractibility, depressed mood, a loss of interest in previously enjoyable activities, appetite changes, weight changes, sleep difficulties, psychomotor agitation or retardation, fatigue or loss of energy, diminished ability to think or concentrate, feelings of worthlessness or excessive guilt, and suicidality.

Individuals suffering from bipolar disorders may present during a manic, hypomanic or depressive episode. Individuals presenting during a manic episode may exhibit inflated self-esteem, grandiose thinking about themselves, pressured speech, distractibility and/or irritability. Additionally, individuals presenting during a manic episode may jump from one topic to another during a conversation and/or they may

outline their risky behavior, pleasure seeking activities or sexual interactions during an examination. Furthermore, individuals presenting during a manic episode may show signs of marked impairment and/or psychosis/psychotic features such as delusions and hallucinations. Individuals presenting during a depressive episode may appear untidy or disheveled. Their personal hygiene may be lacking. They may appear troubled or distracted. They may exhibit behaviors that can seem odd or inconsistent with other patient populations and they may display body language indicating a depressed mood such as: moving slowly, head tilting down, arms crossed and/or slouching.

Health care professionals should note the following when considering ASD associated bipolar disorders: health care professionals should observe ASD patients with associated bipolar disorders to distinguish ASD symptoms from bipolar disorder symptoms. Health care professionals should also note that ASD associated bipolar disorders may also lead to suicidal ideation. Health care professionals should make every effort to identify the potential for suicide and prevent patient suicide when applicable.

Avoidant/restrictive food intake disorder - Avoidant/restrictive food intake disorder may refer to a eating disorder characterized by a persistent failure to meet appropriate nutritional and/or energy needs. According to the DSM-5, an individual may be diagnosed with avoidant/restrictive food intake disorder if he or she meets the following criteria:

A. An eating or feeding disturbance (e.g., apparent lack of interest in eating or food; avoidance based on the sensory characteristics of food; concern about aversive consequences of eating) as manifested by persistent failure to meet appropriate nutritional and/or energy needs associated with one (or more) of the following:

1. Significant weight loss (or failure to achieve expected weight gain or faltering growth in children)

2. Significant nutritional deficiency

3. Dependence on enteral feeding or oral nutritional supplements

B. The disturbance is not better explained by lack of available food or by an associated culturally sanctioned practice.

C. The eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance in the way in which one's body weight or shape is experienced.

D. The eating disturbance is not attributable to a concurrent medical condition or not better explained by another mental disorder. When the eating disturbance occurs in the context of another mental disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder and warrants additional clinical attention.

Health care professionals should note the following when considering ASD associated avoidant/restrictive food intake disorder: often patients with ASD require special nutrition attention to ensure they meet their nutritional needs and requirements.

Health care professionals should make a concerted effort to identify and manage any additional issues or concerns that may arise when administering health care to patients with ASD, especially when it pertains to patients exhibiting suicidal ideation.

Section 1: Summary

Autism spectrum disorder (ASD) may refer to a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns. The major symptoms of ASD fall into the following categories: social skill symptoms, communication symptoms, unusual behavior symptoms, and "other" symptoms. The diagnostic process for ASD typically involves two major stages or steps, which include developmental screening and a comprehensive diagnostic evaluation. The physical and mental-health conditions typically associated with ASD include the following: epilepsy, ADHD, anxiety, depression, bipolar disorders, and avoidant/restrictive food intake disorder. To best serve patients suffering from ASD, health care professionals should possess an understanding of ASD as well as its presentation, diagnosis, and associated conditions.

Section 1: Key Concepts

- Autism is referred to as a spectrum disorder because there is wide variation in the type and severity of ASD symptoms.
- The major symptoms of ASD fall into the following categories: social skill symptoms, communication symptoms, unusual behavior symptoms, and "other" symptoms.
- ASD may cause an individual to develop at different rates in different areas; an individual with ASD may not develop in the same manner when compared to other individuals without ASD.
- Patients with ASD may present with a range of ASD symptoms.
- ASD is typically diagnosed by health care professionals using criteria outlined in the DSM-5.

- There are three severity levels typically associated with ASD; Severity Level 1, Severity Level 2, and Severity Level 3; individuals with Severity Level 3 ASD traditionally require very substantial support.
- The physical and mental-health conditions typically associated with ASD include the following: epilepsy, ADHD, anxiety, depression, bipolar disorders, and avoidant/ restrictive food intake disorder.
- Health care professionals should make a concerted effort to identify and manage any additional issues or concerns that may arise when administering health care to patients with ASD, especially when it pertains to patients exhibiting suicidal ideation.

Section 1: Key Terms

Autism spectrum disorder (ASD) - a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns

Echolalia - reparative speech patterns; respective word use

Repetitive motion (as it relates to ASD) - any action that is consistently repeated for no apparent reason

Pica - an eating disorder characterized by the need to eat objects with little to no nutritional value such as ice, grass, dirt, rocks, hair, and/or paper

Age-related developmental milestone - any significant change typically associated with growth and aging

Developmental screening - the process of determining if an individual is progressing at a desired rate; is a child learning basic skills when he or she should

Comprehensive diagnostic evaluation (as it relates to ASD) - a diagnostic procedure used to determine if an individual meets the criteria necessary for ASD diagnosis

Epilepsy - a disorder that causes seizures

Attention-deficit/hyperactivity disorder (ADHD) - a type of brain disorder which is marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development

Anxiety - a mental health disorder characterized by prolonged periods of persistent, excessive worry about a number of events or activities, which cause clinically

significant distress or impairment in social, occupational, or other important areas of functioning

Generalized anxiety disorder - a mental health disorder characterized by excessive anxiety and worry occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance), which is difficult to control and leads to clinically significant distress or impairment in social, occupational, or other important areas of functioning

Social anxiety disorder - an anxiety disorder characterized by irrational and excessive anxiety, worry, and/or fear regarding social situations

Major depressive disorder - a form of depression that occurs most days of the week for a period of 2 weeks or longer leading to clinically significant distress or impairment in social, occupational, or other important areas of functioning

Suicidal ideation - thoughts of suicide and/or thoughts of planning suicide

Suicide - a death caused by self-directed injurious behavior with any intent to die as a result of the behavior

Suicide attempt - a non-fatal self-directed and potentially injurious behavior with any intent to die as a result of the behavior.

Bipolar disorder - a mental health disorder characterized by shifting periods or episodes of extreme mood disturbances, which include mania/ hypomania and may cause significant interference in daily life

Avoidant/restrictive food intake disorder - an eating disorder characterized by a persistent failure to meet appropriate nutritional and/or energy needs

Section 1: Personal Reflection Question

How can health care professionals effectively identify individuals with ASD?

Section 2: ASD Treatment

It has been established that it is vital for health care professionals to possess insight into ASD in order to best serve patients in need. With that said, health care professionals should also possess insight into ASD treatment options. Treatment for ASD can come in many different forms including both non-pharmacological and pharmacological options. The beginning of this section of the course will focus on some of the more common non-pharmacological treatment options for ASD.

Non-Pharmacological Treatment Options for ASD

Adequate Nutrition and Physical Activity

First and foremost, health care professionals should ensure ASD patients receive adequate nutrition and physical activity. Specific recommendations regarding nutrition and physical activity may be found below. The information found below was derived from the Dietary Guidelines for Americans 2015 - 2020.[4]

Nutrition and Dietary Recommendations:

- Individuals should follow a healthy eating pattern across their lifespan. All food and beverage choices matter. Individuals should choose a healthy eating pattern at an appropriate calorie level to help achieve and maintain a healthy body weight, support nutrient adequacy, and reduce the risk of chronic disease.
- An eating pattern may refer to the combination of foods and beverages that constitute an individual's complete dietary intake over time; an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption.
- Individuals should focus on variety, nutrient density, and amount. To meet nutrient needs within calorie limits, individuals should choose a variety of nutrient-dense foods across and within all food groups in recommended amounts.
- Individuals should limit calories from added sugars and saturated fats and reduce sodium intake. Individuals should consume an eating pattern low in added sugars, saturated fats, and sodium. Individuals should cut back on foods and beverages higher in these components to amounts that fit within healthy eating patterns.
- Individuals should shift to healthier food and beverage choices; choose nutrient-dense foods and beverages across and within all food groups in place of less healthy choices; consider cultural and personal preferences to make these shifts easier to accomplish and maintain.
- Individuals should support healthy eating patterns for all. Everyone has a role in helping to create and support healthy eating patterns in multiple settings nationwide, from home to school to work to communities to health care facilities.
- Individuals should consume a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level.
- A healthy eating pattern includes:

    - A variety of vegetables from all of the subgroups - dark green, red and orange, legumes (beans and peas), starchy, and other
    - Fruits, especially whole fruits
    - Grains, at least half of which are whole grains
    - Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
    - A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products
    - Oils
- A healthy eating pattern limits the following: saturated fats and trans fats, added sugars, and sodium.
- Individuals should consume less than 10 percent of calories per day from added sugars.
- Individuals should consume less than 10 percent of calories per day from saturated fats.
- Individuals should consume less than 2,300 milligrams (mg) per day of sodium.

Physical Activity Recommendations:

- Physical activity may refer to any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health.
- Children and adolescents (ages 6 - 17) should do 60 minutes (1 hour) or more of physical activity daily.
- Aerobic recommendations for children and adolescents (ages 6 - 17): most of the 60 or more minutes a day should be either moderate - or vigorous - intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.
- Muscle-strengthening recommendations for children and adolescents (ages 6 - 17): as part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.

- Bone-strengthening recommendations for children and adolescents (ages 6 - 17): as part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.
- It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.
- All adults (ages 18 - 64 years) should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.
- For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.
- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.
- Adults should also include muscle-strengthening activities that involve all major muscle groups on 2 or more days a week.
- Older adults (individuals 65 years and older) should follow the adult guidelines. When older adults cannot meet the adult guidelines, they should be as physically active as their abilities and conditions will allow.

Physical Therapy

In addition to physical activity, some ASD patients may require physical therapy. Physical therapy may refer to the practice of treating a disease, condition, disorder, and/or injury through physical means.[2] The goal of physical therapy, when used to treat ASD patients, is often to build motor skills and improve strength, posture, and balance.[2]

Psychotherapy

Psychotherapy, also known as talk therapy, may refer to the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits.[5] Health care professionals should note that

many different forms of psychotherapy may be used to treat patients suffering from ASD.

Cognitive Behavioral Therapy

Cognitive behavioral therapy may refer to a form of psychotherapy which focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior.[6] In other words, cognitive behavioral therapy works to identify unrealistically negative thoughts and their relationship to negative behavior patterns and outcomes in order to develop constitutive ways of thinking that will ultimately lead to more positive behavior patterns and outcomes.

Social Skills Training

Social skills training may refer to a type of therapy that works to improve upon individuals' social skills such as: making eye contact, greetings, the use of appropriate verbal tones, and appropriate emotional responses.[7] Social skills training can be valuable to those individuals suffering from ASD because individuals with ASD typically have difficulties with their social skills and, consequently, their interpersonal relationships.[7] Thus, social skill training can be a means to improve upon ASD-related deficiencies and, ultimately, the quality of life of those patients with ASD. Health care professionals should note social skills training is often used in conjunction with other forms of therapy.[7]

Joint Attention Therapy

Joint attention therapy is a form of therapy that focuses on improving specific skills related to shared attention, such as pointing and coordinating looks between a person and an object.[2] Essentially, joint attention therapy helps patients with ASD build shared attention skills to, ultimately, help them improve upon communication and interpersonal interaction.[2]

Support Groups

Support groups may also be used as a therapeutic option for those with ASD. Support groups can be used to help those with ASD avoid isolation and make connections with other individuals to improve upon symptoms and their quality of life. Health care professionals should be aware that various types of support groups exist and that an individual may participate in one or more support group at a time to cope or manage his or her ASD.

Pharmacological Treatment

As previously mentioned, pharmacological treatment options may be used as care for individuals with ASD. That being the case, the rest of this section will focus on some of the most widely prescribed medications used to treat individuals with ASD. The medications highlighted in this section will be presented in informational segments. The information found below was derived from materials provided by the United States Food and Drug Administration (FDA).[8] When reviewing the highlighted medications health care professionals should keep in mind that the following medications may be used alone or in combination with other therapeutic options to treat individuals with ASD.

Risperidone (Risperdal)

Medication notes - Risperdal is an antipsychotic agent indicated for the treatment of irritability associated with autistic disorder in children and adolescents aged 5 - 16 years. Common side effects of Risperdal include: somnolence, appetite increases, fatigue, rhinitis, upper respiratory tract infection, vomiting, coughing, urinary incontinence, saliva increased, constipation, fever, Parkinsonism, dystonia, abdominal pain, anxiety, nausea, dizziness, dry mouth, tremor, rash, akathisia, and dyspepsia.

Safety notes - Contraindications associated with Risperdal include a known hypersensitivity to the product. Warnings associated with Risperdal include: elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death; Risperdal is not approved for use in patients with dementia-related psychosis. Additional warnings associated with Risperdal include the following: leukopenia, neutropenia, and agranulocytosis have been reported with antipsychotics, including Risperdal; patients with a history of a clinically significant low white blood cell count (WBC) or a drug-induced leukopenia/neutropenia should have their complete blood count (CBC) monitored frequently during the first few months of therapy and discontinuation of Risperdal should be considered at the first sign of a clinically significant decline in WBC in the absence of other causative factors; Risperdal may lead to cognitive and motor impairment; Risperdal may lead to suicide.

Considerations for special patient populations - Health care professionals should note the following: safety and effectiveness not established for schizophrenia less than 13 years of age, for bipolar mania less than 10 years of age, and for autistic disorder less than 5 years of age; nursing mothers should not breast feed.

Aripiprazole (Abilify)

Medication notes - Abilify is an atypical antipsychotic indicated for the treatment of irritability associated with autistic disorder. The initial recommended dose for pediatric patients with autistic disorder is 2 mg/day; the recommended maximum

dose is 15 mg/day. Common side effects of Abilify include: sedation, fatigue, vomiting, somnolence, tremor, pyrexia, drooling, decreased appetite, salivary hypersecretion, extrapyramidal disorder, and lethargy.

Safety notes - Contraindications associated with Abilify include a known hypersensitivity to Abilify. Warnings associated with Abilify include: Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death; Abilify is not approved for the treatment of patients with dementia-related psychosis; increased risk of suicidal thinking and behavior in children, adolescents, and young adults taking antidepressants; monitor for worsening and emergence of suicidal thoughts and behaviors.

Considerations for special patient populations - Health care professionals should note the following: Abilify is not recommended when nursing.

Citalopram (Celexa)

Medication notes - Patients with ASD may be treated in some capacity with selective serotonin reuptake inhibitors (SSRIs). Celexa is an example of a SSRI. Celexa is an orally administered medication. Celexa doses above 40 mg/day are not recommended due to the risk of QT prolongation. Common side effects of Celexa may include: nausea, dry mouth, somnolence, insomnia, increased sweating, diarrhea, tremor and sexual dysfunction.

Safety notes - Celexa is contraindicated in patients with a hypersensitivity to citalopram or any of the inactive ingredients in Celexa. Concomitant use in patients taking monoamine oxidase inhibitors (MAOIs) and/or pimozide is also contraindicated. Warnings associated with Celexa include the following: patients with major depressive disorder, both adult and pediatric, may experience worsening of their depression and/or the emergence of suicidal ideation and behavior (suicidality) or unusual changes in behavior, whether or not they are taking antidepressant medications, and this risk may persist until significant remission occurs. Suicide is a known risk of depression and certain other psychiatric disorders, and these disorders themselves are the strongest predictors of suicide. There has been a long-standing concern, however, that antidepressants may have a role in inducing worsening of depression and the emergence of suicidality in certain patients during the early phases of treatment. All patients being treated with antidepressants for any indication should be monitored appropriately and observed closely for clinical worsening, suicidality, and unusual changes in behavior, especially during the initial few months of a course of drug therapy, or at times of dose changes, either increases or decreases.

Considerations for special patient populations - No dosage adjustment is necessary for patients with mild or moderate renal impairment. Celexa should be used with caution in patients with severe renal impairment. Celexa falls in Pregnancy Category C.

Fluoxetine (Prozac)

Medication notes - Prozac is another example of an SSRI. A typical adult starting dose for Prozac is 20 mg daily. Common side effects of Prozac include: nausea, diarrhea, tremor, dry mouth, sweating, headaches, dizziness and weakness.

Safety notes - Prozac is contraindicated in patients with a hypersensitivity to Prozac or any of the inactive ingredients in Prozac. Additional Prozac contraindications include the following: concurrent use of MAOIs intended to treat psychiatric disorders with Prozac or within five weeks of stopping treatment with Prozac; do not use Prozac within 14 days of stopping an MAOI intended to treat psychiatric disorders; in addition, do not start Prozac in a patient who is being treated with linezolid or intravenous methylene blue; do not use Prozac with pimozide or thioridazine due to risk of QT prolongation and drug interaction; do not use thioridazine within five weeks of discontinuing Prozac. Warnings and precautions associated with Prozac include the following: serotonin syndrome has been reported with SSRIs and SNRIs, including Prozac, both when taken alone, but especially when co-administered with other serotonergic agents (including triptans, tricyclic antidepressants, fentanyl, lithium, tramadol, tryptophan, buspirone, amphetamines, and St. John's Wort). If such symptoms occur, discontinue Prozac and initiate supportive treatment. If concomitant use of Prozac with other serotonergic drugs is clinically warranted, patients should be made aware of a potential increased risk for serotonin syndrome, particularly during treatment initiation and dose increases. Patients should also be screened for bipolar disorder and monitored for mania/hypomania due to potential activation of mania/ hypomania. Prozac should be used cautiously in patients with a history of seizures or with conditions that potentially lower the seizure threshold. Prozac may lead to altered appetite and significant weight loss. Prozac may increase the risk of bleeding when used with NSAIDs, aspirin, warfarin, or other drugs that affect coagulation/may potentiate the risk of gastrointestinal or other bleeding; angle-closure glaucoma has occurred in patients with untreated anatomically narrow angles treated with antidepressants; hyponatremia has been reported with Prozac in association with syndrome of inappropriate antidiuretic hormone (SIADH), consider discontinuing if symptomatic hyponatremia occurs; anxiety and insomnia may occur; QT prolongation and ventricular arrhythmia including Torsades de Pointes have been reported with Prozac use, use with caution in conditions that predispose to arrhythmias or increased fluoxetine exposure, use cautiously in patients with risk factors for QT prolongation;

Prozac has potential to impair judgment, thinking, and motor skills. Other warnings associated with Prozac include the following: Prozac may lead to increased risk of suicidal thinking and behavior in children, adolescents, and young adults taking antidepressants; monitor for worsening and emergence of suicidal thoughts and behaviors.

Considerations for special patient populations - Lower or less frequent dosing may be appropriate in patients with cirrhosis. Prozac should be used during pregnancy only if the potential benefit justifies the potential risks to the fetus. Breast feeding is not recommended.

Ritalin

Medication notes - Ritalin is a central nervous system (CNS) stimulant. Ritalin may be used to help increase attention and decrease impulsiveness and hyperactivity in patients with ASD. The exact mechanism of action of Ritalin is unknown, but it is believed that Ritalin activates the brain stem arousal system and cortex to produce its stimulant effect. Dosage should be individualized according to the needs and responses of the patient. Side effects of Ritalin may include: nervousness, trouble sleeping, loss of appetite, weight loss, dizziness, headaches, nausea, and vomiting. Health care professionals should note that Ritalin is often used with other therapeutic options such as cognitive behavioral therapy.

Safety notes - Marked anxiety, tension, and agitation are contraindications to Ritalin, since the drug may aggravate the aforementioned symptoms. Ritalin is also contraindicated in patients known to be hypersensitive to the drug, in patients with glaucoma, and in patients with motor tics or with a family history or diagnosis of Tourette's syndrome. Additionally, Ritalin is contraindicated during treatment with monoamine oxidase inhibitors, and also within a minimum of 14 days following discontinuation of a monoamine oxidase inhibitor (MAOI). Warnings associated with Ritalin include the following: sudden death has been reported in association with CNS stimulant treatment at usual doses in children and adolescents with structural cardiac abnormalities or other serious heart problems; sudden death, stroke, and myocardial infarction have been reported in adults taking stimulant drugs at usual doses for ADHD, stimulant medications cause a modest increase in average blood pressure and average heart rate. Additional warnings associated with Ritalin include: administration of stimulants may exacerbate symptoms of behavior disturbance and thought disorder in patients with a pre-existing psychotic disorder, aggressive behavior or hostility is often observed in children and adolescents with ADHD; Ritalin may affect growth.

Considerations for special patient populations - Ritalin should be given cautiously to patients with a history of drug dependence or alcoholism. Chronic abusive use can lead to marked tolerance and psychological dependence with varying degrees of abnormal behavior. Careful supervision is required during withdrawal from abusive use, since severe depression may occur. Withdrawal following chronic therapeutic use may unmask symptoms of the underlying disorder that may require follow-up. Ritalin falls in Pregnancy Category C.

Adderall XR

Medication notes - Some patients with ASD may use Adderall XR. Adderall XR is a CNS stimulant. A typical dose for individuals ages 6 - 17 is 10 mg once daily in the morning. The maximum dose for children 6 - 12 is 30 mg once daily. A typical adult dose of Adderall XR is 20 mg once daily in the morning. Side effects of Adderall XR include: loss of appetite, insomnia, abdominal pain, emotional lability, vomiting, nervousness, nausea, and fever.

Safety notes - Adderall XR is contraindicated in patients with advanced arteriosclerosis, symptomatic cardiovascular disease, moderate to severe hypertension, hyperthyroidism, known hypersensitivity or idiosyncrasy to the sympathomimetic amines, glaucoma, agitated states, history of drug abuse, and during or within 14 days following the administration of an MAOI. Warnings for Adderall XR include the following: amphetamines have a high potential for abuse; prolonged administration may lead to dependence; misuse of amphetamines may cause sudden death and serious cardiovascular adverse reactions. Additional warnings associated with Adderall XR include: sudden death has been reported with usual doses of CNS stimulants in children and adolescents with structural cardiac abnormalities or other serious heart problems; sudden death, stroke, and myocardial infarction have been reported in adults taking CNS stimulants at usual doses; stimulant drugs should not be used in patients with known structural cardiac abnormalities, cardiomyopathy, serious heart rhythm abnormalities, coronary artery disease, or other serious heart problems; monitor blood pressure and pulse at appropriate intervals. Use with caution in patients for whom blood pressure increases may be problematic; stimulants may cause treatment emergent psychotic or manic symptoms in patients with no prior history, or exacerbation of symptoms in patients with pre-existing psychosis; evaluate for bipolar disorder prior to stimulant use; monitor for aggressive behavior; discontinue in the presence of seizures; may exacerbate tics; evaluate for tics and Tourette’s syndrome prior to stimulant administration.

Considerations for special patient populations - Adderall XR should only be used during pregnancy if the potential benefit justifies the potential risk to the fetus. Nursing mothers should refrain from breastfeeding when taking Adderall XR.

Concerta

Medication notes - Patients with ASD may be treated in some capacity with Concerta. Concerta is a CNS stimulant. A typical starting dose for children and adolescents is 18 mg once daily. Side effects of Concerta may include the following: decreased appetite, headache, dry mouth, nausea, insomnia, anxiety, dizziness, weight loss, irritability, and hyperhidrosis.

Safety notes - Contraindications for Concerta include: known hypersensitivity to the product, marked anxiety, tension, or agitation, glaucoma, tics or a family history or diagnosis of Tourette's syndrome, use within 2 weeks of using an MAOI. Warnings associated with Concerta include: Concerta should be given cautiously to patients with a history of drug dependence or alcoholism; chronic abusive use can lead to marked tolerance and psychological dependence, with varying degrees of abnormal behavior; sudden death has been reported in association with CNS stimulant treatment at usual doses in children and adolescents with structural cardiac abnormalities or other serious heart problems; monitor patients for changes in heart rate and blood pressure and use with caution in patients for whom an increase in blood pressure or heart rate would be problematic.

Considerations for special patient populations - Caution should be exercised if administered to nursing mothers. Health care professionals should note the safety and efficacy of Concerta has not been established in children less than six years old or elderly patients greater than 65 years of age.

Lisdexamfetamine dimesylate (Vyvanse)

Medication notes - Some ASD patients may be treated in some capacity with Vyvanse. Vyvanse is a CNS stimulant. A typical initial dose of Vyvanse is 30 mg every morning. Side effects of Vyvanse may include the following: anorexia, anxiety, decreased appetite, decreased weight, diarrhea, dizziness, dry mouth, irritability, insomnia, nausea, upper abdominal pain, and vomiting.

Safety notes - Contraindications for Vyvanse include: known hypersensitivity to amphetamine products or other ingredients in Vyvanse; use with an MAOI, or within 14 days of the last MAOI dose. Warnings associated with Vyvanse include: CNS stimulants (amphetamines and methylphenidate-containing products), including Vyvanse, have a high potential for abuse and dependence; assess the risk of abuse

prior to prescribing and monitor for signs of abuse and dependence while on therapy. Additional warnings associated with Vyvanse include: sudden death has been reported in association with CNS stimulant treatment at recommended doses in pediatric patients with structural cardiac abnormalities or other serious heart problems; in adults, sudden death, stroke, and myocardial infarction have been reported; avoid use in patients with known structural cardiac abnormalities, cardiomyopathy, serious heart arrhythmia, or coronary artery disease; monitor blood pressure and pulse; may cause psychotic or manic symptoms in patients with no prior history, or exacerbation of symptoms in patients with pre-existing psychosis; evaluate for bipolar disorder prior to stimulant use; monitor height and weight in pediatric patients during treatment.

Considerations for special patient populations - Vyvanse may cause fetal harm; breastfeeding is not recommended.

Valproic acid (Depakene)

Medication notes - Patients with ASD may be treated in some capacity with Depakene. Depakene an anti-epileptic medication. Depakene is intended for oral administration. Side effects of Depakene may include: blurred vision, amnesia, anorexia, asthenia, ataxia, bronchitis, constipation, depression, diarrhea, diplopia, dizziness, dyspepsia, dyspnea, ecchymosis, emotional lability, fever, flu syndrome, headache, increased appetite, infection, insomnia, nausea, nervousness, nystagmus, peripheral edema, pharyngitis, rhinitis, somnolence, thinking abnormal, thrombocytopenia, tinnitus, tremor, vomiting, weight gain, and weight loss.

Safety notes - Contraindications for Depakene include: hepatic disease or significant hepatic dysfunction, known mitochondrial disorders caused by mutations in mitochondrial DNA polymerase γ (POLG), suspected POLG-related disorder in children under two years of age, known hypersensitivity to the drug, and urea cycle disorders. Warnings associated with Depakene include: hepatotoxicity, including fatalities, usually during first six months of treatment; children under the age of two years and patients with mitochondrial disorders are at higher risk; monitor patients closely, and perform serum liver testing prior to therapy and at frequent intervals thereafter; fetal risk, particularly neural tube defects, other major malformations, and decreased IQ; pancreatitis, including fatal hemorrhagic cases

Considerations for special patient populations - Health care professionals should note the following: Depakene can cause congenital malformations including neural tube defects and decreased IQ; children under the age of two years are at considerably higher risk of fatal hepatotoxicity.

Section 2: Summary

It is important for health care professionals to possess insight into ASD treatment options. Treatment options for ASD include: nutrition, physical activity, physical therapy, psychotherapy, cognitive behavioral therapy, social skills training, joint attention therapy, support groups as well as the use of medications. Some of the most widely prescribed medications used in ASD-related treatment include the following: Risperdal, Abilify, Celexa, Prozac, Ritalin, Adderall XR, Concerta, Vyvanse, and Depakene. Possessing insight into the aforementioned treatment options can help health care professionals safely and effectively administer health care to patients with ASD.

Section 2: Key Concepts

- It is vital for health care professionals to possess insight into ASD treatment options.
- Non-pharmacological treatment options for ASD may include: nutrition, physical activity, physical therapy, psychotherapy, cognitive behavioral therapy, social skills training, joint attention therapy, and support groups.
- Pharmacological ASD-related treatment options may include the following medications: Risperdal, Abilify, Celexa, Prozac, Ritalin, Adderall XR, Concerta, Vyvanse ,and Depakene.

Section 2: Key Terms

Eating pattern - the combination of foods and beverages that constitute an individual's complete dietary intake over time; an eating pattern may describe a customary way of eating or a combination of foods recommended for consumption[4]

Physical activity - any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal level; generally refers to the subset of physical activity that enhances health[4]

Physical therapy - the practice of treating a disease, condition, disorder, and/or injury through physical means[2]

Psychotherapy (also known as talk therapy) - the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits[5]

Cognitive behavioral therapy - a form of psychotherapy which focuses on helping individuals solve problems and create positive outcomes by changing unrealistically negative patterns of thought and behavior[6]

Social skills training - a type of therapy that works to improve upon individuals' social skills such as: making eye contact, greetings, the use of appropriate verbal tones, and appropriate emotional responses[7]

Joint attention therapy - a form of therapy that focuses on improving specific skills related to shared attention, such as pointing and coordinating looks between a person and an object[2]

Section 2: Personal Reflection Question

What therapeutic options may be used to treat patients with ASD?

Case Study: ASD

An ASD-related case study is presented below to review the concepts found in this course. A case study review will follow the case study. The case study review includes the types of questions health care professionals should ask themselves when considering ASD and how it relates to the administration of health care. Additionally, reflection questions will be posed, within the case study review, to encourage further internal debate and consideration regarding the presented case study and ASD. The information found within the case study and case study review was derived from materials provided by the CDC and the United States Department of Health & Human Services as well as the DSM-5.[1,2,3]

Case Study

A mother and a father present with their 18-month-old son. The parents of the 18-month-old patient have questions and concerns about their son's behavior. Upon questioning, the parents of the patient revel that their son was born full term following a normal pregnancy and delivery and appears to be physically healthy. However, the patient's parents also report that their son has been exhibiting, what they refer to as "odd behavior." For example, the patient's parents report that their son does not seem to answer when they call his name. They also report that their son often has "meltdowns or tantrums" when he does not get what he wants or when they try to leave their home. Additionally, the parents report that their son does not seem to be interested in playing with other children his age. Further, questioning reveals that some of the patient's age-related developmental milestones have been delayed. For example, the patient does not seem to respond to pointing. The parents of the patient would like their questions and concerns addressed, however they are not sure how to proceed.

Case Study Review

What patient details may be relevant to the possible presence of ASD?

The following patient details may be relevant to the possible presence of ASD: the patient is 18 months old, the patient is male, the patient's parents report that their son does not seem to answer when they call his name, the patient often has "meltdowns or tantrums" when he does not get what he wants or when they try to leave their home, the patient's parents report that their son does not seem to be interested in playing with other children his age, and some of the patient's age-related developmental milestones have been delayed (e.g., the patient does not seem to respond to pointing).

Are there any other patient details that may be relevant to the possible presence of ASD; if so, what are they?

How are each of the aforementioned patient details relevant to the possible presence of ASD?

Each of the previously highlighted patient details may be potentially relevant to the possible presence of ASD. The potential relevance of each patient detail may be found below.

The patient is 18 months old - the patient's age is potentially relevant because the symptoms of ASD often appear early in development; many individuals show symptoms of ASD by 12 months to 18 months of age or even earlier; however, some individuals may not show symptoms of ASD until 24 months of age.

The patient is male - the patient's gender is relevant because evidence suggests that ASD is about 4 times more common among males than among females.

The patient's parents report that their son does not seem to answer when they call his name - the previous patient detail is relevant because it may represent a sign/symptom of ASD. Health care professionals should note the following: not responding to one's name may be one of the first recognizable signs/symptoms of ASD.

The patient often has "meltdowns or tantrums" when he does not get what he wants or when they try to leave their home - the previous patient detail is relevant because it may represent a sign/symptom of ASD.

The patient's parents report that their son does not seem to be interested in playing with other children his age - the previous patient detail is relevant because it may represent a sign/symptom of ASD.

Some of the patient's age-related developmental milestones have been delayed (e.g., the patient does not seem to respond to pointing) - the previous patient detail is relevant because it suggests/supports the possible presences of ASD. ASD is a developmental disorder, thus delays in age-related developmental milestones, especially when accompanied by ASD symptoms, may indicate ASD.

What other ways, if any, are the patient details relevant to the possible presence of ASD?

Is it possible the patient in the case study has ASD?

Based on the information found in the case study, it does appear possible that the patient may have ASD.

How can a health care professional potentially gather additional patient information to help confirm the possible presence of ASD?

What should be the first step in diagnosing the patient with ASD?

Developmental screening is often the first step to diagnosing ASD. Developmental screening may refer to the process of determining if an individual is progressing at a desired rate (e.g., is a child learning basic skills when he or she should). The developmental screening process may be conducted by various health care professionals in a variety of settings, including school environments. The essential elements of a typical developmental screening include: a parent interview, a child interview, and the use of a related questionnaire or the use of a specific developmental screening tool.

What developmental screening tools may be used in the developmental screening process?

What should be the second step in diagnosing the patient with ASD?

If a health care professional determines, through a developmental screening, that a patient may, potentially, have ASD, he or she may recommend that the patient move to the second stage or step of the ASD diagnostic process, which consists of a comprehensive diagnostic evaluation. A comprehensive diagnostic evaluation, as it relates to ASD, may refer to a diagnostic procedure used to determine if an individual meets the criteria necessary for ASD diagnosis. A comprehensive diagnostic evaluation may include: a parent interview, a child interview, the use of a diagnostic tool, and the use of the DSM-5.

How is the DSM-5 used to diagnose ASD?

How may a health care professional address the parent's questions and concerns regarding their son?

There are a variety of strategies that may be used, by a health care professional, to address the parent's questions and concerns regarding their son, including the ones found below.

Remain professional - remaining professional is often essential to addressing parent's questions and concerns regarding their child's potential for ASD. Remaining professional may help set a tone for a parent/patient discussion that can help foster effective communication and ensure the adequate transmission and receipt of vital information.

Remain calm and composed - a potential ASD diagnosis may be difficult for some parents/patients to handle, thus, they may react in a dramatic manner when presented with ASD-related information. With that in mind, it is important for health care professionals to remain calm and composed in situations where parents/patients react dramatically to ASD-related information. Much like with remaining professional, remaining calm and composed can help foster effective communication and ensure the adequate transmission and receipt of vital information. Furthermore, remaining calm and composed may help deescalate any volatile situations that may arise.

Clearly answer questions - many questions may arise in a parent/patient discussion regarding ASD. It is important health care professionals clearly answer questions that may develop in an ASD discussion to help avoid confusion among parents and/or patients.

Provide ASD-related educational information - parents/patients may not be familiar with ASD. Thus, health care professionals should consider providing parents/patients ASD-related educational information to help address any questions and concerns that may arise. Health care professionals should note the following when providing ASD-related educational information: it is important not to overwhelm a parent/patient with ASD-related educational information. Finding out a child may have ASD can be overwhelming in it of itself. Thus, health care professionals should not further overwhelm parents with copious amounts of information. Health care professionals should observe parents/patients to ascertain there response to ASD-related educational information and provide subsequent information accordingly.

Outline the ASD diagnosis process - outlining the ASD diagnosis process to a parent or a patient may help in addressing any future questions or concerns that may arise.

Outline ASD treatment options - some parents and/or patients may initially ask questions regarding ASD treatment options. Therefore, it may be appropriate, in some

cases, for health care professionals to outline ASD treatment options. Health care professionals should note the following: when reviewing ASD treatment options, health care professionals should include both non-pharmacological and pharmacological therapies, when applicable.

Provide information regarding the "next step" for parents/patients - much like the parents highlighted in the case study, parents and patients may not know how to preceded with obtaining further ASD-related health care. Providing clear information regarding the "next step" for ASD-related health care can be both informational and comforting for parents and patients.

What other strategies may be used to address parent's and/or patient's questions and concerns regarding ASD?

Conclusion

Autism spectrum disorder (ASD) may refer to a complex developmental disorder that affects how an individual behaves, interacts with others, communicates, and learns. The major symptoms of ASD fall into the following categories: social skill symptoms, communication symptoms, unusual behavior symptoms, and "other" symptoms. The diagnostic process for ASD typically involves two major stages or steps, which include developmental screening and a comprehensive diagnostic evaluation. The physical and mental-health conditions typically associated with ASD include the following: epilepsy, ADHD, anxiety, depression, bipolar disorders, and avoidant/restrictive food intake disorder. Non-pharmacological treatment options for ASD include: nutrition, physical activity, physical therapy, psychotherapy, cognitive behavioral therapy, social skills training, joint attention therapy, and support groups. Pharmacological treatment options for ASD include the following medications: Risperdal, Abilify, Celexa, Prozac, Ritalin, Adderall XR, Concerta, Vyvanse, and Depakene. Finally, health care professionals should possess insight into ASD as well as ASD treatment options to best serve patients with ASD.

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