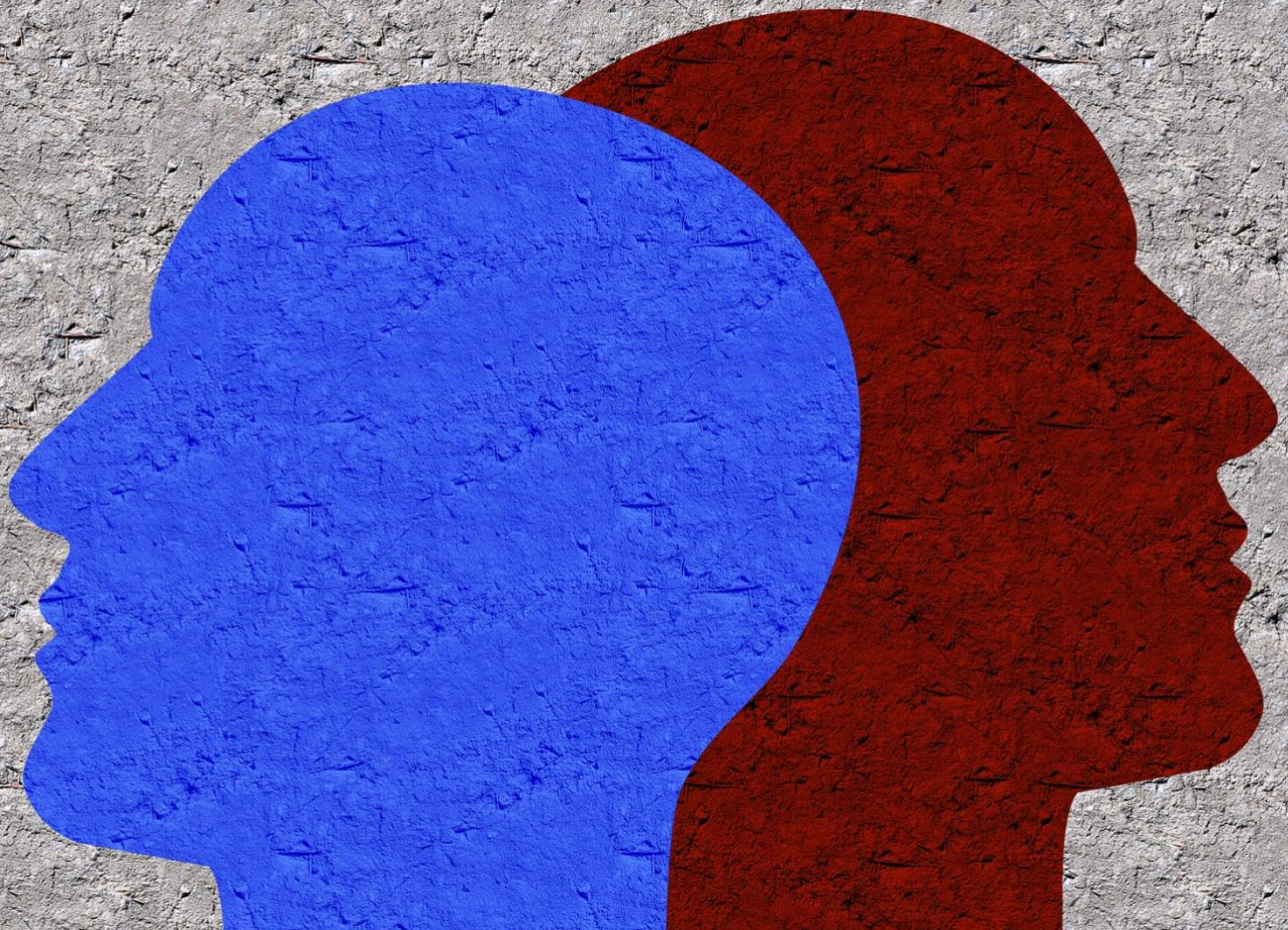




# Attention Deficit Hyperactivity Disorder (ADHD)



## Introduction

Research indicates the prevalence of attention-deficit/hyperactivity disorder (ADHD) may be on the rise. Thus, it is essential for health care professionals to possess insight into ADHD to best serve patients. This course will review information regarding ADHD and the treatment of ADHD to provide health care professionals with the necessary insight to administer safe and effective health care to those patients suffering from ADHD.

## Section 1: Attention-deficit/Hyperactivity Disorder (ADHD)

### *Case Study 1*

A 42 year-old male presents with complaints of sleep disturbances. Upon questioning, the patient reports that he is having problems falling asleep. During the examination, the patient begins to rapidly tap his left hand on the examination table and talk excessively. The patient goes on to explain that he is having problems concentrating and focusing. Upon further questioning, the patient explains that he has been dealing with issues regarding focus and concentration his whole life. The patient recalls that his issues with concentration began at a young age, and he often got into trouble as a child due to what he refers to as his overall "restlessness." The patient then explains he has also had "relationship issues" due to his inability to "maintain focus and attention on others" and due to his consistent "anger outbursts." Furthermore, the patient expresses his feelings of anxiety regarding his new employment. The patient does not feel like he is going to be able to thrive in his new work environment because he simply does not have "the organizational skills to excel in the workforce ." By the end of the conversation, the patient appears distracted.

### *Case Study 2*

A 19 year-old female patient presents with complaints of anxiety. The patient is a college student who was recently placed on academic-probation. The patient reports she has been feeling anxious due to her "college situation" and believes it is a direct result of her inability to remain focused during lectures. Upon examination, the patient is unable to directly answer questions. The patient often interrupts and repeatedly changes conversation topics without providing definitive answers to any posed questions. However, the patient does reveal that she has been on medications in the past to help manage her "hyperness." The patient then goes on to explain she stopped her medications because she did not like the way they made her feel. Upon questioning regarding her previous medications, the patient appears distracted and does

not seem to be listening. Additionally, the patient begins to become restless and asks if it would be "okay" for her to stand up and walk around for "a little bit." Before the patient stands up, she reveals that she has been "smoking marijuana lately and drinking a lot of beer" to help her calm down and relax.

### ***Case Study 3***

A 9 year-old male patient presents with his parents. The patient's physical examination is unremarkable and the patient has no known allergies. Upon questioning, the patient's parents reveal their son is having difficulties in school. They report he is often "in trouble" and cannot seem to sit still in class. The patient's parents also report their son does not seem to be able to focus on his homework, although he can devote what they refer to, as "an almost hyper-focus" on activities with which he is interested. The patient's parents also reveal that their son has problems following directions, engaging in routines, is often frustrated, and exhibits examples of emotional impulsiveness such as crying outbursts and aggression. During the conversation with the patient's parents, the patient appears distracted and frustrated. Additionally, the patient consistently kicks his mother's chair, while firmly holding on to his own chair. The patient's mother and father repeatedly attempt to stop the patient from kicking his mother's chair, to no avail. The patient also consistently blurts out answers to questions even though they may not be directed towards him. When the patient is quiet, he often looks around the room and/or attempts to leave his chair in order to grab at objects. At the conclusion of the conversation with the patient's parents, the patient's mother expresses her mounting concerns regarding her child's behavior.

The patients in the previous three case studies range in age from 9 - 42, represent different genders, and may come from completely different backgrounds - however, they all have one thing in common - they all may be suffering from ADHD. With that said, how can health care professionals best serve patients suffering from ADHD? To best serve patients suffering from ADHD, health care professionals should possess an understanding of ADHD and its presentation. Due to the importance of the aforementioned concept, the remainder of this section will provide insight into ADHD. The ADHD-related information found in this section will be broken down and presented in informational segments. The information found in this section was derived from materials provided by the Centers for Disease Control and Prevention (CDC), the National Institute of Mental Health, and the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).<sup>1,2,3</sup>

## ***What is ADHD?***

ADHD may 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.

## ***What is ADHD-related inattention?***

ADHD-related inattention may refer to an inability to maintain focus. Individuals exhibiting ADHD-related inattention typically appear disorganized, lack persistence, wander off task, and typically have difficulty maintaining sustained focus.

## ***What is ADHD-related hyperactivity?***

ADHD-related hyperactivity may refer to a type or form of restlessness. Individuals exhibiting ADHD-related hyperactivity may appear fidgety or constantly move around. Individuals exhibiting ADHD-related hyperactivity may also talk excessively and/or maintain constant activity, e.g., rapidly move from one activity to the next.

## ***What is ADHD-related impulsivity?***

ADHD-related impulsivity may refer to a form of behavior that is characterized by ill-conceived actions. Individuals exhibiting ADHD-related impulsivity typically do not consider the long-term consequences of their actions. Often individuals exhibiting ADHD-related impulsivity engage in risky activities, which are not well thought out and/or planned. Individuals exhibiting ADHD-related impulsivity may also take part in activities that offer instant gratification. Additionally, individuals exhibiting ADHD-related impulsivity may appear socially intrusive or excessively invasive.

## ***What are the risk factors associated with ADHD?***

**Risk factors associated with ADHD include the following:**

- Genetic factors
- Substance use and/or substance abuse during pregnancy
- Exposure to environmental toxins (e.g., lead)
- Low birth rate
- Brain injuries

## ***What are the potential symptoms of ADHD?***

**Inattentive-related symptoms of ADHD may include the following:**

- An inability to give close attention to details
- An inability to maintain focus
- An inability to maintain sustained mental effort for long periods of time
- A capacity to consistently overlook details
- A capacity to consistently make mistakes (e.g., making careless mistakes on a consistent basis)
- Often appears to be not listening when being spoken to directly
- Often fails to follow through on instructions
  - Often fails to complete tasks
- Often distracted by extraneous stimuli
- Often forgetful
- Consistently disorganized

**Hyperactivity-impulsive symptoms of ADHD may include the following:**

- Fidgety (e.g., hand tapping, foot tapping, squirms in his or her seat)
- Often moves around and/or makes movements at seemingly inappropriate times
- Restless
- Excessive talking
- Often interrupts other individuals while they are talking
- Often exhibits difficulty waiting for his or her turn
- Often intrudes on others

### ***How do individuals suffering from ADHD typically present?***

Individuals suffering from ADHD may present in a variety of different states including the following:

***Predominantly inattentive presentation state*** - a predominantly inattentive presentation state may refer to an ADHD-related presentation state that is dominated by the inattentive symptoms of ADHD, i.e., a presentation state where an individual's behavior exhibits ADHD-related inattentiveness. When individuals present in a

predominantly inattentive presentation state, they may appear disorganized and/or have trouble paying close attentions to specific details. Additionally, they may seem easily distracted and/or appear to have difficulty following instructions and/or the flow of a conversation.

***Predominantly hyperactivity-impulsive presentation state*** - a predominantly hyperactivity-impulsive presentation state may refer to an ADHD-related presentation state that is dominated by the hyperactivity-impulsive symptoms of ADHD, i.e., a presentation state where an individual's behavior exhibits ADHD-related hyperactivity-impulsivity. When individuals present in a predominantly hyperactivity-impulsive presentation state, they may seem fidgety, e.g., a individual may excessively tap his or her hands and/or feet. Additionally, individuals presenting in a predominantly hyperactivity-impulsive presentation state may find it difficult to sit still or maintain a conversation without consistently interrupting other individuals who may be speaking. Essentially, an individual presenting in a predominantly hyperactivity-impulsive presentation state may appear restless.

***Combined presentation state*** - a combined presentation state may refer to an ADHD-related presentation state that includes both the inattentive and hyperactivity-impulsive symptoms of ADHD, i.e., a presentation state where an individual's behavior exhibits ADHD-related inattentiveness and hyperactivity-impulsivity. In essence, an individual presenting in a combined presentation state may appear distracted and restless.

Health care professionals should pay particular attention to an individual's symptoms and presentation state when attempting to determine if an individual is potentially suffering from ADHD. In addition to ADHD-related symptoms health care professionals should also pay close attention to an individual's language when attempting to identify the presence of ADHD. Individuals suffering from ADHD may use certain types of wording to describe or articulate their state. Examples of wording that may be used by individuals potentially suffering from ADHD to describe or articulate their state may include the following:

- I cannot focus
- I am having trouble focusing
- I feel disorganized
- I am having trouble with organization
- I am easily distracted

- I am constantly losing things
- I am constantly forgetting important details
- I am reluctant to take on projects at work
- I am reluctant to take an school assignments
- I do not want to do homework
- I have been making a lot of mistakes
- I have been taking part in risky activities
- I often do not think before I act
- I typically do not consider the long-term consequences of my actions
- I feel fidgety
- I cannot sit still
- I cannot relax
- I am restless

When attempting to distinguish specific wording regarding ADHD, health care professionals should keep in mind that they may hear or encounter many different versions or variations of the previously highlighted language. Additionally, health care professionals should focus their attention on any patient's verbiage which may indicate further symptoms of ADHD that may not, initially, appear to be present. Furthermore, health care professionals should observe patients when they are speaking to identify behavior consistent with ADHD-related signs and symptoms such as:

- An inability to sit still
- Moving around a lot
- Foot tapping
- Hand tapping
- Standing up and/or moving at seemingly inappropriate times
- Appearing distracted

- Appearing to have an overall lack of focus
- Appearing to not listen when being spoken to
- Not being able to follow instructions
- Excessive talking
- Consistently interrupting a conversation
- Rapidly changing conversation topics

Regarding patient observations, health care professionals should note the following: patients potentially suffering from ADHD may present at various ages, including ages consistent with childhood and adolescence. Child and adolescent age patients may not be able to articulate their symptoms, difficulties, health concerns or the state of their overall well-being. Thus, patient observation may be essential to identifying ADHD in children and adolescent age patients.

### ***What professional skills and tools should health care professionals employ while engaging with individuals suffering from ADHD?***

***Observation/patient monitoring*** - As previously alluded to, patient observation can be essential to identifying individuals suffering from ADHD. Health care professionals should observe patients' signs and symptoms as well as patients' body language and overall appearance to help them effectively identify an individual suffering from ADHD.

Patient observation can also play an important role in patient monitoring. Due to the nature of ADHD, it is important to the administration of health care that ADHD patients are routinely monitored. Any changes to a patient's vital signs, demeanor, eating habits, mobility, level of aggression and overall mental status should be documented and reported.

***Health care documentation*** - health care documentation may refer to a digital or an analog record detailing the administration of health care to patients.<sup>4</sup> If completed effectively, health care documentation can be used in daily practice by health care professionals to communicate vital patient information to other health care professionals in order to facilitate positive health care outcomes and to decrease the potential for negative health care outcomes, such as adverse events and patient mortalities. Regarding ADHD, effective health care documentation may be used as a



method to review patient cases and to ensure all aspects of an individual patient's health care are noted and evaluated to maximize therapeutic outcomes.

In order for health care documentation to be considered effective, it must function as a viable form of communication, as well as a means to establish a detailed record of health care administration. There are many different forms of health care documentation - however, if health care professionals include specific characteristics in their documentation, they can ensure the documentation will be effective.

The first characteristics of effective documentation are objectivity and accuracy. Health care documentation should include objective information free of subjective judgment, bias or opinion. Health care documentation should also be accurate - meaning it should include information which can be measured or verified by another individual.

Additional characteristics of effective health care documentation include clarity and completeness. Clarity, as it relates to health care documentation, may refer to a quality which enables multiple health care professionals to obtain meaning from recorded data and/or information relating to health care. Completeness, as it relates to health care documentation, may refer to a state where all of the necessary components and/or parts are present. Only when clarity and completeness are achieved can health care documentation be considered effective.

Finally, the information found within health care documentation should be readily accessible and available to all those who require it. Thus, health care professionals must include accurate times and dates of health care administration when completing their health care documentation to further its effectiveness.

ADHD patients may require special attention and consideration. Completing effective health care documentation can help health care professionals ensure ADHD patients receive the care they require.

**Active listening** - active listening may refer to the process in which a health care professional gathers information from a patient by engaging in a style of two-way communication which fosters a clear and mutual understanding of information.<sup>5</sup> In other words, active listening is the process of listening with the intent to obtain meaning.<sup>5</sup> That being said, there are several steps health care professionals can take to ensure they are effectively engaging in active listening when administering health care to patients with ADHD.

The first step health care professionals can take towards active listening is to give their patients their full attention when they are speaking.<sup>5</sup> Often when individuals engage in conversation, one individual speaks while the other individual simply waits

for his or her turn to talk. Words are being heard, however individuals are not focused on what is being said. Instead, they typically are thinking about what they want to say next. The previous style of listening can be referred to as passive listening. Often when passive listening is employed, two people are engaged in conversation, however neither one of them is focused on what the other person is saying. There is little to no intent to obtain meaning when two individuals are engaged in passive listening. Therefore, the first step towards active listening should always be to focus and concentrate on what the other individual is saying. Making a concerted effort to focus on what the other person is saying when engaged in a conversation can increase the ability for both parties to understand the meaning of what is being communicated. It can also help both individuals improve their recall of the conversation. If an individual is focused on what another individual is saying, he or she is more likely to remember what is said. Health care professionals should always make an effort to avoid passive listening when engaged in conversation with a patient.

The next step towards active listening is to make eye contact<sup>5</sup>. Eye contact can let individuals know they are being listened to. Eye contact can also foster trust and encourage individuals to open up and fully articulate what they want to say.

The third step to active listening is to provide individuals with the opportunity to say what they would like to express.<sup>5</sup> Limiting interruptions when patients are speaking and allowing for periods of silence can further open up the conversation to allow for a greater expression of ideas.

The next step to active listening is to respond to what is being said.<sup>5</sup> From time to time, health care professionals should respond to what their patients are saying. Repeating what the patient says or paraphrasing the patient's words can reinforce that they are truly being heard and listened to, which can make them more likely to further engage in conversation. After all, everyone likes to know they are being heard.

Making an effort to understand the emotions behind the patient's words can be another step towards active listening.<sup>5</sup> Talking about one's health and overall well-being can be an emotional experience. It can open up the stress and horrors of past trauma and can leave patients feeling vulnerable. Being empathetic towards the difficult emotions behind the words can make patients feel at ease and allow them to continue to discuss their health-related needs and concerns.

Asking open-ended questions and clarifying what is said can also be steps to active listening.<sup>5</sup> At times, health care professionals will need to ask their patients questions. Keeping questions open, as opposed to closed, can allow information to flow freely. Therefore, at times, it may be advantageous to avoid yes and no

questions and focus on how, what, where, and why questions. Yes and no questions can limit the expression of ideas, while open ended questions can expand the expression of ideas, which can be very helpful to health care professionals when they are trying to get their patients to open up about their ADHD symptoms. In addition, health care professionals should not be afraid to clarify what is said during a health care-related conversation with their patients. Slowing down the conversation to clarify what is said can benefit both parties in the long run.

Lastly, to fully achieve active listening, health care professionals can provide words of encouragement to their patients. As previously mentioned, talking about health care can be difficult for a patient. Using words of encouragement such as "you are being very brave" or "you have been courageous during this difficult situation" can go a long way to motivate patients to express themselves in regards to their individual health. Additionally, words of encouragement can bring a human aspect to the process of health care, which can help reinforce the idea to patients that they are being cared for by individuals dedicated to the improvement of their health and overall well-being.

Communicating with ADHD patients can be challenging. As previously mentioned, individuals suffering from ADHD may talk excessively, frequently interrupt others, and repeatedly change topics. Therefore, to ensure meaning is obtained by all parties evolved in a conversation, health care professionals should work to employ active listening skills when administering health care to ADHD patients.

### ***How is ADHD diagnosed?***

ADHD is typically diagnosed by a physician using criteria outlined in the DSM-5. An individual may be diagnosed with ADHD if he or she meets the following DSM-5 criteria:

- A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by (1) and/or (2):

1. Inattention: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

*Note:* The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or failure to understand tasks or instructions. For older adolescents and adults (age 17 and older), at least five symptoms are required.

- a. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
- b. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy reading).
- c. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
- d. Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
- e. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy, disorganized work; has poor time management; fails to meet deadlines).
- f. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, reviewing lengthy papers).
- g. Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- h. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts).
- i. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).

2. Hyperactivity and impulsivity: Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that negatively impacts directly on social and academic/occupational activities:

*Note:* The symptoms are not solely a manifestation of oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions. For older

adolescents and adults (age 17 and older), at least five symptoms are required.

- a. Often fidgets with or taps hands or feet or squirms in seat.
- b. Often leaves seat in situations when remaining seated is expected (e.g., leaves his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
- c. Often runs about or climbs in situations where it is inappropriate. (*Note:* In adolescents or adults, may be limited to feeling restless.)
- d. Often unable to play or engage in leisure activities quietly.
- e. Is often “on the go,” acting as if “driven by a motor” (e.g., is unable to be or uncomfortable being still for extended time, as in restaurants, meetings; may be experienced by others as being restless or difficult to keep up with).
- f. Often talks excessively.
- g. Often blurts out an answer before a question has been completed (e.g., completes people’s sentences; cannot wait for turn in conversation).
- h. Often has difficulty waiting his or her turn (e.g., while waiting in line).
- i. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people’s things without asking or receiving permission; for adolescents and adults, may intrude into or take over what others are doing).

- Several inattentive or hyperactive-impulsive symptoms were present prior to age 12 years.
- Several inattentive or hyperactive-impulsive symptoms are present in two or more settings (e.g., at home, school, or work; with friends or relatives; in other activities).
- There is clear evidence that the symptoms interfere with, or reduce the quality of, social, academic, or occupational functioning.
- The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better explained by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication or withdrawal).

## ***What are the complications and coexisting conditions typically associated with ADHD?***

The complications typically associated with ADHD include: academic/work-related failure, low self-esteem, and social isolation. The coexisting conditions typically associated with ADHD can include the following:

***Oppositional defiant disorder*** - oppositional defiant disorder may refer to a disorder characterized by a pattern of negative, argumentative, defiant, and/or hostile behavior towards authority figures.

***Disruptive mood dysregulation disorder*** - disruptive mood dysregulation disorder may refer to a childhood condition characterized by extreme irritability, anger, and frequent, intense temper outbursts.

***Autism spectrum disorder*** - autism spectrum disorder may refer to a developmental disorder that affects communication, social interaction and overall behavior.

***Tourette's syndrome*** - Tourette's syndrome may refer to a type of tic disorder characterized by involuntary movements and/or vocalizations.

***Sleep disorders*** - sleep disorders may refer to a group of disorders that affect the way individuals sleep. Health care professionals should be aware that a variety of different sleep disorders may be present in individuals suffering from ADHD.

***Anxiety disorders*** - an anxiety disorder may refer to 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.

***Substance abuse*** - due to the association of substance abuse and ADHD, health care professionals should be familiar with the signs of both alcohol abuse and drug abuse. Signs of alcohol abuse may include the following: slurred speech, an active tremor, shakiness, poor coordination, sweating, nausea, vomiting, sweating, memory loss, agitation, compulsive behavior, and cravings. Signs of drug abuse may include: red eyes, dry mouth, drowsiness, involuntary eye movements, dilated pupils, nasal congestion, mouth sores, nausea, vomiting, slowed reaction time, sedation, dizziness, confusion, and needle marks. When considering signs of potential drug abuse, health care professionals should keep in mind that signs may vary depending on the drug(s) of abuse.

## ***Case Studies Revisited***

With the previous insight into ADHD in mind, the three case studies presented at the beginning of this course will now be revisited. Each case study will be re-presented below followed by a case study review. The case study review will include the types of questions health care professionals should ask themselves when attempting to identify and/or administer health care to patients suffering from ADHD. Additionally, reflection questions will be posed to encourage further internal debate and consideration regarding the presented case study and ADHD.

### ***Case Study 1***

A 42 year-old male presents with complaints of sleep disturbances. Upon questioning, the patient reports that he is having problems falling asleep. During the examination, the patient begins to rapidly tap his left hand on the examination table and talk excessively. The patient goes on to explain that he is having problems concentrating and focusing. Upon further questioning, the patient explains that he has been dealing with issues regarding focus and concentration his whole life. The patient recalls that his issues with concentration began at a young age, and he often got into trouble as a child due to what he refers to as his overall "restlessness." The patient then explains he has also had "relationship issues" due to his inability to "maintain focus and attention on others" and due to his consistent "anger outbursts." Furthermore, the patient expresses his feelings of anxiety regarding his new employment. The patient does not feel like he is going to be able to thrive in his new work environment because he simply does not have "the organizational skills to excel in the workforce ." By the end of the conversation, the patient appears distracted.

### ***Case Study 1 Review***

#### **What patient information is relevant to the health care of the patient?**

The patient information that may be most relevant to the health care of the patient may include the following: the patient presents with complaints of sleep disturbances/problems falling asleep, during the examination the patient rapidly taps his left hand on the examination table, the patient talks excessively and the patient reports that he is having problems concentrating and focusing, and he has been dealing with issues regarding focus and concentration is whole life. Additional patient details they may be relevant are as follows - the patient recalls that his issues with concentration began at a young age, the patient reports he often got into trouble as a child due to what he refers to as his overall "restlessness," the patient has had "relationship issues" due to his inability to "maintain focus and attention on others" as well as his consistent "anger outbursts," the patient is anxious about his new

employment opportunity because he believes that he does not have "the organizational skills to excel in the workforce," and the patient appears to be distracted by the end of the examination.

*Are there any other patient details that may be relevant to the patient's health care?*

### **Why is the aforementioned patient information relevant?**

Each of the previously outlined patient details may have relevance to the health care of the patient. The relevance of each patient detail may be observed below.

- The patient presents with complaints of sleep disturbances/problems falling asleep - the aforementioned patient detail is relevant because ,often, patients suffering from ADHD present with complaints related to sleep, especially if the patient is suffering from undiagnosed ADHD. Health care professionals should pay close attention to patients who present with complaints related to sleep, with no medical explanation, because they can be an indication of an underlying medical condition such as ADHD.
- During the examination, the patient rapidly taps his left hand on the examination table - the aforementioned patient detail is relevant because it points to a symptom of ADHD.
- The patient talks excessively and the patient reports that he is having problems concentrating and focusing - the previous patient details are relevant because they are symptoms of ADHD.
- The patient reports he has been dealing with issues regarding focus and concentration is whole life - the aforementioned patient detail is relevant because it provides insight into the patient' s history regarding focus and concentration. A long history of difficulties with focus and concentration may indicate the presence of ADHD. Health care professionals should note any patient related information which provides background information and/or insight into their medical history. The aforementioned information can prove to be invaluable when attempting to identify and/or help diagnose ADHD.
- The patient recalls that his issues with concentration began at a young age - the aforementioned patient detail is relevant because it provides additional insight into the patient's medical history.
- The patient reports he often got into trouble as a child due to what he refers to as his overall "restlessness" - the previous patient detail is relevant because it points to symptoms of ADHD.



- The patient has had "relationship issues" due to his inability to "maintain focus and attention on others" as well as his consistent "anger outbursts" - the patient's previous reports are relevant because they may indicate that the patient's health-related state is leading to impairment and/or negatively impacting his ability to function, both of which may be relevant when attempting to diagnose the patient with ADHD.

- The patient is anxious about his new employment opportunity because he does not have "the organizational skills to excel in the workforce" - the previous patient detail is relevant because it points to symptoms of ADHD.

- The patient appears to be distracted by the end of the examination - the previous patient detail is relevant because it points to symptoms of ADHD.

*In what other ways are the aforementioned patient details relevant to the patient's health care?*

### **What professional skills/tools should be employed in the scenario outlined in Case 1?**

The following professional skills/tools should be employed and utilized:

- Observation/patient monitoring - observation and patient monitoring should be used to further evaluate the patient and to distinguish additional signs and symptoms of ADHD, e.g., consistent patient fidgeting and/or patient foot/hand tapping.

- Health care documentation - the patient in Case 1 provided valuable insight into his current state and past medical history. The patient-related information should be effectively documented to optimize the patient's health care.

- Active listening - it was noted that the patient in Case 1 was talking excessively. In scenarios where patients are talking excessively, active listening can be used by health care professionals to demonstrate they are listening to the patient and to steer the conversation to pertinent information and topics, e.g., by asking open ended questions.

*In what other ways could the aforementioned professional skills/ tools be employed in the scenario outlined in Case 1?*

### **Is the patient presented in Case 1 suffering from ADHD?**

A physician is required to diagnose the patient with ADHD - however, taking the DSM-5 criteria for ADHD into consideration, it does seem like the patient is suffering from ADHD.

*How does the DSM-5 criteria regarding ADHD relate to the patient highlighted in Case 1?*

**In addition to the potential for ADHD, what other concerns are relevant to the patient?**

The patient noted he has feelings of anxiety regarding his new employment opportunity. ADHD and anxiety disorders may coexist. Thus, further evaluation regarding the patient's anxiety may be required. Health care professionals should be very aware that patients potentially suffering from ADHD may also be suffering from associated conditions, such as an anxiety disorder. Health care professionals should make attempts to identify conditions associated with ADHD when caring for patients diagnosed with ADHD.

*What additional concerns may be relevant to the patient?*

## **Case Study 2**

A 19 year-old female patient presents with complaints of anxiety. The patient is a college student who was recently placed on academic-probation. The patient reports she has been feeling anxious due to her "college situation" and believes it is a direct result of her inability to remain focused during lectures. Upon examination, the patient is unable to directly answer questions. The patient often interrupts and repeatedly changes conversation topics without providing definitive answers to any posed questions. However, the patient does reveal that she has been on medications in the past to help manage her "hyperness." The patient then goes on to explain she stopped her medications because she did not like the way they made her feel. Upon questioning regarding her previous medications, the patient appears distracted and does not seem to be listening. Additionally, the patient begins to become restless and asks if it would be "okay" for her to stand up and walk around for "a little bit." Before the patient stands up, she reveals that she has been "smoking marijuana lately and drinking a lot of beer" to help her calm down and relax.

## **Case Study 2 Review**

**What patient information is relevant to the health care of the patient?**

The patient information that may be most relevant to the health care of the patient may include the following: the patient presents with complaints of anxiety, the patient was recently placed on academic-probation, the patient reports she has been feeling anxious due to her "college situation" and believes it is a direct result of her inability to remain focused during lectures, the patient is unable to directly answer questions, the patient often interrupts and repeatedly changes conversation topics

without providing definitive answers to any posed questions, the patient has been on medications in the past to help manage her "hyperness," upon questioning regarding her previous medications the patient appears distracted and does not seem to be listening, during the examination the patient becomes restless and needs to stand up and walk around for "a little bit," and the patient reveals that she has been "smoking marijuana lately and drinking a lot of beer" to help her calm down and relax.

*Are there any other patient details that may be relevant to the patient's health care?*

### **Why is the aforementioned patient information relevant?**

Each of the previously outlined patient details may have relevance to the health care of the patient. The relevance of each patient detail may be observed below.

- The patient presents with complaints of anxiety - As previously mentioned, individuals suffering from ADHD may also be suffering from associated conditions such as anxiety disorders. The presence of a condition associated with ADHD may be a sign that an individual is potentially suffering from ADHD. Health care professionals should be aware of the various conditions associated with ADHD.
- The patient was recently placed on academic-probation - the previous patient detail is relevant because it may indicate that the patient's health-related state is leading to impairment and/or negatively impacting her ability to function, both of which may be relevant when attempting to diagnose the patient with ADHD.
- The patient reports she has been feeling anxious due to her "college situation" and believes it is a direct result of her inability to remain focused during lectures - the patient's report regarding her inability to remain focused during lectures is relevant because it points to symptoms of ADHD.
- The patient is unable to directly answer questions - the previous patient detail is relevant because it points to symptoms of ADHD.
- The patient often interrupts and repeatedly changes conversation topics without providing definitive answers to any posed questions - the previous patient detail is relevant because it points to symptoms of ADHD.
- The patient has been on medications in the past to help manage her "hyperness" - the aforementioned patient detail is relevant because it points to the presence of ADHD. Health care professionals should note any details relevant to patient references to medications. Follow-up questions by health care professionals may be necessary to obtain additional information regarding patient medications. Examples of the types of questions health care professionals should ask patients about their past

and/or present medications may include: what medications are you currently taking, why did you stop taking your medications, when did you stop taking your medications, etc.

The previous patient detail may also be relevant because it may help provide a potential timeline regarding the patient's signs and symptoms, i.e., how long a patient has been experiencing the potential signs and symptoms of ADHD. At times when attempting to identify ADHD, patients may be very straightforward in providing a timeline, e.g., a patient may simply say "I have been experiencing my signs and symptoms for 2 months." Other times, like in Case Study 2, patients may be more cryptic when providing an ADHD-related timeline. With that said, health care professionals should always attempt to identify or note a patient's ADHD-related timeline because it can be vital to the identification and diagnoses of ADHD.

- Upon questioning regarding her previous medications the patient appears distracted and does not seem to be listening - the previous patient detail is relevant because it points to symptoms of ADHD.

- During the examination, the patient becomes restless and needs to stand up and walk around for " a little bit" - the previous patient detail is relevant because it points to symptoms of ADHD.

- The patient reveals that she has been "smoking marijuana lately and drinking a lot of beer" to help her calm down and relax - the previous patient detail is relevant because it may point to the possible presence of substance abuse, a condition associated with ADHD.

*In what other ways are the aforementioned patient details relevant to the patient's health care?*

### **What professional skills/tools should be employed in the scenario outlined in Case 2?**

The following professional skills/tools should be employed and utilized:

- Observation/patient monitoring - observation and patient monitoring should be used to further evaluate the patient and to distinguish additional signs and symptoms of ADHD, e.g., consistent patient fidgeting. Observation/patient monitoring may also be used to identify signs of substance abuse such as: drowsiness, sedation, and slowed reaction time.

- Health care documentation - health care documentation should be used to accurately document the aforementioned patient details.

- Active listening - in this case, active listening may be used to obtain additional information regarding the patient's potential anxiety, past medications, and potential substance abuse.

*In what other ways could the aforementioned professional skills/tools be employed in the scenario outlined in Case 2?*

**Is the patient presented in Case 2 suffering from ADHD?**

A physician is required to diagnose the patient with ADHD - however, taking the DSM-5 criteria for ADHD into consideration, it does seem like the patient is suffering from ADHD.

*How does the DSM-5 criteria regarding ADHD relate to the patient highlighted in Case 2?*

**In addition to the potential for ADHD, what other concerns are relevant to the patient?**

The patient noted she has feelings of anxiety. ADHD and anxiety disorders may coexist. Thus, further evaluation regarding the patient's anxiety may be required. In addition to the potential for an anxiety disorder, the patient may also be suffering from substance abuse. If the potential for substance abuse is present health care professional should address any related concerns or possible issues. Furthermore, health care professionals should note that individuals suffering from ADHD may also be suffering from multiple associated conditions. The presence of one condition does not rule out the possibility for other/multiple coexisting conditions.

*What additional concerns may be relevant to the patient?*

### **Case Study 3**

A 9 year-old male patient presents with his parents. The patient's physical examination is unremarkable and the patient has no known allergies. Upon questioning, the patient's parents reveal their son is having difficulties in school. They report he is often "in trouble" and cannot seem to sit still in class. The patient's parents also report their son does not seem to be able to focus on his homework, although he can devote what they refer to, as "an almost hyper-focus" on activities with which he is interested. The patient's parents also reveal that their son has problems following directions, engaging in routines, is often frustrated, and exhibits examples of emotional impulsiveness such as crying outbursts and aggression. During the conversation with the patient's parents, the patient appears distracted and frustrated. Additionally, the patient consistently kicks his mother's chair, while firmly

holding on to his own chair. The patient's mother and father repeatedly attempt to stop the patient from kicking his mother's chair, to no avail. The patient also consistently blurts out answers to questions even though they may not be directed towards him. When the patient is quiet, he often looks around the room and/or attempts to leave his chair in order to grab at objects. At the conclusion of the conversation with the patient's parents, the patient's mother expresses her mounting concerns regarding her child's behavior.

### ***Case Study 3 Review***

#### **What patient information is relevant to the health care of the patient?**

The patient information that may be most relevant to the health care of the patient may include the following: upon questioning the patient's parents reveal their son is having difficulties in school/the patient is often "in trouble" and cannot seem to sit still in class, the patient's parents also report their son does not seem to be able to focus on his homework, although he can devote, what they refer to, as "an almost hyper-focus" on activities with which he is interested, the patient's parents also reveal that their son has a problem following directions, engaging in routines, is often frustrated, and exhibits examples of emotional impulsiveness such as crying outbursts and aggression, the patient appears distracted and frustrated, the patient consistently kicks his mother's chair, while firmly holding on to his own chair, the patient consistently blurts out answers to questions even though they may not be directly directed at him, and when the patient is quiet, the patient often looks around the room and/or attempts to leave his chair in order to grab at objects.

*Are there any other patient details that may be relevant to the patient's health care?*

#### **Why is the aforementioned patient information relevant?**

Each of the previously outlined patient details may have relevance to the health care of the patient. The relevance of each patient detail may be observed below.

- Upon questioning the patient's parents reveal their son is having difficulties in school/ the patient is often "in trouble" and cannot seem to sit still in class - the previous patient details are relevant because they may indicate that the patient's health-related state is leading to impairment and/or negatively impacting his ability to function, both of which may be relevant when attempting to diagnose the patient with ADHD. Additionally, the previous patient details may point to symptoms of ADHD.

- The patient's parents also report their son does not seem to be able to focus on his homework, although he can devote, what they refer to, as "an almost hyper-focus" on

activities with which he is interested - the previous patient details are relevant because they may point to symptoms of ADHD.

- The patient's parents also reveal that their son has problems following directions, engaging in routines, is often frustrated, and exhibits examples of emotional impulsiveness, such as crying outbursts and aggression - the previous patient details are relevant because they may point to symptoms of ADHD.

- The patient appears distracted and frustrated - the previous patient detail is relevant because it points to symptoms of ADHD.

- The patient consistently kicks his mother's chair, while firmly holding on to his own chair - the previous patient detail is relevant because it points to symptoms of ADHD.

- The patient consistently blurts out answers to questions even though they may not be directly directed at him - the previous patient detail is relevant because it points to symptoms of ADHD.

- The patient often looks around the room and/or attempts to leave his chair in order to grab at objects - the previous patient detail is relevant because it points to symptoms of ADHD.

*In what other ways are the aforementioned patient details relevant to the patient's health care?*

### **What professional skills/tools should be employed in the scenario outlined in Case 3?**

The following professional skills/tools should be employed and utilized:

- Observation/patient monitoring - in this case observation and patient monitoring may be particularly important because the patient is young and his parents are doing most of the talking for him. In cases where younger patients present, accompanied by their parents who do most of the talking for the patient, it may be important for health care professionals to observe and monitor the patients to note any direct evidence that can be used to address any health-related concerns. Health care professionals should also attempt to speak and ask questions directly to the patient when possible.

Due to the patient's age, observation and patient monitoring may also be used to make sure the patient does not make any movements that may lead to an injury. Individuals suffering from ADHD may be accident-prone or may make movements, e.g., jumping out of his or her seat quickly, that may lead to injury. Observing the patient may help prevent an accidental injury to the patient. With that in mind, when

health care professionals are examining children or adolescent patients suffering from ADHD they should make sure potentially dangerous materials/objects, e.g., medical equipment or sharp objects, are out of the reach of patients to prevent injury.

- Health care documentation - in this case health care documentation should be used to note any relevant patient information.

- Active listening - in this case active listening may be used to obtain additional information from the patient and/or his parents.

*In what other ways could the aforementioned professional skills/tools be employed in the scenario outlined in Case 3?*

### **Is the patient presented in Case 3 suffering from ADHD?**

A physician is required to diagnose the patient with ADHD - however, taking the DSM-5 criteria for ADHD into consideration, it does seem like the patient is suffering from ADHD.

*How does the DSM-5 criteria regarding ADHD relate to the patient highlighted in Case 3?*

### **In addition to the potential for ADHD, what other concerns are relevant to the patient?**

Due to the patient's difficulties in school and behavior towards his parents, the patient may need to be assessed for oppositional defiant disorder or disruptive mood dysregulation disorder.

*What additional concerns may be relevant to the patient?*

## ***Section 1: Summary***

ADHD may 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. Symptoms of ADHD may include the following: an inability to give close attention to details, an inability to focus, excessive talking, and restlessness.

Individuals suffering from ADHD may present in a variety of different states such as: the predominantly inattentive presentation state, the predominantly hyperactivity-impulsive presentation state, and the combined presentation state. ADHD is typically diagnosed by a physician using criteria outlined in the DSM-5. The coexisting conditions typically associated with ADHD can include the following: oppositional defiant disorder, disruptive mood dysregulation disorder, anxiety disorders, and substance abuse. To best serve patients suffering from ADHD, health care



professionals should possess an understanding of ADHD as well as its presentation, diagnosis and related complications and coexisting conditions.

### **Section 1: Key Concepts**

- Individuals suffering from ADHD may present in a variety of different states such as: the predominantly inattentive presentation state, the predominantly hyperactivity-impulsive presentation state, and the combined presentation state.
- Examples of the professional skills and/or tools that should be employed while engaging with ADHD patients include: observation/patient monitoring, health care documentation, and active listening.
- ADHD is typically diagnosed by a physician using criteria outlined in the DSM-5.
- Complications typically associated with ADHD include: academic/work-related failure, low self-esteem, and social isolation.
- Coexisting conditions typically associated with ADHD can include the following: oppositional defiant disorder, disruptive mood dysregulation disorder, autism spectrum disorder, Tourette's syndrome, sleep disorders, anxiety disorders, and substance abuse.

### **Section 1: Key Terms**

**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

**ADHD-related inattention** - an inability to maintain focus

**ADHD-related hyperactivity** - a type or form of restlessness

**ADHD-related impulsivity** - a form of behavior that is characterized by ill-conceived actions

**Predominantly inattentive presentation state** - an ADHD-related presentation state that is dominated by the inattentive symptoms of ADHD (i.e., a presentation state where an individual's behavior exhibits ADHD-related inattentiveness)

**Predominantly hyperactivity-impulsive presentation state** - a predominantly hyperactivity-impulsive presentation state may refer to an ADHD-related presentation state that is dominated by the hyperactivity-impulsivity symptoms of ADHD (i.e., a presentation state where an individual's behavior exhibits ADHD-related hyperactivity-impulsivity)

**Combined presentation state** - a combined presentation state may refer to an ADHD-related presentation state that includes the inattentive and hyperactivity-impulsive symptoms of ADHD (i.e., a presentation state where an individual's behavior exhibits ADHD-related inattentiveness and hyperactivity-impulsivity)

**Health care documentation** - a digital or an analog record detailing the administration of health care to patients<sup>4</sup>

**Active listening** - the process in which a health care professional gathers information from a patient by engaging in a style of two-way communication which fosters a clear and mutual understanding of information<sup>5</sup>

### **Section 1: Personal Reflection Question**

How can health care professionals effectively identify individuals suffering from ADHD?

## **Section 2: Treatment**

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

### **Non-pharmacological Treatment Options for ADHD**

#### **Psychotherapy**

One of the first non-pharmacological treatment options for ADHD that may come to mind is 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.<sup>6</sup> Health care professionals should note that many different forms of psychotherapy may be used to treat patients suffering from ADHD.

#### **Cognitive Behavioral Therapy**

Another non-pharmacological treatment option for ADHD that may initially come to mind is 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.<sup>7</sup> 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.<sup>8</sup> Social skills training can be valuable to those individuals suffering from ADHD because individuals with ADHD typically have difficulties with their social skills and, consequently, their interpersonal relationships.<sup>8</sup> Thus, social skill training can be a means to improve upon ADHD-related deficiencies and, ultimately, the quality of life of those patients with ADHD. Health care professionals should note social skills training is often used in conjunction with other forms of therapy.<sup>8</sup>

### **Support Groups**

Support groups may also be used as a therapeutic option for those suffering from ADHD. Support groups can be used to help those with ADHD 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 ADHD.

### **Routine Exercise**

Routine exercise may not be one of the first treatment options for ADHD that comes to mind - however, establishing routines, or day-to-day schedules, centered around exercise or other activities beneficial to health can help manage ADHD patients. Essentially, establishing routines, like routine exercise, may be used to supplement ADHD-related treatment. Age-related exercise recommendations may be found in Figure 1.

## **FIGURE 1: EXERCISE RECOMMENDATIONS<sup>9</sup>**

### **Exercise Recommendations for individuals ages 6 - 17 years**

- Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.

- Aerobic: 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: 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: 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.

### **Exercise Recommendations for individuals ages 18 - 64 years**

- All adults 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.

### **Exercise Recommendations for individuals ages 65 years and older**

- Older adults 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.
- Older adults should do exercises that maintain or improve balance if they are at risk of falling.

- Older adults should determine their level of effort for physical activity relative to their level of fitness.
- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular physical activity safely.

## ***Sleep Routines***

Routines involving sleep or bedtimes may also be beneficial to patients suffering from ADHD. Essentially, creating a routine centered around sleep, exercise or even school, work, or eating can help ADHD patients remain organized and focused as they progress with their treatment. Age-related sleep recommendations may be found in Figure 2.

## **FIGURE 2: SLEEP RECOMMENDATIONS<sup>1</sup>**

### **Sleep Recommendations for Newborns**

- Newborns should sleep 14 - 17 hours per 24 hours.

### **Sleep Recommendations for infants**

- Infants should sleep 12 - 16 hours (including naps) per 24 hours.

### **Sleep Recommendations for individuals 1 - 2 years old**

- Individuals 1 -2 years old should sleep 11 - 14 hours (including naps) per 24 hours.

### **Sleep Recommendations for individuals 3 - 5 years old**

- Individuals 3 - 5 years old should sleep 10 - 13 hours (including naps) per 24 hours.

### **Sleep Recommendations for individuals 6 - 12 years old**

- Individuals 6 - 12 years old should sleep 9 - 12 hours per 24 hours.

### **Sleep Recommendations for individuals 13 - 18 years old**

- Individuals 13 - 18 years old should sleep 8 - 10 hours per 24 hours.

### **Sleep Recommendations for individuals 18 - 60 years old**

- Individuals 18 - 60 years old should sleep 7 or more hours per night.

### **Sleep Recommendations for individuals 61 - 64 years old**

- Individuals 61 - 64 years old should sleep 7 - 9 hours.

### **Sleep Recommendations for individuals 65 years old or older**

- Individuals 65 years old or older should sleep 7 - 8 hours.

## ***Pharmacological Treatment***

As previously mentioned, there are many forms of treatment that may be used as care for individuals suffering from ADHD - however, one of the most predominant forms of treatment found in the current landscape of health care is the use of medications. That being the case, the rest of this section will focus on some of the most widely prescribed medications used to treat individuals suffering from ADHD. 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).<sup>10</sup> 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 ADHD.

### **Ritalin**

*Medication notes* - One of the first medications that may come to mind when considering ADHD medications is Ritalin. Ritalin is a central nervous system (CNS) stimulant. Ritalin may be used to help increase attention and decrease impulsiveness and hyperactivity in patients with ADHD. 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* - Another medication that may initially come to mind when considering ADHD medications is Adderall XR. Adderall XR is a CNS stimulant indicated for the treatment of ADHD. 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* - Concerta is a CNS stimulant indicated for the treatment of ADHD in children 6 years of age and older, adolescents, and adults up to the age of 65. A typical starting dose for children and adolescents is 18 mg once daily. A typical starting dose for adults is 18 mg or 36 mg/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* - Vyvanse is a CNS stimulant indicated for the treatment of ADHD. The typical initial ADHD-related dose of Vyvanse is 30 mg every morning. The ADHD-related maximum recommended dose of Vyvanse is 70 mg per day. 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.

### **Atomoxetine (Strattera)**

*Medication notes* - Strattera is a selective norepinephrine reuptake inhibitor indicated for the treatment of ADHD. A typical initial dose of Strattera for children and adolescents weighing up to 70 kg is 0.5 mg/kg; a typical target total daily dose is 1.2 mg/kg; the recommended maximum total daily dose is 1.4 mg/kg. A typical initial dose of Strattera for individuals weighing over 70 kg is 40 mg; a typical target total daily dose is 80 mg; the recommended maximum total daily dose is 100 mg. Side effects of Strattera may include: nausea, vomiting, fatigue, decreased appetite, abdominal pain, and somnolence.

*Safety notes* - Contraindications for Strattera include: hypersensitivity to atomoxetine or other constituents of the product, use within 2 weeks after discontinuing MAOI or other drugs that affect brain monoamine concentrations, narrow angle glaucoma, pheochromocytoma or history of pheochromocytoma, and severe cardiovascular disorders that might deteriorate with clinically important increases in HR and BP. Warnings associated with Strattera include the following: increased risk of suicidal ideation in children or adolescents; patients started on therapy should be monitored closely; Strattera should be discontinued and not restarted in patients with jaundice or laboratory evidence of liver injury; generally Strattera should not be used in children or adolescents with known serious structural cardiac abnormalities,

cardiomyopathy, serious heart rhythm abnormalities, or other serious cardiac problems that may place them at increased vulnerability to its noradrenergic effects.

*Considerations for special patient populations* - Pregnant or nursing women should not use unless potential benefit justifies potential risk to fetus or infant.

## **Section 2: Summary**

It is important for health care professionals to possess insight into ADHD treatment options. Treatment options for ADHD include: psychotherapy, cognitive behavioral therapy, social skills training, support groups, routine exercise, sleep routines as well as the use of medications. Some of the most widely prescribed medications used to treat ADHD include the following: Ritalin, Adderall XR, Concerta, lisdexamfetamine dimesylate (Vyvanse), and atomoxetine (Strattera). Possessing insight into the aforementioned treatment options can help health care professionals safely and effectively administer health care to ADHD patients.

## **Section 2: Key Concepts**

- It is vital for health care professionals to possess insight into ADHD treatment options.
- Non-pharmacological treatment options for ADHD include: psychotherapy, cognitive behavioral therapy, social skills training, support groups, routine exercise, and developing sleep routines.
- Pharmacological treatment options for ADHD include the following medications: Ritalin, Adderall XR, Concerta, lisdexamfetamine dimesylate (Vyvanse), and atomoxetine (Strattera).

## **Section 2: Key Terms**

**Psychotherapy (also known as talk therapy)** - the use of psychological techniques and/or psychotherapeutic approaches to help individuals overcome problems and develop healthier habits<sup>6</sup>

**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<sup>7</sup>

**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<sup>8</sup>

## ***Section 2: Personal Reflection Question***

What therapeutic options may be used to treat patients suffering from ADHD?

### **Course Review**

The following questions are presented below to further review the concepts found in this course. By reviewing the following questions, health care professionals can obtain practical knowledge, which may be used to ensure the safe and effective administration of health care to individuals suffering from or living with ADHD.

#### ***What are potential symptoms of ADHD?***

Symptoms of ADHD may include the following: an inability to give close attention to details, an inability to maintain focus, an inability to maintain sustained mental effort for long periods of time, a capacity to consistently overlook details, a capacity to consistently make mistakes (e.g., making careless mistakes on a consistent basis), often appears to not be listening when spoken to directly, often fails to follow through on instructions, often fails to complete tasks, often distracted by extraneous stimuli, often forgetful, consistently disorganized, fidgety (e.g., hand tapping, foot tapping, squirms in his or her seat), restless, excessive talking, often interrupts other individuals while they are talking, often exhibits difficulty waiting for his or her turn, and often intrudes on others.

#### ***What is 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.<sup>7</sup>

#### ***What contraindications are associated with Ritalin?***

Ritalin is contraindicated in patients who possess marked anxiety, tension, and agitation as well as 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.<sup>10</sup> Additionally, Ritalin is contraindicated during treatment with monoamine oxidase inhibitors, and also within a minimum of 14 days following discontinuation of a MAOI.<sup>10</sup>

#### ***According to materials provided by the FDA, what warnings are associated with Adderall XR?***

Warnings associated with 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.<sup>10</sup> 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.<sup>10</sup>

### ***What is a typical starting dose of Concerta for children and adolescents?***

A typical starting dose of Concerta for children and adolescents is 18 mg once daily.

## **Conclusion**

ADHD may 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. Symptoms of ADHD may include the following: an inability to give close attention to details, an inability to focus, excessive talking, and restlessness. Individuals suffering from ADHD may present in a variety of different states such as: the predominantly inattentive presentation state, the predominantly hyperactivity-impulsive presentation state, and the combined presentation state. ADHD is typically diagnosed by a physician using criteria outlined in the DSM-5. Non-pharmacological treatment options for ADHD include: psychotherapy, cognitive behavioral therapy, social skills training, support groups, routine exercise, and establishing sleep routines. Pharmacological treatment options for ADHD include the following medications: Ritalin, Adderall XR, Concerta, lisdexamfetamine dimesylate (Vyvanse), and atomoxetine (Strattera). Health care professionals should possess insight into ADHD as well as ADHD treatment options to best serve patients suffering from ADHD.

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