APPENDIX

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1098

Alzheimer's Disease

Emily Meibeyer

Description

Alzheimer's disease (AD), the most common form of dementia, is a progressively degenerative and irreversible disease that affects cognitive function, occurring most frequently in the elderly population. Dementia is characterized by the loss or decline in memory, along with aphasia, apraxia, agnosia, and loss of executive function (American Psychiatric Association [APA], 2000). AD has a tremendous impact on the person, the family, and his or her daily occupational and social functioning.

Incidence and Prevalence

Classification of AD is based on age of onset; early, or younger onset, is the presence of symptoms before age 65 years, and late onset occurs after age 65 years (Schaber & Lieberman, 2010). In 2010, it was estimated that there was 5.3 million Americans of all ages with AD. This figure includes 5.1 million individuals aged 65 years and older and approximately 200,000 under the age of 65 years. This is approximately 13% of people older than age 65 years, and the prevalence of AD is higher among women than men. At the current rate, the number of individuals with AD aged 65 years and older is estimated to reach 7.7 million in 2030 and between 11 and 16 million by 2050 (Alzheimer’s Association, 2010).

Cause and Etiology

The etiology of AD is unknown, although genetics seem to play a major factor. Numerous other theories have been examined, including the development of abnormal structures called plaques and tangles in the brain (Alzheimer’s Association, 2010; Schaber & Lieberman, 2010). Risk factors for AD consist of advancing age, family history, and heredity, but head trauma and vascular disease have also been theorized as having an associated risk (Alzheimer’s Association, 2010). Extensive research on AD is being conducted to further examine the cause, treatment, and prevention.

Typical Course, Symptoms, and Related Conditions

Although the experience of symptoms and the time when symptoms may occur can differ greatly from one individual to the next, the progression of Alzheimer's symptoms can be categorized into three basic stages: early, middle or moderate, and severe or late stages.
Cognition

Cognitive Performance Test (CPT): evaluates effect of cognitive interventions
Minimize dangers in the environment; a safe environment enables clients to function independently

Motor

Activities of daily living (ADL): no significant changes; may still live independently with support for instrumental activities of daily living (IADL) or more complex tasks

Behavioural/psychological

Allen Diagnostic Module-2 (ADM-2): assesses cognitive processing
Activity Card Sort (ACS): clients describe instrumental, social, and leisure activities

Mini-Mental State Examination (MMSE): evaluates orientation, memory, and other cognitive skills

Behavioural/psychological

Kitchen Task Assessment (KTA): measures level of cognitive support needed

Allen Cognitive Level Screen-5 (LACLS-5)/Large Allen Cognitive Level Screen-5 (LACLS-5): screens global cognitive processing, capacities, and intervention needs

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Occupational Therapy Interventions

Early Cognition

Cognition: mild memory deficits, particularly short-term memory (e.g., forgetting appointments, recent conversations, dates); lack of concentration and ability to learn new materials; mild language impairment; difficulty with novel and complex tasks

Behavioural/psychological: personality changes; social withdrawal; increased depression, anxiety, and irritability

Activities of daily living (ADL): no significant changes; may still live independently with support for instrumental activities of daily living (IADL) or more complex tasks

Middle or Moderate Cognition

Cognition: severe impairment in recent memory and objective memory (e.g., loss of ability to spell or count), more obvious language impairments (e.g., aphasia, word-finding difficulties), apraxia, agnosia, disorientation, impaired judgment, impaired executive functioning

Behavioural/psychological: increased aimless activities (e.g., wandering), disrupted sleep patterns, delusions, hallucinations, aggression/agitation, requires supervision

ADL: requires supervision to extensive assistance with ADL, including dressing, bathing, toileting, and eating; fatigue

Severe or Late Cognition

Cognition: profound disturbances in orientation and memory, unable to recognize caregivers/family, severe intellectual deterioration, severely limited verbal communication, unaware of environment

Behavioural/psychological: apathetic and unresponsive, except for facial grimacing and repetitive humming or moaning

Motor: severe motor function impairments; progression to bedridden stage with pathological reflexes, loss of motor control, and limb rigidity

ADL: complete loss of basic daily living abilities, incontinence of bowel and bladder, completely dependent on caregivers (APA, 2000; Hart et al., 2003; Schaber & Lieberman, 2010)

Precautions

Because the global functioning of an individual with AD changes and deteriorates with the progression of the disease, there becomes an increasing need to monitor and supervise the individual to ensure safety and optimal functioning.

Avoid leaving individuals with AD alone and unsupervised secondary to tendency to wander, disorientation, impaired judgment, and increased fall risk.

Avoid overstimulation of the individual because it may trigger or exacerbate behavioral or psychological symptoms.

Avoid arguing with individuals with AD when they are disoriented to reality; this may also trigger behavioral problems, such as increased agitation.

Minimize dangers in the environment; a safe environment enables persons with AD to experience increased security and mobility.

Interdisciplinary Interventions

Medication Therapy

Although current medications cannot cure AD or stop the progression of the disease, there are two types of prescription drugs presently approved to treat and lessen the symptoms: cholinesterase inhibitors (ChEIs) and memantine. ChEIs are prescribed to lessen symptoms related to memory, thinking, language, and other thought processes; they have been found to have a therapeutic effect associated with improved performance of ADL, reduced behavioral issues, stabilized cognitive impairment, and decreased caregiver stress (Alzheimer’s Association, 2007; Hodgson, Gillin, Winter, & Dennis, 2008). Common side effects are nausea, vomiting, loss of appetite, and increased frequency of bowel movements. Memantine is used to improve memory, attention, reason, language, and the ability to perform simple tasks with individuals in the moderate to severe stages (Alzheimer’s Association, 2007). As the disease progresses, the use of psychotropic medications is often necessary for psychological symptom management (e.g., anxiety, agitation) (Hodgson et al., 2008).

Occupational Therapy Evaluations

The occupational therapy (OT) evaluation should be conducted with the client, caregiver or family member, or health care proxy to ensure that accurate information is exchanged. The client with AD should be encouraged to take an active role in the evaluation and interview process, with others providing additional information as needed. An occupational profile and observation of client engagement in functional tasks allow the practitioner to obtain information to determine the clients’ needs and barriers to occupational performance (Schaber & Lieberman, 2010).

Activities of Daily Living or Instrumental Activities of Daily Living Assessments

Assessment of Motor and Process Skills (AMPS): assesses motor and process skills in context of familiar functional tasks

Disability Assessment for Dementia (DAD): scale to measure ADL/IADL in community-dwelling adults with dementia

Functional Independence Measure (FIM): assesses functional status and assistance needs

Kohlman Evaluation of Living Skills (KELS): evaluates ability to live independently

Performance Assessment of Self-Care Skills (PASS): evaluates functional status

Routine Task Inventory-Expanded (RTI-E): self-report or observation of functional behavior and self-awareness during typical tasks

Cognitive Assessments

Allen Cognitive Level Screen-5 (ACL5-5)/Large Allen Cognitive Level Screen-5 (LAACL5-5): screens global cognitive processing, capacities, and performance abilities

Allen Diagnostic Module-2 (ADM-2): assesses cognitive processing and intervention needs

Cognitive Performance Test (CPT): evaluates effect of cognitive processing on functioning

Kitchen Task Assessment (KTA): measures level of cognitive support needed by individuals with dementia

Mini-Mental State Examination (MMSE): evaluates orientation, attention, memory, and other cognitive skills

Occupation-Focused Assessments

Activity Card Sort (ACS): clients describe instrumental, social, and leisure activities

Adult Sensory Profile: assesses ability to process sensory input and effect on function

Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations

Occupational Therapy Interventions

The primary goal of OT intervention for clients with AD is to maximize the quality of life and engagement in occupation and to promote safety. Intervention must occur at intervals over time given the progressive nature of the disease; the goals change based on the evolving needs of the client at each stage of the disease (Schaber & Lieberman, 2010). For a client in the early stage of AD, OT intervention might focus more on compensatory strategies for loss of cognitive abilities, and for a client in the later stages, the intervention will focus more on adaptation of the environment, safety, and caregiver training (American Occupational Therapy Association, 2007, 2010).

Task simplification: diminish demands of ADL and other tasks through establishing daily routines or increasing visual, verbal, or tactile cues and support from caregivers; use of assistive technology or adaptive devices (e.g., pill boxes)
Environmental modifications: keep environments consistent to decrease confusion; increase lighting; adaptive equipment (e.g., grab bars, door alarms); provide a low-stimulus environment; labeling cupboards and doors with familiar pictures, names, or symbols as visual cues.

Caregiver training/education: provide resources for community support, such as respite care, in-home services, and caregiver support groups; education to increase knowledge of AD and the development of coping skills; enable caregivers to use routines, home modifications, and adaptive equipment; instruction on effective behavior management (e.g., calming strategies) and effective communication (e.g., validation)

Occupational Therapy and the Evidence

OT interventions focused on teaching compensatory strategies, environmental modifications, fall prevention and safety instruction, and balance and muscle exercises were shown to have a positive long-term effect on reducing functional decline and mortality in older adults (Gitlin et al., 2009). There is a strong evidence that environmental interventions for persons with AD, such as the use of visual cues and labeling, increases participation and ability to navigate home environment safely (Dooley & Hinojosa, 2004; Nolan, Matthews, & Harrison, 2001). Interventions that used step-by-step guidance, compensatory strategies, and alterations of the task demands by providing cueing and prompting were found to be effective for people in the early and middle stages of the disease with ADL performance, particularly at mealtimes (Dooley & Hinojosa, 2004; Graff et al., 2006; Watson & Green, 2006). Gitlin and colleagues (2008) support modifying activity demands to fit the skill level of the client because it can help reduce psychiatric behaviors and, in turn, caregiver burden. Hasselkus and Murray (2007) found that engagement in everyday occupation helped contribute to the relative well-being of both the caregiver and the care receiver and was an important source of satisfaction and a personal sign of good care. Caregiver training has been found to help decrease aggressive behavioral symptoms and promote independence in self-care for the person with AD and increase knowledge, coping skills, and sense of self-efficacy in the caregiver (Corcoran & Gitlin, 2001; Dooley & Hinojosa, 2004; Graff, Vernooij-Dassen, Hoefnagels, Dekker, & de Witte, 2003; Huang, Lotus Shyu, Chen, Chen, & Lin, 2003).

Resources

Organization
- Alzheimer's Association
  225 N. Michigan Ave., Fl. 17
  Chicago, IL 60601
  Telephone: 800-272-3900
- Alzheimer's Disease Education and Referral Center
  National Institute on Aging
  Building 31, Room 5C27
  31 Center Drive, MSC 2292
  Bethesda, MD 20892
  Telephone: 800-438-4380
- Alzheimer's Foundation of America
  322 8th Ave., 7th Fl.
  New York, NY 10001
  Telephone: 1-866-232-8484

Books

Journals
- *Alzheimer's Disease & Associated Disorders*
- *American Journal of Alzheimer's Disease & Other Dementias*
- *American Journal of Geriatric Psychiatry*
- *Topics in Geriatric Rehabilitation*

Websites
- Alzheimer's Association
  [http://www.alz.org](http://www.alz.org)
  The Alzheimer’s Association offers news, fact sheets, education, publications, support groups, and online message boards for those affected by AD and dementia.
- Alzheimer's Disease Education and Referral (ADEAR) Center
  The ADEAR Center, a federal resource through the National Institute on Aging, provides free publications, fact sheets, research databases, clinical trials information, referrals to local services, training materials, and guidelines for health care professionals.
- Alzheimer's Foundation of America (AFA)
  [http://www.alzfdn.org](http://www.alzfdn.org)
  The AFA Website includes information about AD and related illnesses, caregiving strategies, and behavioral issues, as well as comprehensive educational materials, conferences and workshops, government programs, and current clinical trials.
- Family Caregiver Alliance (FCA)
  [http://www.caregiver.org](http://www.caregiver.org)
  The FCA provides factsheets, publications, and newsletters related to caregiver issues, advice, public policy, and research. It also offers programs at the national, state, local, and online forums for caregivers to connect and share experiences.

References


**Amputations**

*Pamela Vaughn*

**Description and Diagnosis**

An amputation is the removal of a part of the body, a limb, or part of a limb via surgery. Types of amputation surgeries include the following:

- Primary—after a trauma, before infection has begun
- Secondary—after a trauma, after infection has begun
- Closed—in which flaps of tissue are retained and used to create a cover over the end of the bone
- Open—in which the amputation is temporarily left open while infection is cleared and surgical closure is completed at a later time
- Trans amputations (e.g., transhumeral)—an amputation made across the longitudinal axis of a long bone
- Disarticulation amputations (e.g., ankle disarticulation)—an amputation made at a natural joint, not involving the cutting of bone

Although individuals who were born with missing or partially developed limbs may experience the same or similar occupational barriers as those who have undergone surgical amputation, these clients are considered to have congenital developmental conditions and present with different needs—particularly psychological needs—than those with acquired amputations (*Mosby’s Medical, Nursing, & Allied Health Dictionary*, 2002; Stubblefield & Armstrong, 2008).

**Cause and Etiology**

The most frequent causes of amputation are dysvascular disease, diabetes, and trauma (e.g., work-related accidents, motor vehicle accidents, war trauma) (Ziegler-Graham, Mackenzie, Ephraim, Travison, & Brookmeyer, 2008). Cancer and tumors are additional causes of amputation, but limb removal is often used only as a last resort in these cases.

**Incidence and Prevalence**

More than 1.6 million Americans are currently living with limb loss, and this figure is estimated to increase to more than 2.2 million by 2020 and 3.6 million by 2050 based on population projections (Ziegler-Graham et al., 2008). Males are significantly more affected than females. Lower extremity amputations (LEA; including hemipelvectomy, hip disarticulation, transfemoral, knee disarticulation, transtibial, ankle disarticulation, partial foot/toe amputation) are more common than upper extremity amputations (UEA; including scapulothoracic, transhumeral, elbow disarticulation, transradial, wrist disarticulation, partial hand/finger amputation); the leading cause of UEA is trauma (Kobayashi et al., 2011; Ziegler-Graham et al., 2008). The rate of nontraumatic LEA among people with diabetes has decreased in recent decades but is still at about 3.5 per 1,000 individuals with diabetes (DeFrances, Lucas, Buie, & Golosinskiy, 2008). Approximately 3.4%—5.283 individuals—of battle-injured U.S. military service members from the Vietnam War sustained traumatic limb loss. For the Operation Iraqi Freedom/Operation Enduring Freedom conflicts, approximately 2.6%, or 1,000 service members, had endured traumatic limb loss as of January 2010 (Reiber et al., 2010).

**Typical Course, Symptoms, and Related Conditions**

In the case of trauma, amputations occur when a limb or portion of a limb is surgically irreparable following the accident. In the case of disease, for example, diabetes or vascular disease, amputations may be necessary due to ischemia, ulcers, neuropathy, and so forth (Ziegler-Graham et al., 2008). Mortality rates are higher for clients with nontraumatic amputations than for those with traumatic amputations (Kratz et al., 2010).

Throughout recovery, clients with amputations may experience various psychological reactions such as shock, grief, anger, denial, helplessness, and depression (Stubblefield & Armstrong, 2008). Many are diagnosed with posttraumatic stress disorder (PTSD) as well (Epstein, Heinemann, & McFarland, 2010; Kratz et al., 2010). Phantom sensations or perceptions of pain, tingling, or other sensations in the missing limb are frequently reported by clients following amputation (Chapman, 2010). Particularly in the case of LEA, a decrease in physical activity may lead to a more sedentary lifestyle and result in health complications (Robbins, Vreeman, Sothmann, Wilson, & Oldridge, 2009). Additionally, clients may develop skin problems on their residual limb if proper hygiene is not maintained, especially if they use a prosthetic (Stubblefield & Armstrong, 2008).

**Interdisciplinary Interventions**

**Orthopedics and Medicine**

An orthopedic surgeon is typically the physician who performs amputation surgeries, although other medical specialties may be involved, particularly in the case of traumatic limb loss. Following the procedure, precautions to prevent infection are taken, that is, administration of antibiotics and proper cleaning by a nurse. Pain medication is frequently administered as well (Chapman, 2010).

**Prosthetics**

A prosthetist and/or an interdisciplinary team (including occupational therapist) discusses prosthesis options with the client and, if the client desires a prosthesis, helps prepare the client to use a prosthesis. This includes preparing the residual limb for proper prosthesis fit, desensitizing the residual limb, educating the client regarding limb and prosthesis hygiene, helping the client develop independence in activities of daily living (ADL) for times when they won’t have use of the prosthesis, and providing psychological support throughout the transition and learning period (Stubblefield & Armstrong, 2008). There are several timelines for fitting and beginning to use a prosthetic device, but it is generally accepted that the sooner a prosthetic device can be used, the better the functional and psychological outcomes of the client (Robinson, Sansam, Hirst, & Neumann, 2010).

**Physical Therapy**

Physical therapists work with clients to maintain or increase strength and range of motion (ROM) of the residual limb and of the trunk. Exercises are designed to reduce swelling as well as prepare the limb for wearing and using a prosthetic device. Pain control modalities, such as heat and...
cold therapies, may be used. For LEA, physical therapy will work with the client on gait training with ambulation devices, for example, crutches, and to prepare for walking with a prosthesis (Robinson et al., 2010).

**Psychology**

Considering the implications of amputation, psychologists or counselors are often employed to assist clients with identifying and working through their emotions in a healthy and functional manner (Robinson et al., 2010).

**Vocational Therapy**

Depending on the nature of the amputation and the desires of the client, return to previous employment may not be an option. To specifically address this, vocational therapists may meet with clients to assist in identifying potential alternative modes of employment after acute rehabilitation.

**Occupational Therapy Evaluations**

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of amputation on occupational performance.

**Occupation-Focused Assessments**

- Role Checklist (Oakley, Kielhofner, Barris, & Reechler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Activity Measure for Post-Acute Care (AM-PAC) (Jette, Hayley, Coster, & Ni, 2007)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Therapy Measure (COTM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)

**Client Factor Assessments**

- Disabilities of the Arm, Shoulder, and Hand (DASH) Outcome Measure (Hudak, Amadio, Bombardier, & the Upper Extremity Collaborative Group, 1996)
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength
- Measures of edema

**Occupational Therapy Interventions**

The primary goal of occupational therapy intervention for clients with amputations is to facilitate a return to occupational functioning. This varies between clients depending on the type of amputation, their previous occupations, and their personal goals.

**Acute Stages**

Intervention during the acute stage of rehabilitation includes educating the client regarding wound care and residual limb hygiene, scar management, strategies to decrease swelling, exercises to increase and maintain ROM of the residual limb, and strategies to independently complete ADL (Smurr, Gulick, Yancosek, & Ganz, 2008; Stubblefield & Armstrong, 2008). With UEA, the client may have to change his or her dominant hand as well, so occupational therapist can assist in retraining fine motor skills of the intact limb. Pain management, including strategies to recognize and deal with phantom pain, should also be addressed during acute rehabilitation.

**Prosthetic Devices**

Occupational therapists are part of the prosthetic team, which prepares the client for wearing and use of a prosthetic device—this includes consultation regarding the prosthetic choice; preparing the client’s body via strength and balance exercises; preparing the residual limb by desensitizing and shaping it; training the client to don, doff, and care for the prosthesis; and training the client in control and functional use of the prosthesis. Depending on the type of amputation and design of the prosthesis, adaptive and assistive devices may be recommended for the client to be able to perform occupations independently (Robinson et al., 2010; Smurr et al., 2008; Stubblefield & Armstrong, 2008).

**Task and Environmental Adaptations**

Depending on the needs of the client, occupational therapists can suggest strategies and methods for home, school, and workplace modifications in order to facilitate mobility and participation within these environments.

**Consultation**

Occupational therapist can assist clients in new and/or adapted occupations to participate in following amputation in order to maintain satisfaction, quality of life (QOL), and participation in meaningful occupations. As undergoing an amputation can be a very emotional process for clients, providing information regarding realistic post-rehabilitative goals and community supports can ease their adjustment (Smurr et al., 2008; Stubblefield & Armstrong, 2008).

**Occupational Therapy and the Evidence**

There is a correlation between satisfaction with prosthetic devices and a higher QOL among clients with amputations, and an increased need of assistance with ADL has been correlated with decreased QOL (Epstein, Heinemann, & McFarland, 2010). The use of assistive devices as well as task and environmental adaptations helped one client with bilateral finger amputations to independently perform most ADL, resume physical activity, and return to full-time work (Stapanian, Stapanian, & Staley, 2010). Community self-management programs for individuals with amputations that focus on developing problem solving, skill acquisition, and increasing activity and participation resulted in decreased levels of depression and functional limitations as well as increased QOL when compared to individuals who had not undergone the programs (Wegener, Mackenzie, Ephraim, Ehde, & Williams, 2009). Early mobilization of upper extremity joints via ROM exercises has been shown to be somewhat effective in decreasing pain and swelling and facilitating quicker return to previous occupations (Amini, 2011).

**Caregiver Concerns**

Family members, particularly parents, of individuals with amputations have reported experiencing an increase in expenditures related to medical expenses and having to quit jobs or decrease hours in order to care for their family members after amputation (Weir, Ephraim, & Mackenzie, 2010).

**Resources**

**Organizations**

- Amputee Coalition—an educational, support, and advocacy organization for individuals with limb loss; includes the National Limb Loss Information Center.
  
  900 East Hill Avenue, Suite 205
  
  Knoxville, Tennessee 37915-2566
  
  Telephone: (888) 267-5669
  
  Website: http://www.amputee-coalition.org/

- National Amputation Foundation—support program for veterans and civilians with amputations.
  
  40 Church Street
  
  Malverne, NY 11565
  
  Telephone: (516) 887-3600
  
  Fax: (516) 887-3667
  
  E-mail: amps76@aol.com
  
  http://www.nationalamputation.org/
Amyotrophic Lateral Sclerosis

Christine M. Carifio

Description

Amyotrophic lateral sclerosis (ALS), also referred to as Lou Gehrig’s disease, is a rare, progressive, degenerative condition that affects the motor neurons in the corticospinal pathways, the motor nuclei of the brain stem, and the anterior horn cells of the spinal cord. ALS causes decreased function of the nerve cells in the brain, brain stem, and spinal cord, which weakens and atrophies the muscles of the entire body, eventually leading to paralysis. ALS does spare personality and cognition. ALS currently has no known cure (Maddox, 2003).

Incidence and Prevalence

- ALS affects approximately 5 out of every 100,000 people in the world (Amyotrophic Lateral Sclerosis, 2010).
- About 5,600 people in the United States are diagnosed with ALS every year.
- In the United States, about 30,000 people currently have ALS.
- Most people develop ALS between the ages of 40 and 70 years.
- ALS is 20% more common in men than in women.
- ALS affects people of all races.
- 90% to 95% of cases occur at random with no known cause, whereas 5% to 10% are of genetic origin (Amyotrophic Lateral Sclerosis Fact Sheet, 2011).

Cause and Typical Course


Cause and Typical Course

The cause for ALS remains unknown. The onset is varied, asymmetrical, and usually begins in the lower extremities. ALS is characterized in three categories: upper motor, lower motor, and bulbar involvement. The major overarching sign of ALS is muscle weakness. As the disease progresses, ambulation, severe weakness, and speech and swallowing issues may arise, eventually leading to a complete decline in activities of daily living (ADL). Because the disease only affects the motor pathways, higher cortical processes of memory, insight, awareness, eye movement,
bladder function, cognition, personality, and skin sensation remain intact. The median amount of life postdiagnosis ranges from 23 to 52 months; however, many individuals may live 5 years or more after being diagnosed. Death usually results from respiratory atrophy unless the individual is put on a ventilator (Who gets ALS?, 2008).

Symptoms

**Motor Neuron Damage**
- Damage to the lower motor neurons (spinal cord) may result in flaccid paralysis, decreased muscle tone and muscle weakness, and decreased reflexes.
- Damage to the upper motor neurons (in the brain) and to the corticospinal tract may lead to spasticity and hyperreflexia.
- Damage to the bulbar region includes symptoms of dysarthria and dysphagia (Amyotrophic Lateral Sclerosis Fact Sheet, 2011).

**General Symptoms**
- Muscle atrophy distal to proximal
- Muscle weakness
- Twitching (fasciculation) and cramping of the muscles
- Sialorrhoea (excess drooling)
- Weight loss
- Loss of endurance, dexterity, and ADL function
- Fatigue
- Stumbling and falling due to lower extremity weakness (Who gets ALS?, 2008)

Interdisciplinary Interventions

There is not one specific assessment to diagnose ALS. Magnetic resonance imaging (MRI), electromyography, blood tests, nerve conduction velocity tests, and neurological examinations are conducted to rule out other diagnoses (Amyotrophic Lateral Sclerosis Fact Sheet, 2011). No known effective pharmacological treatment is available for ALS but riluzole (Rilutek), a U.S. Food and Drug Administration (FDA)-approved anti-glutamate agent, which may extend survival for several months (Riluzole, 2008). Other medications can help manage some of the symptoms of ALS such as fasciculation, spasticity, anxiety, insomnia, and excessive saliva. Because ALS is progressive with a wide variety of symptoms, a multidisciplinary team of support including respiratory therapists, speech pathologists, physical therapists, occupational therapists, psychologists, and social workers is needed to sustain the individual’s quality of life and support the family (Mitsumoto, 2009).

Precautions
- Pneumonia and pulmonary emboli
- Ventilator precautions (if applicable)
- Inability to cough/clear mucus from airway and other swallowing issues that present choking hazards
- Pressure sores due to decreased mobility
- Posture and balance instability may lead to fall risks
- Difficulty maintaining weight
- Shoulder subluxation
- Joint contractures (Amyotrophic Lateral Sclerosis, 2010)

Occupational Therapy Evaluations

Occupational therapy (OT) evaluations focus on individual daily functioning, the physical environment, social network, and quality of life for the client and their family or caregivers.

**Comprehensive Evaluations**
- ALS Functional Rating Scale: assesses the changes in physical functioning in persons with ALS

### Appendix I: Common Conditions, Resources, and Evidence

- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Activity Card Sort (ACS): helps clients describe instrumental and social activities
- Health Status Questionnaire (SF-36): assesses patient’s perceptions of health and physical limitations
- Multidimensional Fatigue Inventory: self-report that measures fatigue

### Activities of Daily Living or Instrumental Activities of Daily Living or Leisure Evaluations
- Function Independence Measure (FIM): measures function and assistance level
- Barthel Index: measures ADL performance
- Performance Assessment of Self-Care Skills (PASS): evaluates functional status

### Upper Extremity Function/Strength/Balance Evaluations
- Purdue Pegboard: measures hand and finger dexterity
- Manual muscle testing: assesses a client’s muscle strength
- Range of motion testing: measures range of movement for a joint
- Berg Balance Scale: measures balance through performance in functional tasks

### Occupational Therapy Interventions

#### Education
- Energy conservation in client-preferred activities
- Compensatory strategies such as using gravity-eliminated devices
- Splints and orthotics to reduce pain, subluxation, and fatigue
- Adaptive devices
- Safety, positioning, safe transfers, and skin integrity
- Augmentative communication devices
- Continued participation in shifted life roles and meaningful occupations (Foley, 2004; Lyons, Orozovic, Davis, & Newman, 2002)

#### Adaptation
- Environmental modification to promote function
- Adaptive utensils or equipment (wheelchairs, self-care devices, grab bars) (Trail, Nelson, Van, Appel, & Lai, 2001)

#### Prevention
- Muscle deconditioning
- Contracture through active and passive range of motion exercises
- Pressure sores with proper positioning (Cazzolli, 1999)

### Occupational Therapy and the Evidence

Although the outcomes of ALS appear hopeless, OT may offer the individual and his or her family the opportunity to seek meaningful occupations and participate in the mindfulness of living life to the fullest. The philosophy of OT is consistent with a quality of life construct that may be used with individuals that have ALS. In order to increase the well-being and quality of life for these individuals, occupational therapists may help them identify personal and meaningful occupations (Foley, 2004). Occupational therapists provide a holistic approach of care for individuals with ALS with therapy that encompasses occupational performance, education, adaptation, coping strategies, leisure, social participation, and palliative care. The medical model is not sufficient to fulfill the needs of individuals with ALS (Matuz, Birbaumer, Hautzinger, & Kubler, 2010). OT is devoted to providing meaning to the client and family’s unique needs in this new stage of life. According to some individuals with ALS, factors such as psychological well-being, social supports, and spirituality are more important than physical function in terms of quality of life. Therefore, occupational therapists help increase opportunities for those with ALS to participate in personally meaningful occupations (Roach,
Caregiver Concerns

Because of the rapid progression of ALS, caring for a loved one is extremely difficult and can be overwhelming at times. Life roles of the individual and his or her family often shift greatly. The individual with ALS may need to discontinue working, leading to financial concerns and loss of identity. Decrease in ADL or instrumental activities of daily living (IADL) function is not only physically demanding for caregivers but also symbolizes a loss of independence for the individual with ALS, which can also be psychologically draining. Learning more about the disease is essential for caregivers because the information can give all parties a stronger sense of control. It is important for individuals and family members to learn coping strategies with the disease and to still find solace in meaningful occupations. Caregiver support groups can be beneficial in providing answers, information, and support from others having similar experiences (see ALS Links).

Books


Through his diary entries, Allen Hanlan reveals his journey from being diagnosed with ALS to facing his impending death. His wife also writes a postscript that describes living with a husband with ALS.

Rice, E. (2005). If they could only hear me: A collection of personal stories about ALS and the families that have been affected. Wakefield, MA: the Angel Fund.

This collection of personal stories offers an inside perspective on ALS from individuals and families affected and depicts a fighting spirit and keeps hope alive.

Journals

- Amyotrophic Lateral Sclerosis and Other Motor Neuron Disorders
- Journal of Neurology
- The World Federation of Neurology Research Group on Motor Neuron Diseases

References


Depicts Philip Simmons spiritual journey with ALS. A thoughtful book that is humorous, poetic, and ironic.


A meditative diary of a 33-year-old woman battling ALS where Wakefield shares her fears, triumphs, and frustrations. Despite her diagnosis, she is determined to still be a professor, a homeowner, and a mother.

- Amyotrophic Lateral Sclerosis and Other Motor Neuron Disorders
- Journal of Neurology
- The World Federation of Neurology Research Group on Motor Neuron Diseases

Websites

- ALS Links http://www(ALS-link.org

This Website is an internet portal for the ALS community, including patients, doctors, and caregivers. It offers other informative resources and is very user friendly.


This Website provides a comprehensive overview of ALS and gives useful information in a thorough yet simple format.


Depicts Philip Simmons spiritual journey with ALS. A thoughtful book that is humorous, poetic, and ironic.


A meditative diary of a 33-year-old woman battling ALS where Wakefield shares her fears, triumphs, and frustrations. Despite her diagnosis, she is determined to still be a professor, a homeowner, and a mother.

- National Institute of Neurological Disorders and Stroke

http://www.ninds.nih.gov/disorders/amyotrophiclateral sclerosis/ detail_ALS.htm

This Website provides a comprehensive overview of ALS and gives useful information in a thorough yet simple format.
## Anxiety Disorders

**Pamela Vaughn**

### Description and Diagnosis

Anxiety disorders are the most common of psychiatric disorders and include a broad range of conditions, including, but not limited to, generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), and posttraumatic stress disorder (PTSD). Anxiety itself is a normal response to stressful experiences, but when it is prolonged, inappropriate, and/or overwhelming to the point that it interferes with functioning, it becomes a pathological disorder (Davis, 2011).

The American Psychiatric Association’s (APA; 2000) *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*) lists the following criteria for each GAD, OCD, and PTSD:

### Diagnosis and Description

| Generalized anxiety disorder (GAD): characterized by at least 6 mo of persistent and excessive anxiety and worry | A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 mo, about a number of events or activities (such as work or school performance).  
B. The person finds it difficult to control the worry.  
C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past 6 mo).  
1. Restlessness or feeling keyed up or on edge  
2. Being easily fatigued  
3. Difficulty concentrating or mind going blank  
4. Irritability  
5. Muscle tension  
6. Sleep disturbance (difficulty falling or staying asleep or restless unsatisfying sleep) |
|---|---|
| **Diagnostic Criteria (APA, 2000)** | D. The focus of the anxiety and worry is not confined to features of an Axis I disorder.  
E. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.  
F. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism) and does not occur exclusively during a mood disorder, a psychotic disorder, or a pervasive developmental disorder. |
| Obsessive-compulsive disorder (OCD): characterized by obsessions (which cause marked anxiety or distress) and/or by compulsions (which serve to neutralize anxiety) | A. Either obsessions or compulsions:  
--- |---|
| **Obsessions** as defined by the following:  
1. Recurrent and persistent thoughts, impulses, or images that are experienced, at some time during the disturbance, as intrusive and inappropriate and that cause marked distress or disturbance, as intrusive and inappropriate and that cause marked anxiety or distress  
2. The thoughts, impulses, or images are not simply excessive worries about real-life problems.  
3. The person attempts to ignore or suppress such thoughts, impulses, or images or to neutralize them with some other thought or action.  
4. The person recognizes that the obsessional thoughts, impulses, or images are product of his or her own mind (not imposed from without as in thought insertion). |
| **Compulsions** as defined by the following:  
1. Repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the person feels driven to perform in response to an obsession or according to rules that must be applied rigidly  
2. The behaviors or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviors or mental acts either are not connected in a realistic way with what they are designed to neutralize or prevent or are clearly excessive.  
B. At some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable.  
--- |---|
| Note: This does not apply to children.  
C. The obsessions or compulsions cause marked distress; are time consuming (take more than 1 h a day); or significantly interfere with the person’s normal routine, occupational (or academic) functioning, or usual social activities or relationships.  
D. If another Axis I disorder is present, the content of the obsessions or compulsions is not restricted to it.  
E. The disturbance is not due to the direct physiological effects of a substance or a general medical condition.  
--- |---|
| Specify with poor insight, if for most of the time during the current episode, the person does not recognize that the obsessions and compulsions are excessive or unreasonable. |
| Posttraumatic stress disorder (PTSD): characterized by the reexperiencing of an extremely traumatic event accompanied by symptoms of increased arousal and by avoidance of stimuli associated with the trauma | A. The person has been exposed to a traumatic event in which both of the following were present:  
1. The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury or a threat to the physical integrity of self or others.  
2. The person’s response involved intense fear, helplessness, or horror.  
--- |---|
| B. The traumatic event is persistently reexperienced in one (or more) of the following ways:  
1. Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.  
Note: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed. |

(continued)
Prevalence
Most recent prevalence estimates report that in a given year, approximately 40 million (~18%) of adults in the United States are affected by anxiety disorders. Approximate breakdowns by specific diagnosis are the following:

- 3% of U.S. adults have GAD
- 1% of U.S. adults have OCD
- 3.5% of U.S. adults have PTSD (Kessler, Chiu, Demler, Merikangas, & Walters, 2005)

Women are more at risk of developing an anxiety disorder than men, and anxiety disorders are seen in all cultures (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010).

Cause and Etiology
Because there is such a wide variety of anxiety disorders, no single etiological factor can be identified. Each disorder is as unique as the individuals who develop the disorders are. Causal factors may include the following:

- Extreme or prolonged stress
- Genetic factors
- Neuroanatomical factors (e.g., reduction in the size of the hippocampus)
- Faulty neurotransmitter communication
- Cognitive and psychological factors (e.g., misinterpretation of stressful events as overwhelming, dysfunctional cognitive schemas)
- Environmental factors (e.g., traumatic event) (Davis, 2011)

Typical Course, Symptoms, and Related Conditions
Many anxiety disorders begin in childhood or adolescence, but they can also begin during adulthood (e.g., after a traumatic event). The course of the disorders also varies greatly by individual, as some disorders are addressed and controlled immediately, whereas others develop into disabling and chronic conditions that affect all areas of occupation. See diagnostic criteria for disorder-specific symptoms for GAD, OCD, and PTSD. General symptoms may include the following:

- Physical symptoms (e.g., rapid heartbeat, weakness, nausea, headaches) or impairments (e.g., poorer overall health, fatigue)
- Cognitive impairments based on excessive and irrational fear and/or dread, for example, difficulty focusing or following directions, poor memory, difficulty with processing
- Psychosocial impairments, for example, decreased number and/or quality of relationships, disruption of performance in school or at work, feeling hopeless (Davis, 2011; National Institute of Mental Health [NIMH], 2009)

Common comorbid conditions include depression, eating disorders, bipolar disorder, sleep disorders, and substance abuse; specifically with PTSD, physical injuries or conditions (e.g., amputation) may be present (APA, 2000).

Interdisciplinary Interventions
The most common approach to the treatment of anxiety disorders is to use medication, psychotherapeutic techniques, or a combination of the two.

Medication Therapy
Medication is used to control and alleviate the symptoms of anxiety disorders, but it cannot “cure” people of these disorders. Different medications are prescribed for different anxiety disorders, and dosages taken depend on the individual's needs and any experienced side effects. All health professionals working with clients with anxiety disorders should be aware of any medications that their clients are taking and any side effects they may experience.
effects, including withdrawal, which they are experiencing. The most common types of medication include the following:

- Antidepressants (selective serotonin reuptake inhibitors [SSRIs], tricyclics, monoamine oxidase inhibitors [MAOIs])
- Antianxiety drugs (benzodiazepines, azapirones)
- Beta-blockers—used to treat the physical symptoms of anxiety (NIMH, 2009)

**Psychotherapy**

Psychotherapeutic intervention “involves talking with a trained mental health professional, such as a psychiatrist, psychologist, social worker, or counselor, to discover what caused an anxiety disorder and how to deal with its symptoms” (NIMH, 2009, p. 17). The most common technique used is cognitive behavioral therapy (CBT), which helps clients change their thought processes surrounding their anxiety and develop individualized skills and strategies to change the way they react in situations that are anxiety inducing. Occupational therapists can be trained in CBT. Relaxation therapy, in which a client is taught to develop and use strategies such as deep breathing, meditation, muscle relaxation, and visualization before or during anxiety-inducing situations, is another psychotherapeutic approach (Davis, 2011).

**Occupational Therapy Evaluations**

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of anxiety disorders on occupational performance.

**Occupation-Focused Assessments**

- Role Checklist (Oakey, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Occupational Self-Assessment (OSA) Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)
- Occupational Profile of Sleep (Pierce & Summers, 2011)
- Stress diary

**Client Factor Assessments**

- Beck Anxiety Inventory (BAI) (Beck, 1993)
- Allen Cognitive Level Screen—Fifth Version (LACLS-5) (Allen et al., 2007)
- Adolescent/Adult Sensory Profile (Brown & Dunn, 2002)

**Occupational Therapy Interventions**

In addition to psychotherapeutic intervention techniques, specifically CBT, described previously, occupational therapy interventions for anxiety disorders may include the following:

- Modification of activities of daily living (ADL), instrumental activities of daily living (IADL), school, and/or work tasks and/or environments to decrease situations in which anxiety is triggered
- Development of coping strategies
- Time management and daily living routine development to increase participation in meaningful occupation
- Sleep regulation (Pierce & Summers, 2011)
- Sensory integration, particularly for clients with OCD or gravitational insecurity (Bierie & Anderson, 2009)
- Safe driving interventions

**Occupational Therapy and the Evidence**

Rieke and Anderson (2009) found that adults and adolescents with OCD have increased sensitivity to sensory stimuli, creating an opportunity for occupational therapists trained in sensory integration techniques to provide intervention for these clients. In recent years, many veterans have been diagnosed with PTSD, which has occupational implications including in the area of driving (Classen et al., 2011). CBT has been shown to be effective in decreasing symptoms of anxiety and even sometimes resulting in a remission of anxiety disorder diagnosis in both children/adolescents and adults with anxiety disorders (Hunot, Churchill, Teixeira, & Silva de Lima, 2007; James, Soler, & Weatherall, 2005).
Typical Course, Symptoms, and Related Conditions


### Arthritis

**Pamela Vaughn**

**Description and Diagnosis**

*Arthritis* is the inflammation of a joint and its surrounding tissues. It includes more than 100 diseases and conditions that affect the joint. Common forms include the following:

- Osteoarthritis (OA; also referred to as a degenerative joint disease [DJD])
- Rheumatoid arthritis (RA)
- Juvenile rheumatoid arthritis (JRA)
- Lupus
- Fibromyalgia
- Gout (Centers for Disease Control and Prevention [CDC], 2009)

Doctors perform physical exams and may use X-ray, magnetic resonance imaging (MRI), blood tests, and/or joint fluid analysis to diagnose arthritis and rule out other conditions that could be causing inflammation of the joint (CDC, 2009).

### Incidence and Prevalence

*Arthritis* is the leading cause of disability in the United States with the following statistics:

- In 2009, more than 52.1 million (22%) U.S. adults reported having doctor-diagnosed arthritis.
- Women are more likely than men to be diagnosed with arthritis.
- Diagnosis of arthritis increases with age—54% of U.S. adults older than age 75 years versus 8% of U.S. adults aged 18 to 44 years reported having doctor-diagnosed arthritis in 2009.
- Asian adults and Hispanic adults are less likely to have arthritis than non-Hispanic White adults and non-Hispanic Black adults.
- Lower socioeconomic status is correlated with higher diagnoses of arthritis.
- Having Medicaid and/or Medicare insurance versus private health insurance is correlated with higher diagnoses of arthritis.
- It is projected that the incidence of arthritis will increase in coming years, reaching an estimated prevalence of 67 million U.S. adults by the year 2030.
- More than 9% of the U.S. adult population reports arthritis-attributable activity limitation (Cheng et al., 2010; Hootman & Helmick, 2006; Pleis, Ward, Lucas, & National Center for Health Statistics, Centers for Disease Control and Prevention, 2010).

According to the National Arthritis Data Workgroup (Helmerick et al., 2008; Lawrence et al., 2008), U.S. prevalence of specific forms of arthritis is estimated at

- OA—27 million adults
- RA—1.3 million adults
- Juvenile arthritis, including JRA—294,000 children

### Cause and Etiology

The precise cause of arthritis is unknown, but it is generally agreed on that both genetics and environment factors are OA, or DJD, is caused by the gradual degeneration of the cartilage within a joint capsule (Yasuda, 2008).

The course of arthritis depends on the form and varies between individuals. Individuals diagnosed with arthritis report increased disability and a decreased quality of life (Poole, Chiappissi, Cordova, & Sibbitt, 2007). Depression is often a condition secondary to arthritis.

### Osteoarthritis

OA—caused by a breakdown of cartilage within a joint often as a result of repetitive use, injury, and/or genetic factors—results in the bones rubbing together and producing pain and stiffness in the joint. When the bones rub together, bony growths called “spurs” may develop, and small pieces of bone may break off and float in the synovial fluid of the joint. Both of these aftereffects can lead to swelling of the joint, which is the characteristic symptom of arthritis. Commonly affected joints are the hips, knees, interphalangeal joints of the fingers, the carpal-metacarpal joint (base of the thumb), and the spine (particularly the neck and the lower back). Symptoms include joint tenderness and pain that are often exacerbated by activity as well as limited joint movement and stiffness, particularly in the morning or after prolonged periods of rest. Obesity, as well as the repetitive use of joints, for example, at work, increase the likelihood of developing OA (Yasuda, 2008).
Rheumatoid Arthritis
RA is an autoimmune condition of unknown cause in which the lining of a joint—the synovial membrane—becomes inflamed and wears away at the bone and cartilage, resulting in destruction and deformation of joints. Many joints may be and often are affected at once, and RA is usually symmetrical. Onset can be gradual or sudden and generally begins with aching and soreness (sometimes bluish) followed by pain, tenderness, inflammation, and warmth in the joints. This results in a general overall stiffness, decreased movement and strength, and fatigue. Symptoms such as decreased strength, function, and appetite as well as increased fatigue and pain during movement persist and worsen as more joints are affected, whereas inflammation often decreases following the acute stage. Eventually, deformities (particularly in the distal extremities, e.g., swan-neck and boutonniere) and rheumatoid nodules (bumps under the skin) often appear. The systemic nature of RA indicates that multiple other physiological systems may be affected as well (e.g., swollen pulmonary and cardiac tissue). Depression is a common problem for individuals with RA due to the impact that the disease has on their everyday lives. Most clients have chronic RA, in which symptoms persist and/or flare up occasionally, although some enter remission. JRA is classified by a diagnosis at an age younger than 16 years; most children with JRA experience acute stages and symptoms between the ages of 1 and 6 years. Many children recover without lasting disability (Orchianian, 2007).

Interdisciplinary Interventions
Because arthritis is a chronic condition, intervention focuses on controlling symptoms and improving function.

Medical Management
- Medications: analgesics (e.g., acetaminophen or topical creams), non-steroidal anti-inflammatory drugs (NSAIDs; e.g., ibuprofen), corticosteroid injections, biologics, and disease-modifying antirheumatic drugs (DMARDs), immunosuppressants
- Surgery: partial or total joint replacement

Physical Therapy
Physical therapy for arthritis focuses on strength maintenance and pain control. Methods of intervention may include strength training, heat and/or ice treatment, ultrasound, and the use of transcutaneous electrical nerve stimulation (TENS) machines (Paskins, Kamath, & Hassell, 2010).

Exercise and Weight Control
Exercise helps maintain joint health by preventing the degeneration of cartilage and maintaining strength, flexibility, and range of motion (ROM). It also increases the body’s reparative processes and therefore helps control pain levels (Fitzcharles, Lussier, & Shir, 2010). Because individuals who are overweight or obese have a higher likelihood of developing OA, exercise as a means of losing weight can also alleviate OA symptoms. Several packaged exercise programs for individuals with arthritis are available (Brady, Jernick, Hootman, & Sniezek, 2009).

Complementary and Alternative Therapy
Many clients use complementary and alternative medicine (CAM) to alleviate symptoms associated with arthritis. Commonly used techniques include thermal springs, oral herbal therapies, hot and cold therapy, externally applied therapies, and massage. Many of these techniques—particularly heat therapy and massage—are perceived by clients as effective in reducing symptoms of arthritis (Usual & Gouzum, 2010).

Occupational Therapy Evaluations
The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of arthritis on occupational performance.

Appendix I: Common Conditions, Resources, and Evidence

Occupation-Focused Evaluations
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Activity Measure for Post-Acute Care (AM-PAC) (Jette, Hayley, Coster, & NL, 2007)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Health Assessment Questionnaire (HAQ) (Ramey, Raynauld, & Fries, 1992)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)

Client Factor Evaluations
- Arthritis Hand Function Test (Backman & Mackie, 1997)
- Disability of Arm, Shoulder, and Hand (DASH) (Hudak, Amadio, Bombardier, & the Upper Extremity Collaborative Group, 1996)
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Manual muscle testing
- Measures of grasp and pinch strength

Occupational Therapy Interventions
The primary goal of occupational therapy (OT) intervention for arthritis is to restore clients to occupational functioning. This takes different forms depending on the diagnosis and individual needs of the client. The following interventions are common for use with clients with arthritis (Yasuda, 2008):

- Client education: Occupational therapists can assist other medical personnel in educating individuals with arthritis and their caregivers about arthritis, its symptoms, and its effect on occupation.
- Joint maintenance and protection: Help clients identify and apply techniques to preserve or improve current joint condition and decrease symptoms; may include strengthening, ROM exercises, hot/cold modalities to decrease pain and stiffness, ergonomic education, task modification, and so forth.
- Splinting: Particularly for the hands, splints can stabilize joints to reduce inflammation and pain, keep joints in proper positioning for maximal occupational performance, and prevent undesired motion or deformity.
- Fatigue management and energy conservation: Work with clients to identify fatiguing activities and determine alternative or modified activities to conserve energy and increase function and participation.
- Environmental modification: Identify and implement changes to the workplace, school, and home that will facilitate occupational performance while decreasing chances of exacerbating symptoms.
- Task modification: Alter tasks, potentially with the use of assistive devices, to increase client’s ability to perform them satisfactorily (without fatigue, pain, etc.).
- Consultation for lifestyle changes: Collaborate with client to identify alternative occupations (for work, leisure, social participation, etc.) that will result in increased participation and satisfaction.
- Consultation regarding sexual relations: Educate client about potential barriers that arthritis can have on sexual participation; help identify strategies for communication with his or her sexual partner and for more comfortable sex.

Occupational Therapy and the Evidence
OT interventions (i.e., client education, joint protection training, use of splints and other adaptive devices) are effective in increasing function and participation in activities of daily living (ADL) with decreased pain among clients with RA (Steultjens et al., 2008). Hand, Law, and McColl
(2011) identified the following multiple OT interventions for clients with arthritis as beneficial:

- Joint protection groups led to improved ADL for adults with RA compared to controls; declines over time in ADL functioning were less for the intervention group than for the controls.
- In-home and telephone interventions increased self-efficacy and participation in ADL or instrumental activities of daily living (IADL) for clients with chronic conditions, including arthritis, when compared to controls.
- Multidisciplinary (including OT) interventions regarding employment can improve psychological health in clients with RA.

Mallinson, Fischer, Rogers, Ehrlich-Jones, and Chang (2009) suggest that the future of OT for clients with arthritis will experience a shift away from remediation interventions and begin to focus on increased health promotion on a public health level.

Caregiver Concerns
Martire et al. (2006) found that spouses of older adults with OA experience stress, burden, and irritation when they incorrectly estimate the levels of pain and functionality that their spouses have; those who have accurate perceptions report less burden, stress, and negative emotions in response to their spouses’ condition.

Resources

Organizations
- Arthritis Foundation: a nonprofit research and educational association for professionals and clients.
- American College of Rheumatology: a resource for health professionals regarding education, research, practice, and advocacy of rheumatology.
- American Occupational Therapy Association
- Arthritis and Rheumatism in Older People

Books

Websites
- http://www.cdc.gov/arthritis/
- http://www.ara.com/

References


Attention Deficit/Hyperactivity Disorder

Alaina Krumbach

Description and Diagnosis

Attention deficit/hyperactivity disorder (ADHD) is one of the most common childhood behavioral disorders and may continue into adolescence and adulthood. ADHD is characterized by persistent inattention, hyperactivity, and/or impulsivity (National Institute of Mental Health [NIMH], 2008). Individuals with ADHD have impairments in functioning and maintaining social relationships in multiple environments including home and school. ADHD is two to three times more frequent in boys than in girls (Centers for Disease Control and Prevention [CDC], 2007).

Some children with ADHD experience sensory processing or sensory responsiveness difficulties when engaging in structured tasks and activities, resulting in limitations with sequencing and planning motor tasks and regulating emotions (Dunn & Bennett, 2002; Schaaf & Miller, 2005).

Incidence and Prevalence

According to the Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA], 2000), an estimated 3% to 7% of school-age children have ADHD. Approximately 9.5% or 5.4 million school-age children between the ages of 4 and 17 years have ever been diagnosed with ADHD (CDC, 2007).

Cause and Etiology

The cause and etiology of ADHD are unknown; however, studies suggest that genes play a significant role, especially in combination with environmental factors. Additional studies are looking at the contributions of nutrition, social environment, and brain injuries in ADHD (NIMH, 2008). Other possible factors may be premature birth, low birth weight, maternal body mass index (BMI) levels, and prenatal maternal smoking and/or alcohol use (NIMH, 2008; Rodriguez et al., 2007).

Typical Course, Related Conditions, and Symptoms

ADHD symptoms arise in early childhood between the ages of 3 and 6 years, unless they are associated with a brain injury later in life. Individuals with ADHD may continue to experience symptoms throughout life. Related conditions include sleep deprivation, depression, anxiety, learning disabilities, oppositional defiant disorder, and bipolar disorder (NIMH, 2008). Children with ADHD and sensory overresponsivity have significantly higher levels of anxiety than children with only ADHD and children without ADHD. Approximately 25% of children with ADHD are diagnosed with a comorbid anxiety disorder (Reynolds & Lane, 2009). A large percentage of individuals with ADHD also have developmental coordination disorder (Watemberg, Wasierberg, Zuk, & Lerman-Sagie, 2007).

Appendix I: Common Conditions, Resources, and Evidence

ADHD is classified into three subtypes in the DSM-IV-TR:

1. ADHD predominantly inattentive type (ADHD-I): Individual may daydream, not seem to be listening, experience difficulty focusing on one task, be easily distracted by surroundings, and experience difficulty organizing work.
2. ADHD predominantly hyperactive-impulsive type (ADHD-HI): Individual may experience difficulty remaining seated or sitting still during tasks; may be impatient, interrupt others, or may talk excessively.
3. ADHD combined type (ADHD-C): Individual meets both sets of inattention and hyperactive-impulsive criteria; this is the most prevalent subtype of ADHD (APA, 2000).

Precautions

Individuals with ADHD may struggle in school and work with organizational skills, task completion, and time management. Individuals with ADHD are more prevalent to take risks, break rules, experience injury, and may have problems with substance abuse in adolescence and adulthood. Individuals on medication may experience undesirable or negative side effects including decreased appetite, sleep problems, and irritability (CDC, 2007; NIMH, 2008).

Interdisciplinary Interventions

Medication Therapy

Stimulants, including methylphenidate and amphetamine, are the most widely researched and most commonly prescribed medications because of their calming effects on individuals with ADHD (NIMH, 2008). Research has demonstrated that stimulants improve individual’s behaviors and academic performance by reducing hyperactivity and impulsivity and improving focusing abilities (Biederman, Monuteaux, Spencer, Wilens, & Faraone, 2009).

Educational Management

Interventions for students with ADHD include tutoring and special education to maximize attention and concentration, counter impulsive behavior, improve self-esteem and socialization, assist in overcoming learning difficulties, and promote consistency of management between home and school (DuPaul, 2007; Reif, 2003). Common strategies include communication folders between parents and teachers, making clear assignment guidelines, and involving school psychologists or counselors in the intervention team (CDC, 2007; DuPaul, 2007).

Multimodal Treatment Study of Attention Deficit/Hyperactivity Disorder

The Multimodal Treatment of Attention Deficit Hyperactivity Disorder (MTA) study, conducted by the NIMH and cosponsored by the U.S. Department of Education, examined intervention effectiveness of medication therapy, behavioral therapy, combination therapy (medication and behavioral therapy), and routine community care for individuals with ADHD. Results indicated that a combination therapy significantly decreased symptoms of anxiety and improved academic performance, familial relations, and social skills (MTA Cooperative Group, 1999). A follow-up study conducted 3 years later showed no significant differences in the intervention groups of the MTA study. Possibilities for variations in results include alterations to medication regimens, age-related changes, familial factors, comorbid conditions, and initial symptom severity (Jenson et al., 2007).

Occupational Therapy Evaluations

Social Participation

- Children’s Assessment of Participation and Enjoyment (CAPE) and Preferences for Activities of Children (PAC): social participation and enjoyment
- Children Helping Out: Responsibilities, Expectations, and Supports (CHORES): assessment of school-age children’s participation in household activities
Caregiver Concerns

- Home Situations Questionnaire (HSQ): assesses impact of ADHD in the home on activities of daily living (ADL)
- Perceived Efficacy and Goal Setting System (PEGS): home, school, and community activities
- Social Skills Rating System (SSRS): teacher–student and peer relationships and academic performance

School Function

- Academic Performance Rating Scale: academic success, productivity, and impulse control
- School Function Assessment (SFA): performance of student’s tasks and activities
- School Situations Questionnaire (SSQ): assesses impact of ADHD at school

Behavior

- Child Behavior Checklist: caregiver reports about child's behavior
- Adolescent Behavior Checklist: adolescent report to identify at-risk behavior
- ADHD Behavior Checklist for Adults: self-report questionnaire to diagnose ADHD

Self-Perception

- Child and Adolescent Social Perception Measure: aspects of nonverbal communication
- Self-Perception Profile for Children: self-esteem and perceived confidence in children
- Self-Perception Profile for Adolescents: self-esteem and perceived confidence in adolescents

Motor Coordination

- Bruininks-Oseretsky Test of Motor Proficiency (BOT-2): gross and fine motor function
- Peabody Motor Scales-2 (PDMS-2): motor development

Visual-Motor Integration

- Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI)
- Test of Visual-Perceptual Skills-3: visual-perceptual abilities without motor responses

Sensory and Sensory Motor Processing

- Sensory Integration and Praxis Tests (SIPT): praxis, sensory processing, and integration
- Sensory Profile: the ability to process sensory information and the effects on function
- Sensory Processing Measure (SPM): sensory processing abilities in the home or school

Marital Relationship and Family Functioning

- Dyadic Adjustment Scale (DAS): partners’ perceptions of relationship adjustment
- Locke-Wallace Marital Adjustment Scale: marital adjustment

Occupational Therapy Interventions

Behavior Modification

Behavior modification includes creating routines, rewarding positive behavior, and communicating clear expectations. Using behavioral strategies in daily routines may result in improvements in social and academic functioning. The token system is one example of a positive reinforcement program that rewards and encourages specific positive behaviors (DuPaul, 2007).

Cognitive Strategy Training

Cognitive strategy training focuses on attention and working memory by repeating exposure to cognitive stimuli. Individuals with ADHD receiving cognitive strategy training and taking medication decreased their impulsivity on daily task performances (Toplak, Connors, Shuster, Knezovic, & Parks, 2008).

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT) combines cognitive strategy training and behavioral modification; it is an action-oriented approach that integrates organization and planning strategies into daily life. CBT strategies include problem solving, self-reinforcement, self-direction, modeling, role-playing, and self-instruction to manage behavior and increase self-control (Toplak et al., 2008). CBT is beneficial for individuals with ADHD because it provides a structured routine that incorporates client's goals (Knouse, Cooper-Vince, Sprich, Safren, 2008).

Sensory Integration

Sensory processing difficulties are often the basis of sensory integration therapy for children with ADHD, especially in addressing attention within the classroom (Dunn & Bennett, 2002; Schilling, Washington, Billingsley, & Deitz, 2003). Evidence demonstrates that sensory integration therapy can be effective in improving self-regulating strategies and enhancing academic performance, especially from a young age (Vochmansky, Parush, & Ornoy, 2004). Improvements in seated behaviors, attention skills, completion of class work, and regulation of aggressive behavior were observed as a result of sensory integration therapy (Schaff & Miller, 2005; Schilling et al., 2003). Occupational therapy for children with sensory processing disorder enhances their ability to attend to higher level sensory information by decreasing interfering sensitivities to noxious stimuli (Schaff & Miller, 2005).

Social Skills Training

Occupational therapists may use social skills training to promote effective coping strategies for interpersonal relationships. Current intervention approaches involve education and counseling through modeling, providing specific instructions, and rehearsing. By achieving success in social situations through these approaches, individuals with ADHD learn problem-solving strategies and methods to enhance their interpersonal relationships (Spence, 2003).

Occupational Therapy and the Evidence

Structure, organization, and routines are implemented to enhance an individual’s functional performance in meaningful occupations by decreasing symptoms of inattention, hyperactivity, and impulsivity. Occupational therapists focus on the social, motor, behavioral, and sensory processing needs of individuals in the natural environments of the home, school, and social settings. Occupational therapists can also work with individuals to improve or enhance interpersonal relationships and social skills. Working with individuals to set personal goals shows significant improvements in the individual’s performance (Schaff & Miller, 2005; Schilling et al., 2003; Spence, 2003; Toplak et al., 2008).

Caregiver Concerns

Caregiver education should focus on providing structure and organization, managing environmental factors, and implementing a system around positive and negative reinforcement to help individuals become successful in every day routines (NIMH, 2008). Mornings and afternoons may be the most vulnerable times for families, especially if homework is involved (Firmin & Phillips, 2009; Segal & Hinojosa, 2006). Considerations to influence a child’s performance should be individualized to each family’s values and priorities and the expectations and perceptions of the child’s abilities (Segal & Hinojosa, 2006). Family’s financial resources and availability need to be considered before implementing strategies to enhance a child’s task performance. Effective strategies can include enfolding occupations (completing more than one occupation at a time), temporal unfolding of occupations (completing one occupation at a time), or unfolding occupations by inclusion (completing occupations with different people) (Segal, 2000).
Appendix I: Common Conditions, Resources, and Evidence

Autism Spectrum Disorder
Sarah Stultz

Description and Diagnosis

Autism spectrum disorder (ASD) is an umbrella term to describe a group of complex impairments in social behaviors, communication skills, and restrictive repetitive patterns of behavior, interests, and activities (American Psychiatric Association [APA], 2000). ASDs are lifelong conditions and include three main diagnoses: autistic disorder, Asperger syndrome, and pervasive developmental disorder-not otherwise specified (PDD-NOS). Autistic disorder, or “classic autism,” requires impairments in verbal and nonverbal communication, reciprocal social interaction, and the presence of repetitive or unusual behaviors.
Occupational Therapy Evaluations

Typically, children present with language delays, and some have comorbid intellectual disability. Individuals with Asperger syndrome have impairments in social and communication domains and show repetitive and focused behaviors, but they do not have a history of language delay or intellectual disability. PDD-NOS is used to describe other individuals with an ASD who display only some symptoms of ASDs. There is no medical test to diagnose an ASD, and diagnosis is based on educational and psychological testing and observations of communication and behavior.

Incidence and Prevalence

- 1 in every 110 children is diagnosed with an ASD.
- 1.5 million individuals are diagnosed in the United States, with tens of millions worldwide.
- Prevalence rate is increasing 10% to 17% annually.
- Boys are three to four times more likely to be diagnosed with an ASD than girls (Centers for Disease Control and Prevention [CDC], 2009).

Causes and Etiology

The cause of ASD is not completely understood (Autism Speaks, 2011). Theories about etiology include factors related to genetics, prenatal and perinatal events, and the environment. Genetic factors cannot be attributed to one particular genetic cause but are likely due to interactions among multiple genes or an interaction between genetic and environmental factors. Prenatal and perinatal events may include maternal history, abnormal presentation in labor, low birth weight, low Apgar score, or postterm birth.

Typical Course, Symptoms, and Related Conditions

Every individual with ASD has different symptoms, ranging from mild to severe, that include a range of communication difficulties, social symptoms, and repetitive behaviors.

Potential Symptoms

<table>
<thead>
<tr>
<th>Communication</th>
<th>Social</th>
<th>Repetitive Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of or delay in language</td>
<td>• Little or no eye contact</td>
<td>• Repetitive use of language and/or motor manners</td>
</tr>
<tr>
<td>• Inability to form sentences or only speaks single words</td>
<td>• Lack of interest in peer relationships, preference to be alone</td>
<td>• Persistent fixation on parts of objects</td>
</tr>
<tr>
<td>• Loss of early signs of communication</td>
<td>• Lack of spontaneous, make-believe, or appropriate play</td>
<td>• Echolalia (repeating phrases over and over)</td>
</tr>
<tr>
<td>• Precocious language or large vocabulary</td>
<td>• Difficulty with friendships</td>
<td>• Repetitive motor behavior (like flapping arms or walking on toes)</td>
</tr>
<tr>
<td>• Difficulty sustaining conversation</td>
<td>• Difficulty conforming to expected behavioral norms</td>
<td></td>
</tr>
<tr>
<td>• Difficulty with nonverbal language</td>
<td>• Difficulty interpreting what others are thinking or feeling</td>
<td></td>
</tr>
<tr>
<td>• Speaks with high-pitched or flat tone</td>
<td>• Unusual parental attachment</td>
<td></td>
</tr>
<tr>
<td>• Difficulty letting others know what they need</td>
<td>• Difficulty regulating emotions</td>
<td></td>
</tr>
<tr>
<td>• Difficulty understanding abstract or metaphorical language (humor, sarcasm)</td>
<td>• Use of unconventional behaviors like biting</td>
<td></td>
</tr>
</tbody>
</table>

Some of these symptoms may lead to disruptive behavior or physiological aggression. If the child is aware of his or her social difficulties, there is a risk of anxiety or depression later in adolescence and adulthood (Whitehouse, Durkin, Jaquet, & Zlatas, 2009).

The symptoms of autism, particularly in behavioral domain, may decrease in severity in adulthood (Shattuck et al., 2007). Impairments in socialization remain particularly problematic in adulthood (Orsmond, Krauss, & Seltzer, 2004). Considerable research documents that most adults with an ASD experience problems with independent employment, living, and relationships (Billstedt, Gillberg, & Gillberg, 2007; Eaves & Ho 2008; Howlin, Google, Hutton, & Rutter, 2004). Yet, given the heterogeneity in symptom severity and cognitive impairments, some adults are achieving independence in adulthood, success in postsecondary education and work, and in personal relationships.

Related Conditions

- Seizure disorders: As many as 39% of people with autism have seizure disorders, which commonly co-occur with cognitive impairments.
- Genetic disorders: These includes fragile X syndrome, Angelman’s syndrome, tuberous sclerosis, or other chromosomal abnormalities. These conditions are often associated with intellectual disability.
- Gastrointestinal disorders: These includes gastritis, chronic constipation, colitis, celiac disease, and esophagitis. Discomfort from these disorders can cause changes in behavior.
- Sleep dysfunction: may be associated with co-occurring medical conditions and may impact performance.
- Pica: eating disorder that involves eating things that aren’t food
- Sensory integration (SI) dysfunction: a difficulty in processing and integrating sensory information (Asher et al., 2010; Audet, 2010; Seltzer et al, 2003)

Interdisciplinary Interventions

Applied Behavior Analysis

Applied behavior analysis (ABA) uses behavioral observation and positive reinforcement to promote behaviors and skills in context. ABA is customized for the client and can include discrete trial training, incidental teaching, pivotal response training, or fluency building to reinforce skill mastery.

Speech-Language Therapy

A speech therapist typically addresses the mechanics of speech and the social aspects of language to help clients communicate functionally, either verbally or nonverbally.

Physical Therapy

A physical therapist focuses on movement problems that cause functional limitations, such as poor muscle tone, balance, and coordination.

Complementary and Alternative Interventions

Some complementary and alternative interventions can include homeopathy; art, music, or dance therapy; yoga; gluten- and casein-free diets; or immunotherapy (Autism Speaks, 2011).

Occupational Therapy Evaluations

When evaluating individuals with ASD, it is important to understand clients’ occupational performance in desired activities and occupations (Tomechek & Case-Smith, 2009). If clients have communication difficulties, evaluation information may be reported by parents or caregivers. The symptoms of autism may vary in different contexts; thus, evaluation in multiple settings is essential. Sample of assessments used during evaluation include the following:

Areas of Occupation

- Adaptive Behavior Assessment System-Second Edition: measures conceptual, social, and practical skills
Appendix I: Common Conditions, Resources, and Evidence

Occupational Therapy Interventions

Occupational therapists focus on helping clients with an ASD maximize their ability to participate in home, school, work, and community activities by enhancing performance in all areas of occupation (Scott, 2011). Interventions may include occupation-based intervention, purposeful activities, and preparatory methods and involve collaboration with the client, family, caregivers, and teachers. Some occupational therapy interventions include SI or sensory-based interventions, relationship-based interactive interventions, developmental skill-based interventions, or social skills interventions (Case-Smith & Arbesman, 2008).

Sensory Integration or Sensory-Based Interventions

The goal of SI or sensory-based interventions is to improve the client’s ability to process sensory information to increase function (Tomchek & Case-Smith, 2009). Based on the work of Dr. A. Jean Ayres, SI focuses on how sensory information is processed neurologically as a foundation for learning skills (Baranek, 2002). SI intervention can serve as a preparatory approach to help clients focus on participating in activities to enhance specific skills. One example of a sensory-based intervention is therapeutic listening, a program that involves listening to modulated music through headphones to help the client organize his or her nervous system to be more receptive to learning (Rimland & Edelson, 1994).

Relationship-Based Interactive Interventions

The goal of relationship-based interactive interventions is to establish a relationship with clients to promote social-emotional growth and behaviors important for learning (Tomchek & Case-Smith, 2009). This team approach includes the family, teachers, and therapy staff and engages clients in developmentally appropriate play activities, incorporating a challenge, and encouraging interaction.

Developmental Skill-Based Interventions

Developmental skill-based interventions use play-based activities to teach specific socialization, communication, and play skills for young children with an ASD. The therapist follows the child’s lead in a play activity; then using direct instructions, challenges the child to try a new action and encourages practice of emerging skills. The goal is to motivate the child to initiate, develop self-efficacy, and generalize new skills (Tomchek & Case-Smith, 2009).

Social Skills Interventions

Social skills interventions are activity-based groups to teach social skills needed to interact with others and to conform to social conventions. Social skills groups provide an environment to facilitate interaction and learning and to practice social skills.

Social Stories

Social stories are written specifically for a certain client to guide social behavior before an event. To promote expected social behaviors, social stories describe a situation and desired behaviors for the upcoming situation (Reynhout & Carter, 2006). Intervention, for people with an ASD across the life course, may also address the following:

- Regulation of emotional and behavioral responses
- Daily living skills (dressing, feeding, hygiene, sleep)
- Assistive technology for communication, school, or work functions
- Adjusting tasks and conditions to match clients’ needs and abilities (adapting environment, computer software for communication)
- Job coaching and consulting with family, educators, employers, or team members
- Assisting with transitions between settings
- Teaching strategies to caregivers and staff on stress and anxiety management, caring for individuals with ASD, balancing life responsibilities
- Safe methods of community mobility (Asher et al., 2010; Scott, 2011)

Occupational therapists can provide intervention in many settings, including early intervention, child-care centers, schools, health centers, hospitals, private clinics, home health agencies, worksite, home, community-based programs, adult day care, or residential settings.

Occupational Therapy and the Evidence

Case-Smith and Arbesman’s (2008) review of the intervention research evidence concluded the following:

- SI or sensory-based interventions enhance the child’s ability to regulate behavior and create positive changes in social interaction and purposeful play. Following SI intervention, increased attention, and decreased sensitivity, maladaptive behaviors, hyperactivity, and self-stimulatory and stereotypic behaviors have been reported. However, according to Baranek (2002), the efficacy of these interventions needs further exploration.
- Relationship-based, interactive interventions have been shown to improve social interaction skills through modification of the environment and reinforcement of attempts to communicate. These interaction skills can promote joint attention, initiative, persistence, interest, cooperation, and positive affect.
- Developmental skill-based programs have been shown to be successful in promoting communication and learning through visual cueing and visual learning. Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH), a school-based program that guides students’ behaviors by presenting information visually, has been effective in improving motor and cognitive performance, imitation, perception, gross motor skills, eye-hand coordination, and adaptive behaviors.
- Social skills training has been found effective when social-emotional skills are explained, modeled, and practiced. The use of social stories has also shown positive effects in increasing positive behaviors.
- Parent education about autism and behavior management has been shown to increase confidence and self-esteem in parents, subsequently improving the child’s behavior.
- Intensive behavioral intervention, involving consistent instruction and consequences to behavior and modification of the environment to promote positive behavior, has been shown to be highly effective.
Description and Etiology

Caregiver Concerns

Caregivers are faced with many stresses, including difficulty obtaining an appropriate diagnosis, making intervention decisions, financial strain, grief, behavioral challenges, and strained marital relationships (Barker et al., 2010; Orsmond, Lin, & Seltzer, 2007). Research has shown that parents of children with an ASD experience more difficulty and frustration with caregiving and behavior management than parents of children with other disabilities. Mothers report higher levels of stress, depression, anxiety, and decreased marital satisfaction, especially when their children are young. As children get older, the emotional well-being of the mother may improve, which may be due to increased experience with parenting roles, changes in severity of symptoms and behavior problems, and changes in the child’s residential status. However, mothers of grown children with an ASD continue to have higher stress and report spending more time caregiving and doing chores and less time participating in leisure activities (Barker et al., 2010). Because there is a higher risk of siblings of children with an ASD having a disability, some parents may be faced with caring for multiple children with disabilities. Mothers of multiple children with disabilities report more depressive symptoms, more anxiety, and decreased family cohesion and adaptability (Orsmond et al., 2007).

Resources

Websites
- Autism Speaks: http://www.austismspeaks.org
- Autism Today: http://www.autismtoday.com

Journals
- Journal of Autism and Developmental Disorders
- Autism Research (in association with International Society for Autism Research)

Books

References


Burns

Anne LeBorgne

Description and Etiology

Burns involve tissue damage caused by heat, chemicals, electricity, sunlight, or radiation (National Institute of General Medical Science [NIGMS], 2008). Thermal burns, caused by contact with heat, flame, or scalding liquids, are the most common. Sixty-six percent of serious burns occur in the home, compared to 10% that occur in an employment setting. Children younger than the age of 4 years and adults older than age 65 years are most at risk for fire-related injuries and death. Serious burns can be complicated by postburn joint conformity, which can significantly impact function. Through reconstructive surgeries and subsequent rehabilitation in the months and years following a severe burn, individuals may return to optimal functioning (American Burn Association [ABA], 2010; Centers for Disease Control and Prevention [CDC], 2010; Sheridan, 2002).
Incidence and Prevalence

- There are 2.4 million burn injuries in the United States and Canada each year.
- Approximately 70% of people admitted to burn centers in the United States are male.
- About one million people annually sustain substantial or permanent disabilities from burn injuries.
- Between 2000 and 2009, the survival rate of people admitted to burn centers was 94.8% (ABA, 2010).

Symptoms and Related Conditions

Classifications

- First-degree, or superficial, burns: damage to the epidermis (outermost layer of skin) only. Signs of first-degree burns include pain, redness, and few, if any, blisters. First-degree burns usually heal within 3 to 6 days and do not result in scar formation.

- Second-degree, or partial-thickness, burns: the epidermis and dermis are damaged. Signs include blistering, wet or red appearance, and pain. If properly cared for, second-degree burns can heal in 7 to 20 days and will leave scarring.

- Third-degree, or full-thickness, burns: The most serious type of burn in which all layers of the skin are damaged; bones, tendons, nerves, and muscle tissues can be damaged as well. Skin is dry and may have small, thin-walled blisters; appearance varies from waxy white to cherry red to charred black. Pain may be limited due to destruction of dermal nerve endings. Healing is very slow and generally requires skin grafts. Extensive scarring is likely (ABA, 2010; NIGMS, 2008; Phillips, 2012).

Burn Size

Burns are typically described by the size of the affected total body surface area (TBSA). The "rule of nines" divides the body surface into percentages; for example, the front of one leg is 9% and the back of one arm is 4.5%. The rule of nines is a quick reference that health professionals use to describe how much of the body has been burned. The rule of nines is applicable for adults only; the percentage breakdown for children and infants is different due to the difference in body surface area. For children and infants, a modified rule of nines, the Lund-Browder chart, is used to describe the percentage of the burned body surface (Phillips, 2012; Sheridan, 2002).

Other Complications

Clients may experience pulmonary complications following a burn. These can be due to irritation of the airways caused by inhalation of toxic gases that are produced during combustion of many products. In addition, if the burns are on the client’s abdomen and/or chest, inhalation and exhalation may be restricted. In the first 24 hours postburn, clients with severe burns may experience “burn shock.” This is when the plasma levels within blood vessels decrease to dangerous levels as fluid shifts out of the vessels to swell in the burn area. Following a burn, the body’s metabolic state drastically increases to accommodate the healing and infection-fighting process, resulting in the need for increased nutritional intake. Bacterial infection is a risk throughout the healing process. Finally, contractures may develop during the healing process due to a prolonged decrease in movement or to the tightening of the skin due to burn scars (Phillips, 2012).

Interdisciplinary Interventions

Surgical Interventions

Not all hospitals are equipped to provide care for significant burn injuries; in these cases, clients are treated at burn centers or hospitals with burn/trauma units.

- Escharotomy: a surgical incision through full-thickness eschar (necrotic tissue) on the arms, legs, or trunk to release tightness that can cut off circulation or prevent the lungs from being able to expand during breathing. Tightness occurs due to decreased elasticity of the eschar and increased internal pressure due to edema.

- Debridement: cleansing and removal of eschar from the wound to decrease potential for burn wound sepsis, facilitate healing, and prepare wound for grafting. Debridement may be surgical, chemical, mechanical, or autolytic. Because the process is painful, the client is premedicated with analgesics and sedative medication.

- Skin grafting: typically occurs in the acute phase and includes the removal of the necrotic tissue and the placement of healthy skin or a skin substitute over the wound. Grafting is usually performed for all full-thickness and large partial-thickness burns if regrowth of the burn site is not expected or has not occurred within 14 days. If the client has enough unburned skin, permanent autografts, in which skin is transplanted from unburned area of the patient to the burn site, are used. If the client does not have available donor sites, the burn can be temporarily closed using a synthetic dressing (e.g., Biobrane) or an allograft (donor skin that the body will naturally reject in 10 to 14 days). In the meantime, other less severely burned areas of the body may heal enough to produce donor skin or cultured epithelium (new skin grown in a laboratory from a biopsy of unburned skin) can be produced (Phillips, 2012; Shakespeare, 2001; Sheridan, 2002).

Medications

Medications used for people who have experienced serious burns may include antimicrobial ointments to reduce the risk of infection and control bacteria growth, antibiotics to treat infections, and prescription pain medications. There may be additional medications depending on the other injuries, such as injuries to organs or to the respiratory system. The occupational therapist needs to ensure that the client is prepared for therapy and schedule therapy after pain medications have been administered (Sheridan, 2002). In addition to medications, clients may be administered intravenous fluids to prevent/treat burn shock. Nutritional support may be provided via nasogastric feeding to support the body’s increased metabolic needs (Phillips, 2012).

Physical Therapy

The scope of physical and occupational therapy (OT) may overlap during the initial stages of burn recovery, particularly in relation to biomechanical interventions to maintain range of motion (ROM).

Scar Management

Hypertrophic scars are the primary type of scars that develop in deep dermal burns. These red, raised scars can be itchy, tender to the touch, and feel stiff. Massage, which includes stretching and slow, firm massage of the area, has been found to be effective in controlling scar formation. Massage techniques can be easily taught to clients and caregivers by the therapist (Sheridan, 2002). The use of compression garments, steroid injection, topical silicone, and surgery are other methods used, with the more conservative methods used first (Phillips, 2012).

Precautions

- Debridement can occur during therapy, which can cause pain or fear of pain as the body reacts to the removal of dead tissue.
- Postsurgical precautions (e.g., client may not be able to move certain joints or may be under heavy sedation)
- Abnormal burn patterns can indicate signs of abuse, such as localized burns with deep burn depth.
- Scar tissue development (Dalal, Saha, & Agarwal, 2010; Sheridan, 2002)

Complications

- Increased risk of tetanus
- Co-occurring injury to organs and/or the respiratory system
- Burned tissue at increased risk for infection
- Contractures due to decreased movement or scar development
Occupational Therapy Evaluations

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of burns on occupational performance.

Occupation-Focused Assessments
- Activity Card Sort (ACS) (Baum & Edwards, 2008)
- Activity Measure for Post-Acute Care (AM-PAC) (Jette, Hayley, Coster, & Ni, 2007)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Burn Specific Health Scale (Yoder, Nayback, & Gaylord, 2010)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Functional Independence Measure (FIM) (Uniform Data System for Medical Rehabilitation, 1997)
- WeeFIM (Serghiou et al., 2008)
- Functional Assessment Measure (FAM) (Wright, 2000)
- Kohlman Evaluation of Living Skills (KELS) (McGourty, 1999)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)

Client Factor Assessments
- Burn Scar Index (Vancouver Scar Scale) (Sullivan, Smith, Kermode, Melver, & Courtmanche, 1990)
- Disabilities of the Arm, Shoulder, and Hand (DASH) Outcome Measure (Hudak, Amadio, Bombardier, & the Upper Extremity Collaborative Group, 1996)
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength
- Measures of edema

Occupational Therapy Interventions

Emergent

Within 24 to 48 hours after the burn, the occupational therapist helps to prevent early contracture formation by using antideformity splinting and positioning and maintaining joint movement. The therapist must be mindful of monitoring devices, including nasogastric tubes, central venous catheters, and endotracheal tubes when working with the client (Sheridan, 2002).

Acute
- Biomechanical
  - Splinting/positioning, exercises (active assistive range of motion [AA-ROM], active range of motion [AROM], and passive range of motion [PROM])
- Pain management
- Monitor heart rate, blood pressure, and respiratory rate during treatment
- Discharge planning

Rehabilitation
- Biomechanical (ROM, strength/coordination training)
- Activities of daily living (ADL) and instrumental activities of daily living (IADL) training
- Psychosocial support
- Scar management (massage and pressure dressings)
- Patient and family education
- Plan for return to work, school, and community
- Leisure and social participation

Occupational Therapy and the Evidence

According to Whitehead and Sergiou’s 2009 survey of therapeutic techniques for clients with burns, the number of burn centers that use positioning, ROM and PROM, and ambulation during interventions has significantly increased since 1994. In addition, therapy is being administered earlier during the acute stay and therefore results in earlier transition to outpatient rehabilitation services. Common outpatient rehabilitation focuses are on helping clients return to occupation. Hwang, Chen-Sea, and Chen (2009) recommend that OT services include return-to-work programs as they found that burn-related factors—that is, longer stay in hospital and burn injuries on both hands and trunk—increased the time required to return to work and may decrease the likelihood of return to work at all. Hill, O’Brien, and Yurt (2007) studied the effects of an OT cooking group for people who had sustained burns and found that not only did the group provide an opportunity for social participation and increase functional movement (e.g., using hands, standing for extended periods of time) but it also decreased burn-related anxiety in the kitchen and helped distract participants from their burns. Melchert-McKearnan, Deltz, Engel, and White (2000) concluded that, for children, purposeful activity and play were more effective than the use of rote activities postburn in rehabilitation.

Caregiver Concerns

Dorn, Yzermans, Spreeuwenberg, and van der Zee (2007) found that parents of children who have burns display significant increases in mental health issues, such as depression and anxiety, and cardiovascular problems years after their child experiences a burn. Parental adjustment to the burn injury was found to be a significant predictor of the child’s psychological adjustment following a severe burn (Noronha & Faust, 2006). Caregivers may also take on rehabilitative responsibilities, including performing scar massage and stretching exercises (Sheridan, 2002).

Resources

Organizations
- American Burn Association
  ABA Central Office-Chicago
  625 N. Michigan Ave., Ste 2550
  Chicago, Illinois 60611
  Telephone: 312-642-9260
  Fax: 312-642-9130
  E-mail: info@ameriburn.org
- Phoenix Society for Burn Survivors
  1835 R W Berends Dr. SW
  Grand Rapids, MI 49519-4955
  Telephone: 1-800-888-2876 or (616) 458-2773
  Fax: (616) 458-2831
  E-mail: info@phoenix-society.org

An organization devoted to supporting the needs of burns survivors and their families through connecting individuals in person and online.

Books
  An account of a fire at a college in New Jersey describing two friends’ journey through recovery and rehabilitation including the involvement of occupational and physical therapists.
  The story of one woman’s rehabilitation and fight to recover from burns covering more than 80% of her body sustained in the September 11 attacks in New York City.
Carcinomas: begin in the body's organs (including skin)

Leukemias: begin in blood-forming tissues (e.g., bone marrow)

Lymphomas: begin in the lymphatic system (National Cancer Institute)

Shriner's Hospital for Children

Between the years 2004 and 2008 in the United States, there was an average incidence of 464.4 cases per 100,000, or approximately 1.4 million new cases per year.

As of January 2008, approximately 11.7 million Americans had a history of cancer (either were living with cancer or were in remission after a previous cancer diagnosis).

Cancer

Description and Diagnosis

According to the American Cancer Society (ACS; 2011a), "cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells" (p. 1). If the growth is not controlled, cancer can be fatal. In the United States, cancer is the second leading cause of death, behind diseases of the heart, with more than 1,500 people dying every day and accounting for one in four deaths. There are over 100 forms of cancer that fall into one of four categories:

- Carcinomas begin in the body's organs (including skin)
- Leukemias begin in blood-forming tissues (e.g., bone marrow)
- Sarcomas begin in connective tissue (e.g., bone, fat, muscle, or cartilage)
- Lymphomas begin in the lymphatic system (National Cancer Institute [NCI], 2011)

The most common forms of cancer are breast, prostate, lung and bronchus, and colorectal cancers (Howlader et al., 2011; International Agency for Research on Cancer [IARC], 2010).

In most cases of cancer (the major exception being leukemia), the cancerous cells form a tumor. By performing regular and frequent self-exams or having a physician perform a physical screen, tumors can be identified, and a physician can from there determine whether the tumor is cancerous (malignant) and if it has spread (metastasized). To diagnose cancer, physicians may use imaging (e.g., computed tomography [CT] scans, X-rays, mammograms) and/or laboratory tests (e.g., blood tests, biopsies).

Incidence and Prevalence

- Between the years 2004 and 2008 in the United States, there was an average incidence of 464.4 cases per 100,000, or approximately 1.4 million new cases per year.
- As of January 2008, approximately 11.7 million Americans had a history of cancer (either were living with cancer or were in remission after a previous cancer diagnosis).
In the United States, approximately one in two men and one in three women will develop or die from cancer.

78% of all cancers are diagnosed in persons aged 55 years or older.

Breast cancer is the most common type of cancer diagnosed in women and prostate cancer is the most common in men, both accounting for ~30% of diagnoses in the respective gender.

Lung and bronchus cancers are the second most common type of cancer among both genders in the United States (Howlader et al., 2011).

Worldwide, cancer is the leading cause of death accounting for an estimated one in eight deaths.

In 2008, an estimated 12.7 million people worldwide were diagnosed with cancer and 7.6 million people died from cancer; these numbers are expected to increase to an estimated 20.4 million and 13.2 million, respectively, in 2030.

The 5-year relative survival rate for all cancers has increased—from 50% for those diagnosed between 1975 and 1977 to 68% for those diagnosed between 1999 and 2006.

More than 60% of all cancer deaths occur in low- and middle-income countries (ACS, 2011a; IARC, 2010)

Cause and Etiology

Normally, when a “mutated” cell (a cell in which the DNA is damaged) is produced, the cell is either repaired or it dies. Cancer is the result of uncontrolled growth and spread of “mutated” cells. This abnormal growth can be caused by several internal and/or external factors. Internally, cancer can be caused by genetics (e.g., inherited cell mutations), immunological conditions, cell mutations produced via metabolism, and hormones. These factors cannot be controlled. External or environmental factors, however, are almost always modifiable; these include tobacco use, exposure to radiation (including sun exposure), poor nutrition and physical inactivity, certain infectious agents, certain medical treatments, and exposure to carcinogens (cancer-causing agents) via pollution, employment, and so forth. Seventy-five percent to 80% of cancer cases in the United States are caused by external factors, so prevention (e.g., via avoiding tobacco use and excessive sun exposure, preventing obesity) of many forms of cancer is possible (ACS, 2011a). Cancer is noncommunicable—you cannot “catch” it from another person.

Typical Course, Symptoms, and Related Conditions

Many forms of cancer are staged to describe the current status of the tumor and any metastases (regions to which the original cancerous site has spread). A common method of staging is the tumor, node, metastasis (TNM) system. Cancers of the nervous system and many lymphomas and leukemias do not use this system due to the nature in which they spread.

The TNM system can allow the cancer itself to be staged; these more general stages vary between the different types of cancer:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition (NCI, 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Cancer in situ (abnormal cells located only in layer in which they were originally detected)</td>
</tr>
<tr>
<td>Stage I, Stage II, and Stage III</td>
<td>Higher numbers indicate more extensive disease: larger tumor size and/or spread of the cancer beyond the organ/site in which it first developed to nearby lymph nodes and/or organs adjacent to the location of the primary tumor</td>
</tr>
<tr>
<td>Stage IV</td>
<td>The cancer has spread to another organ(s)</td>
</tr>
</tbody>
</table>

Generally, the earlier cancer is detected, the better chance of survival. Signs and symptoms vary between forms of cancer, between individuals, and depending on the stage of disease. Some forms of cancer do not have early symptoms, so regular screening is recommended.

<table>
<thead>
<tr>
<th>General Symptoms of Cancer</th>
<th>Signs and Symptoms That May Indicate a Specific Form of Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Unexplained weight loss of 10 lb or more</td>
<td>• Change in bowel habits or bladder function</td>
</tr>
<tr>
<td>• Fever</td>
<td>• Sores that do not heal</td>
</tr>
<tr>
<td>• Fatigue</td>
<td>• White patches inside the mouth or white spots on the tongue</td>
</tr>
<tr>
<td>• Pain</td>
<td>• Unusual bleeding or discharge</td>
</tr>
<tr>
<td>• Skin changes (color change, itching, excessive hair growth)</td>
<td>• Thickening or lump in the breast or other parts of the body</td>
</tr>
<tr>
<td></td>
<td>• Indigestion or trouble swallowing</td>
</tr>
<tr>
<td></td>
<td>• Recent change in wart or mole or any new skin change</td>
</tr>
<tr>
<td></td>
<td>• Nagging cough or hoarseness (ACS, 2010)</td>
</tr>
</tbody>
</table>

The treatment of cancer may cause exacerbation of cancer symptoms and/or additional symptoms, such as cognitive difficulties (e.g., confusion, memory problems, decreased executive functioning), decreased immunity, gastrointestinal problems (e.g., appetite changes, nausea or vomiting, diarrhea or constipation), edema/lymphedema, sleep disturbances, hormonal imbalances (leading to menopause, sexual problems, etc.), difficulty breathing, and nervous and musculoskeletal difficulties (e.g., pain, tremors, weakness, decreased range of motion [ROM], hearing loss) (ACS, 2011a; Brearley et al., 2011; Gilbertson-White, Aouizerat, Jahan, & Miaskowski, 2011). Symptoms of cancer most often result in a decrease in functional capacities and abilities, inhibiting an individual’s occupational participation (Silver & Gilehrist, 2011). As a reaction to diagnosis, a result of decreased function or a side effect/result of treatment, cancer also affects individuals psychosocially (e.g., decreased coping, anxiety, and depression) (Shelton, Lipoma, & Oertli, 2008). Cancer can be fatal (the prognosis varies between individuals and types of cancer), but many treatment options have decreased mortality associated with a cancer diagnosis.

Interdisciplinary Interventions

Depending on the form and stage of cancer, the treatments used and members of the treatments team will vary. For example, an individual with lung cancer may have a respiratory therapist on his or her treatment team. Oncologists are the physicians that perform primary treatment to deal with the cancer itself, whereas other professionals work with the client to treat and/or alleviate symptoms (palliative care).
### Primary Treatment Options (ACS, 2011b)
- Surgery—to remove tumors or body parts affected by cancer
- Chemotherapy—the use of medicine or drugs that destroy cancer cells
- Radiation—the use of high-powered energy beams to damage or kill cancer cells
- Targeted therapy—the use of drugs or other substances that directly block the growth and spread of cancerous cells
- Biological therapy/immunotherapy—techniques to boost the immune system’s response to cancer cells
- Hyperthermia—the use of high temperatures to destroy cancer cells
- Stem cell/tissue marrow transplant—often used to replenish the body’s supply of healthy cells after (or boost the supply before) chemotherapy or radiation treatment
- Photodynamic therapy (PDT)—the use of drugs and light to destroy cancer cells
- Hormone therapy—removal of hormones that fuel certain kinds of cancer (e.g., prostate and breast cancers)

### Examples of Palliative Care Treatments
- Pain medication
- Respiratory therapy
- Audiology
- Physical therapy
- Nutrition and dietary recommendations
- Complementary and alternative medicines—for example, aromatherapy, art therapy, biofeedback, massage therapy, meditation, music therapy, tai chi, yoga
- Social work

### Occupational Therapy Interventions
Interventions for clients with cancer vary depending on the individual's needs and desires, form and stage of cancer, symptoms, and treatment already received. Interventions may include the following:

- Retraining in activities of daily living (ADL)—environmental and/or task modifications, assistive technology; including suggestions to maintain satisfaction in sexual activity despite hormonal imbalances
- Environmental assessment to determine fall risk
- Cognitive retraining to address memory, concentration, and so forth, affected by treatment
- Development of the following coping strategies to address psychosocial and physical symptoms/effects:
  - Pain and/or edema management
  - Sleep regulation techniques
  - Energy conservation techniques to minimize fatigue when performing activities (particularly return to previous occupations); may include relaxation techniques, meaningful participation in exercise, time management skills to balance appointments, and other necessary activities (ADL, instrumental activities of daily living (IADL), employment, etc.) with leisure, play, social participation, and so forth
- Lifestyle modification—for example, identify new or alternate occupations that allow client to participate satisfactorily; may include employment
- Recommendations of support groups and resources within the community
- Consultation at end of life regarding strategies for maintaining productivity and finding closure in life, personal relationships, and so forth (Lemoignan, Chasen, & Bhargava, 2010; Shelton et al., 2008; Silver & Gilchrist, 2011)

### Occupational Therapy Evaluations
The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of cancer on occupational performance.

### Occupation-Focused Assessments
- Functional Assessment of Cancer Therapy, General Scale (FACT-G) (Cella et al., 1993)
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview (OPHI—II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Occupational Self-Assessment, Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)

### Client Factor Assessments
- M. D. Anderson Symptom Inventory (MDASI) (Cleeland et al., 2000)
- Brief Fatigue Inventory (Mendoza et al., 1999)
- Beck Depression Inventory-II (BDI-II) (Beck, Steer, & Brown, 1996)
- Allen Cognitive Level Screen-Fifth Version (ACLS-5) (Allen et al., 2007)
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of edema
- Measures of muscle strength

### Occupational Therapy and the Evidence
The most commonly used interventions for clients with cancer address the occupational domains of leisure and productive occupations (IADL, work, etc.) and involve teaching energy conservation techniques and goal setting (Lemoignan et al., 2010). Despite this knowledge, there is a paucity of evidence regarding the effectiveness of occupational therapy (OT) interventions for cancer. However, for clients with breast cancer, a specific OT-led exercise and relaxation intervention called the Breast Cancer Recovery Program was shown to safely decrease lymphedema while improving participant quality of life and mood when compared to controls (McClure, McClure, Day, & Brufsky, 2010).

### Caregiver Concerns
According to van Ryn et al. (2011), caregivers of individuals with cancer who are currently undergoing treatment, who are in an advanced stage of cancer, and/or who have severe comorbidities report having to provide assistance to their family members significantly more than caregivers of clients with cancer who do not fit those characteristics. They predominantly assist with IADL and care-related tasks (e.g., medication administration, managing symptoms like vomiting). Only a small number of these caregivers reported receiving training to perform these tasks, and despite this, most said that they felt training was needed. Depending on the type of care provided and the details of each individual circumstance, caregivers have reported personal burden in many forms—for example, physical (pain, sleep problems, fatigue, etc.), social (financial difficulties, change in employment status, role strain, isolation, etc.), and emotional (anxiety, depression, fear, etc.) (Stenberg,
References

Ruland, & Miaskowski, 2010). In addition, caregivers report about the same amount of anxiety regarding death as their loved ones with cancer do (Sherman, Norman, & McSherry, 2010).

Resources

Organizations
- American Cancer Society 1-800-227-2345 http://www.cancer.org/

Books

Websites
- National Cancer Institute (at the National Institutes of Health) http://www.cancer.gov/
- CancerNet—patient information site from the American Society of Clinical Oncology http://www.cancer.net/
- Cancer Support Community—a support site for clients and caregivers http://cancersupportcommunity.org
- CancerCare—resource for clients to find professional and personal support and education regarding cancer http://www.cancercare.org/

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Cardiac Conditions

Pamela Vaughn

Description and Diagnosis
Cardiac conditions include any condition that originates in and/or affects the heart. These include, but are not limited to, the following:

- **Coronary heart disease (CHD; also known as coronary artery disease):** the most common type of heart disease (HD) in which there is a narrowing of the blood vessels that supply the heart due to the buildup of plaque, which can eventually lead to myocardial infarction (MI), angina (chest pain, discomfort, or tightness), or other complications.
- **MI (also known as heart attack):** damage or death to a portion of cardiac muscle as a result of insufficient oxygenated blood flow; during an MI, an individual may enter cardiac arrest.
- **Heart failure** (also known as congestive heart failure [CHF]; types are left-sided systolic heart failure, left-sided diastolic heart failure, and right-sided heart failure): a chronic and progressive condition in which the heart cannot sufficiently pump enough blood to meet the body’s need for oxygenated blood; not to be confused with cardiac arrest.
- **Congenital heart defects:** defects that are present since birth due to abnormalities in the prenatal development of the structures or blood vessels of the heart; types of defects vary and may involve abnormal heart valves or holes in the wall of the heart.
- **Arrhythmia:** any change from the normal or expected electrical impulses that create the heartbeat; most are harmless but may result in cardiac arrest.
- **Cardiac arrest:** the sudden loss of heart function, resulting in death within minutes; cardiac arrest may be reversed and the person’s life is saved if cardiopulmonary resuscitation (CPR) or an electrical shock using a defibrillator are administered immediately (American Heart Association [AHA], 2011a; Centers for Disease Control and Prevention [CDC], 2011).

Cardiac conditions are often diagnosed after an individual has experienced a cardiac event. However, if the condition is identified before this, the first stages of diagnosis are often made during physical exams conducted by a general practitioner who involves blood pressure, cholesterol, blood glucose tests, and an examination of family medical history. From there, a cardiologist may use one or more tests such as an electrocardiogram, ultrasound, chest X-ray, exercise stress test, angiogram, cardiac enzyme blood tests, or cardiac catheterization to further evaluate the condition of the client’s heart to form a diagnosis and to develop a treatment plan (CDC, 2011). In the case of congenital heart defects, diagnosis is often made using similar techniques at birth or during infancy after the presentation of symptoms; sometimes, the diagnosis is made during pregnancy (AHA, 2011a).

Incidence and Prevalence

- Approximately 82.6 million—greater than one in three—U.S. adults have at least one cardiovascular disease (this includes cardiac conditions as well as stroke and hypertension); less than half of these (40.4 million) are among people aged 60 years or older.
- 16.3 million (7%) U.S. adults have CHD; men are slightly more affected than women.
- 5.7 million U.S. adults have heart failure (including CHF).
- 650,000 to 1,3 million U.S. adults are living with congenital heart defects.
- The estimated annual incidence of MI is 610,000 new attacks and 325,000 recurrent attacks; the average age at first MI is 64.5 years for men and 70.3 years for women.
- Among whites only, 11.9% have HD and 6.4% have CHD.
- Among blacks or African Americans, 11.2% have HD and 6.7% have CHD.
- Among Hispanics or Latinos, 8.5% have HD and 5.8% have CHD.
- Among Asians, 6.3% have HD and 3.9% have CHD.

The average annual rates of first cardiovascular events rise from 3 per 1,000 men at 35 to 44 years of age to 74 per 1,000 men at 85 to 94 years of age; for women, comparable rates occur 10 years later in life. The gap narrows with advancing age.

HD is the leading cause of death for both genders in the United States (Roger et al., 2011).

Cause, Etiology, and Risk Factors

- **CHD is caused by atherosclerosis**—a buildup of plaque (made of cholesterol) along the walls of the arteries that supply the heart, resulting in a narrowing of the vessels. The main risk factors for CHD are high cholesterol, hypertension, diabetes, cigarette smoking, overweight and obesity, poor diet, physical inactivity, and alcohol use. Genetics likely plays a role in the risk of an individual developing CHD, but it is as yet unclear whether this is simply because families tend to share common environments and lifestyle choices.
- **MI is caused when a coronary artery’s blood flow is stopped or impeded;** this most often happens as a result of blood clots forming in the arteries after a portion of atherosclerotic plaque breaks, for example, in the case of CHD.
- **CHF can be caused by several other compounding conditions,** including hypertension, CHD, a history of MI, congenital heart defects, and diabetes.
- **Congenital heart defects can develop as a result of genetics, environmental factors, and/or behaviors and lifestyle choices of the mother.** There is an increased risk of birth defects if the mother uses drugs, smokes, or drinks alcohol during pregnancy.
- Arrhythmias can be caused by HD, MI, or any other condition in which the cells responsible for the electrical conduction of the heart are affected. They can also be a result of a congenital condition, a side effect of medication, or the use of addictive substances. Conversely, arrhythmias can cause MI, cardiac arrest, or stroke (AHA, 2011a; CDC, 2011; Eckert, 2007).

Typical Course, Symptoms, and Related Conditions

The course and symptoms for each cardiac condition will vary. However, the interrelatedness of these conditions should be noted—for example, CHD can cause MI and CHF; MI, CHF, and CHD can cause arrhythmias; arrhythmias can cause MI; and so forth. General signs and symptoms that an individual may be having a cardiac event include the following:

- **Change in pattern of angina or shortness of breath**
- **Heart palpitations or “fluttering” feeling in chest**
- **Feeling lightheaded, dizzy, or confused; fainting or near-fainting spells**
- **Experiencing more fatigue than expected**
- **Unusual pain or discomfort in muscles or joints after exercise**
- **Sweating**
- **Blood pressure falls 20 mm Hg or more or heart rate is 20 beats per minute or more over resting heart rate** (Eckert, 2007).

In addition, specific signs and symptoms for separate conditions include the following:

- **CHD:** MI is often the first sign (CDC, 2011).
- **CHF:** shortness of breath, persistent coughing or wheezing, edema, fatigue, lack of appetite, nausea, confusion, impaired thinking, and increased heart rate (AHA, 2011a)
Clinical Interventions

Surgery

The diagnosis of a cardiac condition, often only made during or after a medical emergency, may be followed closely by a surgical procedure to fix or alleviate the condition to prevent a (or another) cardiac emergency from occurring.

**Surgeries for Cardiac Conditions (AHA, 2011c)**

- Angioplasty (also known as percutaneous coronary intervention [PCI]): a deflated balloon is threaded into a coronary artery and then inflated (or a laser on the tip of the catheter vaporizes the plaque buildup) to widen a blocked area of the vessel and increase blood flow to the heart; often used in combination with stenting
- Stenting: insertion of a wire mesh tube to prop a coronary artery open
- Atherectomy: A catheter with a rotating shaver trim away plaque from artery walls
- Coronary artery bypass graft (CABG, or "cabbage": also known as open-heart surgery): grafting vessels from other parts of the body to the blocked coronary artery in order to reroute blood flow
- Minimally invasive bypass surgery: the use of video monitors and scopes inserted through small incisions ("ports") in the chest to perform bypasses
- Transmyocardial revascularization (TMR): the use of lasers to drill ~1 mm diameter holes directly into the walls of the heart to relieve severe angina when bypass is not an option
- Valve replacement: a replacement of an abnormal or diseased valve with an artificial valve
- Radiofrequency, or catheter, ablation: a procedure to correct arrhythmias by destroying a small amount of cardiac cells that are causing the abnormal heartbeat
- Insertion of left ventricular assist device (LVAD): assist the heart's pumping chamber
- Implantation of defibrillator or pacemaker: to maintain a normal heartbeat
- Cardiomyoplasty: Skeletal muscle is wrapped around the heart and stimulated for contraction with the use of a pacemaker-like device to assist the heart in pumping
- Heart transplant: Organ donation can be used when a heart is irreversibly damaged.

**Medication Therapy**

There are many medications prescribed to either prevent a cardiac emergency or reduce the likelihood of experiencing another one. Because each medication treats a different symptom or performs a different function, clients are typically prescribed several. It should be noted that the medication adherence rate in the United States for various cardiovascular conditions is still not ideal (Brown & Russell, 2011).

**Classes of Medications for Cardiac Conditions (AHA, 2011b)**

- Anticoagulants—decrease the clotting ability of blood
- Antiplatelet agents (e.g., aspirin)—prevent blood clots
- Angiotensin-converting enzyme (ACE) inhibitors—expand blood vessels to allow blood to flow more easily, decreasing the workload of the heart
- Angiotensin II receptor blocker—prevent vessel constriction and decrease blood pressure
- Beta-blockers—decrease heart rate and cardiac output to decrease blood pressure and angina
- Calcium channel blocker—decrease blood pressure and angina and treat some arrhythmias
- Diuretics—decrease blood pressure and reduce edema
- Vasodilators—expand vessels to decrease angina
- Digitalis preparations—increase the force of the heart's contractions to decrease symptoms and some arrhythmias
- Statins—decrease cholesterol levels

Cardiac Rehabilitation

After a person has a cardiac event (emergency, surgery, etc.), they are generally recommended for a cardiac rehab program. These programs use a combination of education and counseling to help people manage their condition by increasing physical fitness, reducing cardiac symptoms, and finding support. Techniques include individualized physical activity programs, smoking cessation counseling, dietary and nutrition counseling, and counseling for the psychological and emotional effects (e.g., stress, anxiety, depression) of the condition (AHA, 2011d; Huntley, 2008).

**Occupational Therapy Evaluations**

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact the potential of occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of cardiac conditions on occupational performance.

**Occupation-Focused Assessments**

- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Occupational Self-Assessment, Version 2.2 (Baron, Kielhofner, Iyengar, Goldhammer, & Wolenski, 2006)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)
- Reintegration to Normal Living (RNL) Scale (Wood-Dauphinee, Opzoomer, Williams, Marchand, & Spitzer, 1988)

**Client Factor Assessments**

- Beck Depression Inventory-II (BDI-II) (Beck, Steer, & Brown, 1996)
- Borg Rating of Perceived Exertion (RPE) scale (Borg, 1998)
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength
- Monitoring of vital signs (i.e., heart rate, blood pressure)
Occupational Therapy Interventions

Occupational therapists are frequent members of cardiac rehab teams. Interventions provided depend on the condition, needs, and desires of the client. Precautions to prevent overexertion of the client should be taken, and the occupational therapist should monitor heart rate and blood pressure regularly and alert the appropriate members of the rehab team of any changes. Common interventions include the following:

- Teaching energy conservation techniques to minimize the stress placed on the heart
- Retraining in activities of daily living (ADL)—for example, grading activities to optimize participation without causing excessive strain, using assistive devices if necessary; includes suggestions to maintain satisfaction in sexual activity without overly exerting the heart
- Environmental adaptations
- Educating client and family members about the risk factors of cardiac conditions and measures to be taken to remain healthy and functional
- Lifestyle modification—for example, identify new or alternate occupations that allow client to participate satisfactorily without inducing cardiac stress
- Medication management
- Recommendations of support groups and resources within the community (Huntley, 2008)

Occupational Therapy and the Evidence

As the number of people living with cardiac conditions and surviving cardiac emergencies increases, there is a greater need for longer term rehabilitative and lifestyle occupational therapy (OT). Interdisciplinary cardiac rehab has been shown to consistently decrease cardiovascular-related causes of death and improve quality of life in clients of all ages and genders, increase likelihood of return to work, increase function in occupations such as ADL and instrumental activities of daily living (IADL), decrease length of stay in the hospital, and increase client independence after discharge (Vincent, Stephenson, Oml, & Vincent, 2008). Occupational performance declines in ADL and IADL are common, particularly in clients with CHF and CHD, and often result in the use of assistive devices and use of home and community help services (Foster et al., 2011; Norberg, Boman, & Löfgren, 2010). A review of OT for chronic conditions, including HD, showed that various interventions (e.g., in-home or group, occupation reteaching/adaptation or consulting) can improve function and quality of life for clients (Hand, Law, & McColl, 2011). Occupational performance declines in ADL and IADL are common, particularly in clients with CHF and CHD, and often result in the use of assistive devices and use of home and community help services (Foster et al., 2011; Norberg, Boman, & Löfgren, 2010). A review of OT for chronic conditions, including HD, showed that various interventions (e.g., in-home or group, occupation reteaching/adaptation or consulting) can improve function and quality of life for clients (Hand, Law, & McColl, 2011).

Caregiver Concerns

Relatives of clients with cardiac conditions often experience stress, anxiety, and lowered quality of life as a result of their loved ones’ conditions. There is also an increased risk of death following the diagnosis of a relative. These relatives may benefit from education regarding the best ways to support their family members and the importance of keeping themselves healthy and using their own support systems (Nissen, Madsen, & Zwiter, 2008).

Resources

Organizations
- American Heart Association 7272 Greenville Ave. Dallas, TX 75231 Website: http://www.heart.org

Books

Websites
- American College of Cardiology Foundation http://www.cardiosource.org/acc
- American Association of Cardiovascular and Pulmonary Rehabilitation http://www.aacvpr.org

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Cerebral Palsy

Samantha Slocum

Description and Diagnosis

Cerebral palsy (CP) is a term that is used to describe motor disorders that are characterized by impaired voluntary movement and muscle control. CP can result from prenatal, perinatal, or postnatal brain injury occurring before the age of 5 years (Merck, 2006). There are four types of CP, characterized by the type of movement disturbance: spastic (muscles are stiff and weak; most common type), athetoid (slow, writhing, involuntary movement), ataxic (muscle weakness, poor coordination, and tremors), and mixed (combines spastic and athetoid) (Merck, 2006; United Cerebral Palsy Association [UCP], 2001a).

Incidence and Prevalence

Approximately 8,000 infants and 1,200 to 1,500 preschool-aged children are diagnosed with CP each year. An estimate of 764,000 children and adults in the United States demonstrate signs of CP (UCP, 2001a).

Cause and Risk Factors

There is no single cause of CP and often more than one type of brain damage results in the condition. CP can be congenital and be caused by brain damage in utero or during the birthing process. Acquired CP occurs within the first few months or years of life and could be caused by brain infections, oxygen deprivation, brain injuries from motor vehicle accidents, falls, or child abuse (Merck, 2006; UCP, 2001a). Risk factors for CP include premature birth, low birth weight, inadequate nutrients in utero, blood type incompatibility between mother and infant, bacterial infections, oxygen deprivation, and severe jaundice (UCP, 2001a).

Typical Course, Symptoms, and Related Conditions

CP cannot be cured. Although the brain damage itself cannot get worse, the symptoms that occur as a result of the brain damage can change with maturity (Merck, 2006). Symptoms of CP can be managed through medical and therapeutic interventions, which help reduce the impact of symptoms and improve functional abilities in people with CP (Merck, 2006; UCP, 2001a).

Symptoms of CP can range from clumsiness to severe spasticity that causes deformities (i.e., contractures) and the need for mobility aids (Merck, 2006). Common difficulties associated with CP include cognitive delays, speech difficulty, seizure disorders, feeding problems, impaired vision and hearing, abnormal sensation and perception, difficulty with bowel control, breathing problems secondary to poor posture, and skin conditions as a result of pressure sores (UCP, 2001a).

Secondary conditions that are seen in adults with CP include musculoskeletal changes (increased spasticity and decreased strength, endurance, and flexibility), pain, fatigue, arthritis, fractures, and osteoporosis. People with CP typically live well into adulthood (Haak, Lenski, Hidecker, Li, & Paneth, 2009).

Precautions

- Seizure disorders
- Difficulty swallowing
- Impaired vision/hearing
- Abnormal sensation/perception

Interdisciplinary Interventions

Medical Interventions and Medication Therapy

- Anticonvulsant drugs: treat seizures (Merck, 2006; National Institute of Health [NIH], 2011)
- Baclofen pumps: relax muscles and control tremors and spasticity (Merck, 2006; NIH, 2011)
- Benzodiazepines: manage spasticity (Merck, 2006)
- Botulinum toxin (Botox): decrease muscle stiffness and allow for more controlled movement and increased function when used in conjunction with occupational therapy (OT) (Hoare et al., 2010; NIH, 2011)
- Selective dorsal rhizotomy surgery: reduce muscle tone (Goldstein, 2004; Merck, 2006)

Interdisciplinary Interventions

Children with CP may see physical and speech therapists on a regular basis (Merck, 2006).
**Complementary Alternative Medicines**
These are treatment approaches that have not been accepted by mainstream practice, and the evidence remains inconclusive:
- Hyperbaric oxygen therapy (Collet et al., 2001; Hardy et al., 2002; Rosenbaum, Fehlings, & Iliffe, 2001)
- Therapeutic electrical stimulation (Dali et al., 2002; Sommerfelt, Markestad, Berg, & Saetesdal, 2001)
- Hippotherapy
- Massage therapy
- Aquatherapy
- Chiropractic manipulation

**Occupational Therapy Evaluations**
The basis of OT assessment for clients with CP is to determine the client’s ability to participate in society and meaningful occupations. Evaluation of the need for assistive technology is important for clients across the life course because needs can change with age.

**Pediatric Evaluations**
Pediatric evaluations for CP may include the following:

**Activities of Daily Living**
- Pediatric Evaluation of Disability Inventory
- WeeFim: Functional Independence Measure for Children
- CHORES: Children Helping Out: Responsibility, Expectation, and Support
- AMPS: Assessment of Motor and Process Skills

**School Specific**
- School Function Assessment
- School Setting Interview
- School AMPS: School Assessment of Motor and Process Skills

**Functional Mobility**
- Gross Motor Function Classification System (GMFCS)

**Play/Leisure**
- Knox Preschool Play Scale
- Transdisciplinary Play-Based Assessment
- COSA: Children’s Occupational Self Assessment
- Play History
- Children Assessment of Participation and Enjoyment (CAPE)
- Preferences for Activities of Children (PAC)

**Adolescent/Adult Evaluations**
Adolescent and adult evaluations for CP may include the following:

**General Occupational Performance**
- Canadian Occupational Performance Measure (COPM)
- Occupational Performance History Interview
- Occupational Circumstance Assessment Interview and Rating Scale
- Occupational Questionnaire

**Activities of Daily Living**
- Functional Independence Measure (FIM)

**Work**
- Work Environment Impact Scale

**Leisure**
- Adolescent Role Assessment
- Leisure Assessment Inventory

Additional client factors that may be assessed include cognition, tone, spasticity, sensation, fatigue, and range of motion (ROM) (Goldstein, 2004; Steultjens et al., 2004).

**Occupational Therapy Interventions**
When working with people who have CP, OT practitioners focus on adapting tasks and the environment to help enhance participation and quality of life. Occupational therapists aim to decrease disability, improve function, and maintain performance. OT practitioners may play a key role in helping people with CP to choose and access assistive devices and supports that will promote function. Practitioners can play an important role throughout the life course depending on the individual’s needs and may be a part of early intervention, school, and rehabilitation services (Goldstein, 2004; Steultjens et al., 2004).

Interventions may include the following:
- Client and caregiver education on ROM to prevent contractures as well as finding ways to manage daily tasks and routines (Steultjens et al., 2004; UCP, 2001b)
- Fabrication of orthotics or splints (Goldstein, 2004; Steultjens et al., 2004)
- Provision of adaptive seating has been shown to enable engagement in meaningful occupations and may improve school performance (Rigby, Ryan, & Campbell, 2009).
- Constraint-induced therapy (Lam-Damji & Fehlings, 2006; Taub, Ramey, DeLuca, & Echols, 2004)

**Occupational Therapy and the Evidence**
Studies addressing the therapeutic approaches that are used by occupational therapists and other rehabilitation professionals have found that the motivation of the client, the degree of impairment, the therapist–client interaction and relationship, the intensity and duration of treatment, and the environment where therapy takes place can have more of an effect on the success of treatment than the particular intervention approach itself (Goldstein, 2004).

Interventions that focus only on physical capabilities and focus on changing the quality of movement, such as neurodevelopmental treatment, have been shown to provide only limited carryover (Butler & Darrah, 2001; Law et al., 1998; Law et al., 1997). Therefore, it is most appropriate to use a family-centered, functional approach that promotes functional performance, identifies and changes the primary constraints of the task, and encourages practice to improve performance in all areas of occupation. Providing treatment within the natural context has been shown to provide lasting effects in individuals with CP (Law et al., 1998; Law et al., 1997; Steultjens et al., 2004).

**Caregiver Concerns**
- Most people with CP will need at least some type of assistance from a caregiver throughout the life course. As parents age, they might become physically unable to care for their adult children and will need to find alternatives, such as group home placements.
- It is important for caregivers to allow their loved ones to maintain as much independence as possible. Allowing them opportunities to make choices and convey their preferences should be provided when feasible.
- It is important to make sure caregivers take care of themselves and seek assistance from others when needed (UCP, 2001b).
4MyChild (http://www.cerebralpalsy.org)—This is an easy-to-use Website provides information about various issues and services relevant to people with CP that is geared towards professionals as well as clients and their families.

References


Cardiac and respiratory precautions: Monitor for dizziness, breathing difficulties, chest pain, excessive fatigue, and altered heart rate or rhythm.

Full prevention: Provide supervision and assistance during all transition movements.

Shoulder injury or pain: Never move an individual by the affected upper extremity.

Skin integrity

Poor safety awareness and impulsive behavior: Provide appropriate level of supervision.

Contractures: When appropriate, follow individualized preventative program of proper positioning, soft tissue and joint mobilization, and range of motion (ROM) exercises.

General safety concerns: Educate the individual, family, and other health care providers regarding all precautions to maximize safety (Woodson, 2008).

Risk Factors and Prevention

Strokes risk factors include alcohol and tobacco use, physical inactivity, high blood pressure and cholesterol, heart disease, diabetes, sickle cell anemia, obesity, previous stroke, family history of stroke, and aging. Prevention practices include eating a healthy diet, maintaining a healthy weight, remaining physically active, avoiding tobacco use, limiting alcohol use, and managing or treating other medical conditions (CDC, 2010).
Occupational Therapy Evaluations

**Comprehensive Evaluations**
- American Heart Association Stroke Outcome Classification (AHA. SOC): evaluates extent and severity of impairment and level of functional independence
- Functional Independence Measure (FIM): measures type and amount of assistance needed for safe and effective activity performance
- National Institutes of Health Stroke Scale (NIHSS): assesses level of impairment
- Chedoke-McMaster Stroke Assessment: behavioral assessment of unilateral neglect

**Quality of Life Evaluations**
- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Short-Form 36 Health Survey (SF-36): evaluates health-related quality of life
- Stroke Impact Scale (SIS): self-report health status measure
- Stroke-Specific Quality of Life Scale (SS-QOL): self-report questionnaire

**Balance Evaluations**
- Berg Balance Scale (BBS)
- Postural Assessment Scale for Stroke Patients (PASS)
- Motor Assessment Scale (MAS)

**Cognition/Perception Evaluations**
- Behavioral Inattentiveness Test (BIT)
- Rivermead Behavioral Memory Test (RBMT)
- Executive Function Performance Test (EFPT)
- Loewenstein Occupational Therapy Cognitive Assessment (LOTCA): assesses orientation, visual and spatial perception, visuomotor organization, and thinking operations
- Catherine Bergego Scale: behavioral assessment of unilateral neglect

**Upper Extremity Function Evaluations**
- Fugl-Meyer Assessment of Motor Function (FMA)
- Functional Test for the Hemiplegic/Paretic Upper Extremity
- Modified Ashworth Scale (MAS): measure of muscle spasticity
- Goniometry: measures ROM
- Manual muscle testing, dynamometer, and pinch meter: assess strength
- Volumeter: measures edema

**Activities of Daily Living or Instrumental Activities of Daily Living/Leisure Evaluations**
- Assessment of Motor and Process Skills (AMPS): observational assessment of activities of daily living (ADL) and instrumental activities of daily living (IADL) performance
- Barthel Index (BI): assesses self-care abilities and level of assistance needed
- Activity Card Sort (ACS): clients describe their instrumental, social, and leisure activities
- Frenchay Activities Index (FAI): measure of ADL and IADL participation

Occupational Therapy Interventions

All of the following interventions may be used in conjunction with one another to facilitate participation in meaningful occupations.

- **Neuromuscular**: balance training, postural awareness, motor learning, constraint-induced movement therapy
- **Musculoskeletal**: strengthening, mobilization/manual therapy, stretching/passive ROM, edema control, aerobic exercise
- **Cognitive/perceptual/sensory**: cognitive therapy, perceptual training, visual training, sensory retraining, mental imagery
- **Physical agent modalities/orthotics/splinting**: pneumatic compression, compression stockings, electrical stimulation, biofeedback, robotic therapy
- **Skill acquisition/task-specific training**: in all areas of occupation
- **Adaptive/compensatory**: one-handed skills, energy conservation, environmental adaptation, adaptive equipment/assistive technology
- **Educational**: client, caregiver/family, and staff education and training
- **Psychosocial**: relaxation, stress management, coping skills

Occupational Therapy and the Evidence

Research evidence supports the efficacy of various occupational therapy (OT) interventions in stroke rehabilitation. OT effectively improves role participation and performance in basic and IADL for individuals who have had a stroke (Trombly & Ma, 2002). Individuals poststroke demonstrated increased independence in ADL performance and maintenance of these abilities following OT intervention (Legg, Drummond, & Langhorne, 2006). Research findings indicate that provision of instruction and feedback, opportunities for practice of meaningful client-identified activities within natural contexts, and provision of necessary adaptations enhance occupational performance after stroke (Trombly & Ma, 2002). OT treatments focused on remediation of impairments, particularly those involving meaningful occupational tasks or functional goal-directed activity, have generally demonstrated beneficial outcomes (Ma & Trombly, 2002). Research findings also indicate that effective practices to improve upper limb motor recovery after stroke include a combination of mental and physical practice (Nilsen, Gillen, & Gordon, 2010) and the use of extrinsic feedback to enhance motor learning (Subramanian, Massie, Malcolm, & Levin, 2010). Current evidence supports the use of task-specific, task-oriented, and/or repetitive task practice. These interventions represent a shift away from facilitation models previously used in practice, such as neurodevelopmental treatment (NDT), proprioceptive neuromuscular facilitation (PNF), and Brunnstrom’s or Rood’s approaches.

Caregiver Concerns

Caregivers report that they experience various common challenges, which include lack of information and training, distress, uncertainty about the future, lack of support, social isolation, and lack of freedom. Although research more often focuses on caregiver burden, practitioners should also consider the satisfactions associated with the experience of caring, including pride and a sense of closeness (Greenwood, Mackenzie, Cloud, & Wilson, 2009). To successfully manage challenges, caregivers must be educated about taking care of their own physical, emotional, mental, spiritual, and interpersonal health. To support their own health and wellbeing, caregivers should be realistic about what they can and cannot do, think positively, take time for themselves, maintain a healthy lifestyle by practicing healthy eating and exercise habits, seek out support, and communicate with others (American Heart Association, 2011).

Resources

**Organizations**
- American Stroke Association
  7272 Greenville Avenue
  Dallas, TX 75231
  Telephone: 1-888-478-7653
  Website: http://www.strokeassociation.org/
  Offers comprehensive stroke information in a user-friendly format.
- National Stroke Association
  9707 E. Easter Lane, Suite B
  Centennial, CO 80112
  Telephone: 1-800-787-6537
  Website: http://www.stroke.org
  Educates and advocates for all people impacted by stroke.
Chronic Fatigue Syndrome

Pamela Vaughn

Description and Diagnosis

Chronic fatigue syndrome (CFS), also known as chronic fatigue and immune dysfunction syndrome (CFIDS) and myalgic encephalomyelitis (ME), is characterized by extreme and persistent tiredness or weariness that is not alleviated by rest or sleep and is not caused by other medical conditions. Because there is currently no test for CFS, diagnosis entails the exclusion of other possible causes of symptoms and looks for the presence of four or more CFS symptoms over at least 6 months (Centers for Disease Control and Prevention [CDC], 2010).

Incidence and Prevalence

Prevalence reports vary from just under 1% to nearly 4% of the general adult population (Bhui et al., 2011; Fiest, Currie, Williams, & Wang, 2011; van’t Leven, Zielhuis, van der Meer, Verbeek, & Bleijenberg, 2010). Although CFS tends to affect adults and older adults, some adolescents present with symptoms as well. One Dutch study reports a prevalence of adolescent CFS of 0.11% with an annual incidence of 12 per 100,000 (Bhui et al., 2011; van’t Leven et al., 2009) have reported links between the presence of certain viruses (i.e., xenotropic murine leukemia virus-related viruses [XMRV], Epstein-Barr virus, and human herpesvirus 6 [HHV-6]) and a diagnosis of CFS, no definitive etiological connection has been established as of yet (e.g., Satterfield et al., 2011).
Typical Course, Symptoms, and Related Conditions

Symptoms of CFS significantly impair and reduce a client’s level of activity and may include the following:

- Impaired memory or concentration
- Postexertional malaise (extreme, prolonged exhaustion and sickness following physical or mental activity)
- Unrefreshing sleep
- Muscle pain
- Multijoint pain without swelling or redness
- Headaches of a new type or severity
- Sore throat that is frequent or recurring
- Tender cervical or axillary lymph nodes (CDC, 2010)

There are many conditions that may have chronic fatigue as a symptom—for example, fibromyalgia, mononucleosis, hyperthyroidism, sleep apnea, AIDS, major depressive disorder, and so forth—but a diagnosis of CFS will only be made in the absence of such conditions. However, the emotional and psychological implications of CFS result in many clients being diagnosed with depression after the fact (Fiest et al., 2011).

Interdisciplinary Interventions

Medication Therapy

Medications to alleviate or treat the symptoms of CFS—for example, pain medication, sleep aids, and so forth—are frequently prescribed. Many clients may also take antidepressants (CDC, 2010).

Complementary and Alternative Medicine

Complementary and alternative medicine (CAM) techniques have been used to alleviate the symptoms of CFS as well as the associated emotional and psychological effects, for example, anxiety. One review of alternative medical interventions for CFS reported that many approaches (i.e., acupuncture, massage, and meditation) have resulted in decreased symptoms among clients (Porter, Jason, Boulton, Bothne, & Coleman, 2010).

Exercise Therapy

Gradual, guided physical activity is often used to maintain health and decrease severity of CFS symptoms over an extended period of time. It is important that exercise is carefully monitored to ensure that it does not increase fatigue. When compared to controls, individuals undergoing an exercise therapy intervention reported decreased fatigue after 12 weeks when combined with other forms of intervention (e.g., education, medication), exercise therapy was found to be even more effective than any of the interventions alone (Edmonds, McGuire, & Price, 2010).

Occupational Therapy Evaluations

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of CFS on occupational performance. For clients with CFS, it is particularly important to spread the evaluation period out so as not to exhaust the client in one sitting and also to gain insight regarding his or her capacity for endurance over an extended period of time.

Occupation-Focused Assessments

- National Institutes of Health (NIH) Activity Record (ACTRE) (Gerber & Furst, 1992)
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Occupational Self-Assessment, Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006)

Client Factor Assessments

- Chronic Fatigue Syndrome Screening Questionnaire (Jason et al., 1997)
- Functional Capacity Evaluations (FCEs) (see Barrows, 1995)
- Measures of endurance
- Range of motion (ROM)
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength

Occupational Therapy Interventions

Cognitive Behavioral Therapy

Cognitive behavioral therapy (CBT) focuses on helping a client become aware of his or her thought processes to identify and change negative beliefs, behaviors, and emotions to become more functional by managing activity levels, stress, and symptoms. Professionals trained in and able to administer CBT may include psychologists and occupational therapists.

Energy Conservation

Because CFS can negatively affect all areas of occupation, developing energy conservation techniques can allow a client to maintain or improve participation. Techniques may focus on the individual (e.g., relaxation techniques) or on adapting the task and/or environment. This may involve the use of assistive and adaptive devices. Developing time management and pacing skills and prioritizing occupations can assist a client in reducing the occupational impact of CFS (Taylor & Kielhofner, 2003).

Consultation

In addition to working with clients to prevent occupational decline, occupational therapist can consult with clients and work with them to find alternative and potentially new occupations to help them fulfill their roles and increase participation. Referring clients to community support groups helps them access other resources pertaining to CFS. Occupational therapy (OT) consultation can also include an educational component for clients and their family members to learn about CFS and its effects on occupation and about strategies for self-advocacy and assertiveness (Taylor & Kielhofner, 2003).

Occupational Therapy and the Evidence

Hughes (2009) reports the paucity of evidence-based research on the effects of OT for clients with CFS but notes that much research reports the occupational disruption that is caused by CFS. Highlighting this need for OT for clients with CFS, one qualitative study of women with CFS who participated in an art class as a means of occupational and social participation revealed the participants’ desire for earlier access to OT (Reynolds, Vivat, & Prior, 2008).

An 8-week OT group focusing on developing empowerment and participatory action skills in clients with CFS was shown to significantly decrease CFS symptoms and increase quality of life compared to preintervention (Taylor, 2004). Increased occupational participation among clients with CFS has been associated with the coping strategy of maintaining activity as if they were feeling well occupational participation negatively correlated with illness accommodation (rearranging life to deal with CFS symptoms) (Roche & Taylor, 2005). One case study that used energy conservation, time management, and education intervention techniques reports a drastic change in occupational functioning of one individual with CFS (Burley, Cox, & Findley, 2007).
CBT has been reported to decrease CFS symptoms postintervention when compared to usual care (i.e., medication) or other psychological interventions; reports of long-term benefits to CBT, however, are inconsistent (Price, Mitchell, Tidy, & Hurnot, 2008).

Caregiver Concerns
Family members of individuals with CFS express frustration with trying to find a diagnosis that fits their loved one's condition and excitement when they learn that there is a name for it. They also often report feeling stigmatized against because their family member has a condition that is characterized by "being tired." Due to the potential loss of income, some families feel financial burden. Most report having to reassign family tasks to accommodate for the family member's inability to complete chores or roles without exacerabating symptoms (Donalek, 2009).

Resources
Organizations
- International Association for Chronic Fatigue Syndrome/Myalgic Encephalomyelitis (IACFS/ME)
  27 N. Wacker Drive Suite 416
  Chicago, IL 60606
  Telephone: 847-258-7248
  Fax: 847-579-0975
  E-mail: Admin@iacfsme.org
  Website: http://www.iacfsme.org

- National Chronic Fatigue Syndrome and Fibromyalgia Association (NCFSFA)
  PO Box 18426
  Kansas City, MO 64133
  Telephone: 816-737-1343
  Website: http://www.ncfsfa.org/

Books

Websites
- EndFatigue: http://www.endfatigue.com/

References

Appendix I: Common Conditions, Resources, and Evidence

Chronic Pain

Pamela Vaughan

Description and Diagnosis

Pain is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (International Association for the Study of Pain [IASP] Task Force on Taxonomy, 1994/2011, p. 212). Chronic pain, differentiated from acute pain that is often due to a particular injury, is a persistent pain that lasts weeks to years and may or may not be related to a past injury or condition. It is often resistant to treatment, making it a condition that is very pervasive in clients’ lives. Common types of chronic pain include low back pain, headaches and migraines, arthritis pain, and cancer pain. (National Institute of Neurological Disorders and Stroke [NINDS], 2001)

Incidence and Prevalence

The National Center for Health Statistics (2011) reported that in 2009, 16.1% of U.S. adults aged 18 years and older experienced severe headaches or migraines, 28.5% experienced low back pain, and 15.1% experienced neck pain in the past 3 months. One study (Tsang et al., 2008) reported prevalence rates of chronic pain conditions over the past 12 months among adults to be 37.3% in developed countries and 41.1% in developing countries. The prevalence of chronic pain tends to increase with age.

Causes and Risk Factors

Because pain is subjective and is a bodily response to several situations, it can be difficult for physicians to determine the exact cause of each instance of chronic pain. Patients are often asked to describe the location, type (e.g., stabbing, aching), and duration of the pain, which may then warrant further examination through neurological examination, magnetic resonance imaging (MRI), X-ray, electrocardiogram (EMG), and so forth (NINDS, 2001). Many cases of pain are symptoms of other chronic conditions (e.g., cancer pain and arthritis pain) or caused by injury or illness. Current research suggests that chronic non-cancer pain can develop as a result of persistent stimulation of or changes to nociceptors in receptors due to localized tissue damage from an acute injury or disease (e.g., osteoarthritis), or damage to the peripheral or central nervous system, or both (e.g., painful diabetic neuropathy, post stroke pain, spinal cord injury), which might not be readily detectable with currently available diagnostic technologies. (Cheng, 2010, as cited in Turk, Wilson, & Cahana, 2011, p. 2226)

A client’s comfort and pain levels should be taken into account when planning an intervention so as to avoid exacerbating the pain.

Typical Course and Implications

Chronic pain, particularly low back pain, sometimes develops after the occurrence of an injury or as a result of a comorbid disease but persists past the expected recovery time (NINDS, 2001). As it is often resistant to treatment, clients experience barriers due to the pain in several areas of their lives, including activities of daily living (ADL) or instrumental activities of daily living (IADL), work, leisure, and social participation. These barriers can result in clients becoming frustrated, discouraged, and/or fearful to participate in activities that will exacerbate pain (Rochman & Kennedy-Spaïen, 2007). Clients living with chronic pain have reported that it is “life changing” in that it affects numerous aspects of their lives, including “psychological state, occupational performance, relationships with others, and life satisfaction” (Fisher et al., 2007, p. 294).

Interdisciplinary Interventions

Medication Therapy and Other Medical Interventions

The use of medications, both prescription and over the counter, is one of the most common methods to control or alleviate pain (Turk et al., 2011). These include the following:

- Opioids
- Nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen-containing drugs
- Antidepressants
- Anticonvulsants
- Skeletal muscle relaxants
- Topical medications (including ones containing salicylate and capsaicin)

Other medical interventions that are commonly used include the following:

- Injection of anesthetics (e.g., epidural steroid injections)
- Surgery (e.g., lumbar fusion and disc replacement)
- Implantation of pain-relieving devices (medication or electrodes)

Physical Therapy

The overall goal of physical therapy for chronic pain is pain reduction. Techniques used to work towards this goal include muscle tension reduction and finding physical exercise activities that do not result in an increase in pain (NINDS, 2001).

Psychological Therapies

The focus of these intervention approaches is on the client’s response to his or her pain (e.g., coping, adaptation, shift from hopelessness to self-management) and not necessarily on the reduction of the physical pain (Turk et al., 2011). Examples include the following:

- Operant conditioning
- Cognitive behavioral therapy (CBT)—for example, mindfulness
- Relaxation training

Complementary and Alternative Therapies

Although evidence supporting the use of complementary and alternative therapies for the control and alleviation of chronic pain is mixed, several techniques have been used, particularly when more traditional approaches fail to provide relief. Some common therapies include acupuncture, massage, biofeedback, and spinal manipulation (National Center for Complementary and Alternative Medicine, 2011).

Occupational Therapy Evaluations

Occupational therapy (OT) evaluations focus not only on individual daily functioning but also on the physical environment, social network, and quality of life for the client.
## Participation and Activity

- Canadian Occupational Performance Measure (COPM) (Law et al., 2005): self-report of performance and satisfaction with occupations
- Health Status Questionnaire (SF-36): assesses patient’s perceptions of health and physical limitations
- Activity Card Sort (ACS): helps clients describe instrumental and social activities

## Client Factors

- Brief Pain Inventory (Cleeland & Ryan, 1994)
- Functional Capacity Evaluations
- Numerical Pain Rating Scale
- Wong-Baker FACES Pain Rating Scale (Wong & Baker, 1988)
- Face, Legs, Activity, Cry, Consolability (FLACC) Scale (Merkel, Voepel-Lewis, Shayeivitz, & Malviya, 1997)

## Occupational Therapy Interventions

The focus of OT interventions for clients with chronic pain is to increase participation and satisfaction with daily activities. Intervention may include various techniques, including the following:

- Increasing self-management of pain (e.g., teaching a client to use pain management tools independently and proactively)
- Task modification, for example, pacing or the use of adaptive devices to alter activities so that they can be completed without an increase in pain
- Environmental modification
- Assertiveness training and CBT to increase coping skills and self-efficacy
- Education regarding body mechanics and posture (Robinson, Kennedy, & Harmon, 2011a; Rochman & Kennedy-Spaien, 2007)

## Occupational Therapy and the Evidence

Although a few intervention techniques commonly employed by occupational therapists for use with clients with chronic pain have shown to be effective—for example, CBT in increasing client self-management of pain (Turk, Swanson, & Tunks, 2008)—the vast majority of research in this area has not focused on occupation-based interventions (Robinson et al., 2011a, Robinson, Kennedy, & Harmon, 2011b). Occupational therapists are aware of the occupational needs of clients with chronic pain (Skjutar, Schult, Christensson, & Müllersdorf, 2010), but there appears to be a discrepancy between this knowledge and the clinical use of evidence-based interventions targeting these occupational needs. Therefore, Robinson et al. (2011a) call for an increase in the development and subsequent use of occupation-based interventions that are evidence-based.

Evidence supporting the use of interdisciplinary teams and therapeutic approaches—including OT—has been reported frequently, but as the evidence does specify the efficacy of the individual approaches, it is difficult to conclude the effect that OT intervention has on alleviation of, adaptation to, and management of chronic pain (Osland et al., 2009).

In research on the lived experience of clients with chronic pain conducted by Fisher et al. (2007), clients reported a reciprocal relationship between pain and occupation—that is, not only an increase in pain often decreased participation in occupations but also an increase in participation in new or different occupations often resulted in a decrease in and distraction from pain.

## Caregiver Concerns

One major concern that caregivers have is that individuals with chronic pain will develop addiction to and/or overdose on certain prescription medications, namely, opioids (Morgan & Weaver, 2010). Suggestions to prevent this include enforcing stricter prescription criteria, educating users and caregivers about the dangers and signs of misuse, and choosing alternative therapeutic approaches to pain alleviation.

## Resources

### Organizations

- International Association for the Study of Pain (IASP)
  - 111 Queen Anne Ave N, Suite 501
  - Seattle, WA 98109-4955
  - Telephone: 206-283-0311
  - E-mail: IASPdesk@iasp-pain.org
  - http://www.iasp-pain.org
  - IASP is the leading professional association for clinicians, researchers, and educators in the field of pain and aims to reduce the incidence of pain internationally through research and education.
- American Pain Society (APS)
  - 4700 W. Lake Ave.
  - Glenview, IL 60025
  - Telephone: 847-375-4715
  - E-mail: info@ampsainsoc.org
  - http://www.ampsainsoc.org/
  - This is the United States’ national chapter of IASP.
- The American Chronic Pain Association
  - P.O. Box 850
  - Rocklin, CA 95677
  - Telephone: 1-800-533-3231
  - E-mail: ACPA@pacbell.net
  - http://www.theacpa.org
  - A support and education resource for individuals with chronic pain and their caregivers.

### Books


### Journals

- PAIn (the official journal of the IASP)
- The Journal of Pain (from APS)
- Pain Physician
- Pain Practice
- Pain Research & Management

### Websites

- World Institute of Pain
  - http://www.worldinstituteofpain.org
- American Pain Foundation
  - http://www.painfoundation.org/
- National Pain Foundation
  - http://www.nationalpainfoundation.org/

### References


### Developmental Coordination Disorder

**Pamela Vaughn**

**Description and Diagnosis**

*Developmental coordination disorder (DCD)*, according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association [APA], 2000), is “a marked impairment in the development of motor coordination” (p. 56) and has the following diagnostic criteria:

- Performance in daily activities that require motor coordination is substantially below that expected given the person’s chronological age and measured intelligence.
- Disturbance significantly interferes with academic achievement or activities of daily living (ADL).
- Disturbance is not due to a general medical condition (e.g., cerebral palsy, hemiplegia, or muscular dystrophy) and does not meet criteria for pervasive developmental disorder.
- If mental retardation is present, the motor difficulties are in excess of those usually associated with it (APA, 2000).

Although DCD is the term used to refer to this condition in most publications, other names that have been or are still used include clumsy children, developmental dyspraxia, hand–eye coordination problems, and motor delay/impairment (Cermak & Larkin, 2002; Magalhaes, Missiuna, & Wong, 2006).

**Incidence and Prevalence**

Reports of prevalence vary, but approximately 6% of otherwise typically developing school-aged children are estimated to have DCD (APA, 2000; Missiuna et al., 2011). Although recent studies have shown that incidence is about equal between boys and girls, other studies suggest a higher prevalence in boys (Chen, Tseng, Hu, & Cermak, 2009; Missiuna et al., 2011).

**Cause and Etiology**

The cause of DCD is unknown, although motor difficulties have been linked to central nervous system processing deficits (O’Brien, Williams, Bundy, Lyons, & Mittal, 2008), and a few functional magnetic resonance imaging (fMRI) studies have found differences in how information is processed in children with DCD (Kashiwagi, Iwaki, Narumi, Tamai, & Suzuki, 2009; Querne et al., 2008; Zwicker, Missiuna, & Boyd, 2009; Zwicker, Missiuna, Harris, & Boyd, 2011). Genetic predisposition has been cited as a potential causal factor as well (Lichtenstein, Carlstrom, Rastam, Gillberg, & Anckarsater, 2010). Prevalence is higher in individuals who were born extremely preterm or with extremely low birth weight (Roberts et al., 2011).

**Typical Course, Symptoms, and Related Conditions**

DCD, although commonly considered a childhood condition because it is often diagnosed at a young age, persists into adulthood (Kirby, Sugden, Beveridge, & Edwards, 2008). The presentation of symptoms and the degree that function and participation are limited, however, vary between adult individuals depending on intervention received, personality and activity preference, coping mechanisms, and adaptations used (Sugden & Chambers, 2007). Keeping the DSM-IV-TR diagnostic criteria of DCD in mind, symptoms of DCD may include the following:

- Marked delays in achieving motor milestones (i.e., crawling, sitting, walking)
- Difficulties learning new motor skills
- Dropping things; “clumsiness”
- Poor performance in sports/active leisure activities
- Difficulties in school tasks, for example, poor handwriting
- Difficulties with many ADL, such as feeding and dressing (APA, 2000; Missiuna et al., 2008)

DCD is often comorbid with diagnoses such as attention deficit/hyperactivity disorder (ADHD) and reading disabilities with approximately 50% overlap (Crawford & Dewey, 2008; Missiuna et al., 2011). Research has also shown that “children with DCD are likely to experience emotional, social and behavioural difficulties,” which potentially “place them at risk of both current and long-term mental health problems” (Green, Baird, & Sugden, 2006, p. 748). Social participation of children with DCD is limited in home, community, and school settings, and it is thought that poor self-worth decreases their motivation to participate in activities (Chen & Cohn, 2003).

**Interdisciplinary Interventions**

**Medication Therapy**

A double-blind, placebo-controlled study reported the stimulant methylphenidate (MPH) to significantly decrease symptoms of ADHD and
DCD and increase health-related quality of life in children with both ADHD and DCD (Flapper & Schoemaker, 2008).

**Physical Therapy**

Physical therapists can help during the diagnostic process to differentiate DCD from other motor difficulties. Physical therapy intervention for DCD typically addresses low tone, gross motor, and physical endurance (Missiuna, Rivard, & Bartlett, 2006).

**Other Disciplines**

Some people with DCD seek the services of other professionals, for example, speech and language therapists, psychologists, and neurologists, depending on their individual needs and other diagnoses.

**Occupational Therapy Evaluations**

**Assessments of Participation and Occupational Performance**
- Children's Assessment of Participation and Enjoyment (CAPE) (King et al., 2004)
- School Function Assessment (SFA) (Coster, Deeney, Haltiwanger, & Haley, 1998)
- Children Activity Scale Parent & Teacher (ChAS–P/T) (Rosenblum, 2006)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Perceived Efficacy and Goal Setting System (PEGS) (Missiuna, Pollock, & Law, 2004)
- Child Occupational Self-Assessment (COSA) (Keller, Kafkes, Basu, Federico, & Kleinhofner, 2005)
- Children Helping Out: Responsibilities, Expectations, and Supports (CHORES) (Dunn, 2004)
- Do-Eat (Goff er, Josman, & Rosenblum, 2009)

**Assessments of Motor Skills**
- Peabody Developmental Motor Scales (PDMS) (Folio & Fewell, 2000)
- The Developmental Coordination Disorder Questionnaire (DCDQ'07) (Wilson et al., 2009)
- Bruininks-Oseretsky Test of Motor Proficiency (ROT-2) (Bruininks & Bruininks, 2006)
- Sensory Integration and Praxis Tests (Ayres, 1989)

**Occupational Therapy Interventions**

Occupational therapists are the discipline that most frequently works with children with DCD, particularly within the school system. Occupational therapists contribute to the diagnostic process and provide intervention to facilitate skilled motor behavior.

**Task-Oriented Approaches**

Direct practice or teaching of motor tasks has been shown to improve the motor skills of children with DCD (Peens, Piennaar, & Nienaber, 2008). Neumotor task training (NTT) is an example of this approach to intervention and has been shown to have positive results on motor performance (Niemeyer, Smits-Engelsman, & Schoemaker, 2007).

**Cognitive and Performance-Based Approaches**

These approaches, such as cognitive orientation to daily occupational performance (CO-OP), focus on the client identifying and using cognitive strategies through guided discovery to learn and perform tasks (Polatajko & Mandich, 2004).

**Impairment-Oriented Approaches**

Sensory integration (SI) has been used to address the underlying impaired sensory processing and sensory motor functions that are thought to be associated with DCD (Cermak & Larkin, 2002).

**Consultation**

Occupational therapists often provide consultation to help clients and their caregivers determine appropriate activities—particularly leisure and play activities—that will result in increased participation, success, and satisfaction of individuals with DCD (Missiuna et al., 2006).

**Occupational Therapy and the Evidence**

According to Bart, Jarus, Erez, and Rosenberg (2011), children with DCD not only exhibit poor motor performance and decreased participation but “also display decreased enjoyment in participation, and their parents are less satisfied with their children’s participation” (p. 1322). Although there is no “cure” for DCD, there is an opportunity for improvement in occupational performance through occupational therapy interventions such as CO-OP (Banks, Rodger, & Polatajko, 2008). CO-OP has been shown to facilitate the use of strategies for task completion in children with DCD (Rodger & Liu, 2008). It has also been reported as an effective intervention strategy for improvement in occupational performance and satisfaction for both older and younger children (Taylor, Fayed, & Mandich, 2007). Overall, there is a call for practitioners to increase their awareness of DCD so that clients can be properly diagnosed and begin to receive services as early as possible (Missiuna et al., 2008).

If a child with DCD has sensory processing and praxis problems, use of an SI approach may be helpful in promoting motor skills. A systematic review of the research has indicated that SI may result in positive outcomes in sensory motor skills and motor planning (May-Benson & Koomar, 2010).

**Caregiver Concerns**

Caregivers of children with DCD have reported difficulties in getting their children diagnosed due to a lack of knowledge in the health care community of signs and symptoms of DCD, which results in delayed access to services (Maciver et al., 2011). Missiuna, Moll, King, and Law (2007) found that parents’ concerns for their children with DCD tend to change as their children grow older—from worrying that they are not reaching motor milestones at very young ages to noticing differences in the way they play, to being concerned and even frustrated with their difficulties with self-care, academics, and physical activities, and to being concerned about their self-esteem and emotional health.

**Resources**

**Organizations**
- CanChild Centre for Child Disability Research—CanChild is a research and educational center located at McMaster University in Ontario, Canada that focuses on childhood disabilities including DCD. Institute for Applied Health Sciences, McMaster University, 1400 Main Street West, Room 408 Hamilton, Ontario Canada L8S 1C7 Telephone: (905) 525-9140 ext. 27850 E-mail: canchild@mcmaster.ca Website: http://dcd.canchild.ca/en/
- The Dyspraxia Foundation—The Dyspraxia Foundation is a resource in the United Kingdom for individuals with DCD as well as their caregivers and health professionals. 8 West Alley Hitchin Herts, SG5 1EG United Kingdom Telephone: +44 01462 454 986 (help line) E-mail: dyspraxia@dyspraxiafoundation.org.uk Website: http://www.dyspraxiafoundation.org.uk/index.php
References

**Books**


**References**


Rosenblum, S. (2006). The development and standardization of the Children Activity Scales (ChAS-P/T) for the early identification of children with
Developmental Delay

Alaina Krambach

Description and Diagnosis

Developmental delay is an umbrella term used to describe a child that is maturing slowly in one or more areas of development: physical, cognitive, communication, social, and emotional. Common delays can be present in fine or gross motor skills, intellectual abilities or cognitive skills, speech and language, social skills, emotional control, or self-care skills (Boyse, 2010; NICHCY, 2009). Possible symptoms associated with motor skill practice in children with developmental coordination disorder: An IMRI study. International Journal of Developmental Neuroscience, 29, 145–152. doi:10.1016/j.ijdevneu.2010.12.002

Incidence and Prevalence

- Developmental or behavioral disability: 17% of children in the United States are diagnosed yearly.
- Intellectual disability: The most common developmental delay: approximately 1.5 million individuals between the ages of 6 and 64 years in the United States are diagnosed (Centers for Disease Control and Prevention [CDC], 2005).

Cause and Etiology

Developmental delay can be idiopathic or have a definite cause. Some possible causes of developmental delay can include the following:

- Chromosomal or genetic disorders: Down syndrome, fragile X syndrome, Prader-Willi syndrome, Williams syndrome, and phenylketonuria (PKU)
- Prenatal development: maternal alcohol use and infections (i.e., rubella)
- Perinatal: infections, premature birth, and anoxia
- Postnatal: malnutrition, lead or mercury poisoning, infections (i.e., whooping cough, measles, and meningitis), brain injury, anoxia, and epilepsy (AAIDD, 2011; Boyse, 2010; Children, Youth, and Women's Health Service [CYMHS], 2010; NICHCY, 2009)

Typical Course, Symptoms, and Related Conditions

Individuals with developmental delay can learn and develop with added supports and early intervention from health care professionals and caregivers. Individuals with developmental or intellectual delay typically have symptoms throughout the life course. Adaptations, modifications, and learned strategies can promote the individual's cognitive, social, physical, and communication skills (CYMHS, 2010). Possible symptoms or warning signs may be seen during the appropriate developmental milestone windows in different areas of development including:

- **Behavioral**: inability to focus or pay attention to tasks, frustrated at simple tasks, exhibits aggressive or violent behaviors, avoids making eye contact with others
- **Gross motor**: atypical muscle tone (hypertonia or hypotonia), experiences trouble maintaining proper posture, may be more clumsy than other children
- **Vision**: difficulty tracking, frequently rubs eyes, adjusts or strains head and neck to look at an object, eyes may be crossed or turned, difficulty finding or picking up small objects
- **Hearing**: atypical volume when talking, turns body toward sound to hear, difficulty following directions, may not startle at loud noise, may not develop sounds or words (Leslie et al., 2008)

Conditions related to developmental delay can include Down syndrome, fetal alcohol syndrome, autism, pervasive developmental disorder, cerebral palsy, and epilepsy (AAIDD, 2011; CYMHS, 2010). Other terms that are closely related to developmental delay include the following:

- **Global developmental delay**: used to describe limitations in all areas of development
- **Intelliectual delay**: used for children, usually under the age of 5 years, to describe limitations in intellectual functioning and cognitive skills (reasoning, learning, problem solving) if it is uncertain that the delay is permanent
- **Intellectual disability**: term used for individuals with an intellectual delay that affects cognitive, social, and practical skills across the life course; IQ test results of 75 or less can indicate an intellectual disability classified as mild, moderate, severe, or profound (AAIDD, 2011)

Interdisciplinary Interventions

Special Education

Through special education, an individualized education plan (IEP) is developed to promote specific educational programming and resources for each student. Each IEP is designed specifically for the individual and includes detailed information about the student's needs and academic requirements (Boyse, 2010; NICHCY, 2009).

Audiology or Hearing Services

Interventions for children with developmental delay can include testing for hearing loss or hearing impairments. Audiologists may suggest a cochlear implant or introduce alternative forms of nonverbal communication (NICHCY, 2009).

Speech and Language Services

Interventions focus on improving verbal and introducing nonverbal communication. Nonverbal communication may include sign language, Mayer-Johnson symbols, or communication boards. Also, interventions may focus on muscular strength to help with dysphagia, a condition that results in difficulty with or inability to swallow (NICHCY, 2009).

Medical Services

Medical services include testing for chromosomal abnormalities, monitoring health, and prescribing antibiotics for infections in early childhood (NICHCY, 2009).
Occupational Therapy and the Evidence

**Nutrition Services**
Intervention focuses on maternal and individual nutrition to help monitor symptoms. Specifically for individuals with PKU, a diet that is low in phenylalanine is prescribed during pregnancy and throughout the individual’s life course to promote physical and mental health (NICHCY, 2009; Van Voorhees, 2009).

**Physical Therapy**
Physical therapists may work with individuals to improve gross motor skills including gait, range of motion, and strength (NICHCY, 2009).

**Psychological Services**
Counseling and training can be provided to the individual and family to educate caregivers and regulate emotional stress, aggressive behavior, and depressive symptoms (NICHCY, 2009).

**Occupational Therapy Evaluations**

- **Functional Screenings and Assessments**
  - Pediatric Evaluation of Disability Inventory (PEDI): assesses functional skills
  - Functional Independence Measure for Children (WeeFIM)
  - Screening Test for Evaluating Preschoolers (FirstSTEp): identifies risk for delays
  - Bayley Scale of Infant Development-III (BSID-III): developmental skills and behaviors
  - Miller Assessment for Preschoolers (MAP): assesses sensory, motor, and cognitive skills
  - School Function Assessment (SFA): performance of student’s tasks and activities

- **Motor Coordination**
  - Bruininks-Oseretsky Test of Motor Proficiency (BOT-2): gross and fine motor function
  - Test of Infant Motor Performance (TIMP): posture and control functions
  - Peabody Developmental Motor Scales-2 (PDMS): motor development
  - Beery Test of Visual Motor Integration (Beery VMI): integration of vision and motor

- **Sensory and Sensory Motor Processing**
  - Sensory Integration and Praxis Test (SIPT): praxis, sensory processing, and integration
  - Sensory Processing Measure (SPM): sensory processing abilities in the home or school
  - Sensory Profile: the ability to process sensory information and the effects on function

- **Social Participation and Functioning**
  - Children’s Assessment of Participation and Enjoyment (CAPE) and Performance for Activities of Children (PAC): participation and preferences in nonschool activities
  - Canadian Occupational Performance Measure (COPM): activity and performance

- **Adolescent and Adult Activities of Daily Living and Instrumental Activities of Daily Living**
  - Functional Independence Measure (FIM): impact of disability of functional status
  - Transition Planning Inventory (TPI): identifies comprehensive transitional needs
  - Assessment of Motor and Process Skills (AMPS): personal and instrumental activities of daily living (ADL)

- Kohlman Evaluation of Living Skills (KELS): evaluates ability to live in the community
- Test of Grocery Shopping Skills (TOG-SS): ability to complete grocery shopping

**Occupational Therapy Interventions**

**Early Intervention**
Based on an individual family service plan (IFSP), therapy is provided for the family when the child is 3 years or younger in their natural environment. Interventions focus on the relationship of the infant and caregivers through play, identify strategies to implement during daily routines, suggest modifications for everyday activities, and introduce use of adaptive equipment (Frolek Clark, Jackson, & Polichino, 2011).

**Specific Skills Training**
Fine and gross motor interventions continue as the child matures and transitions from an IFSP onto an IEP. Interventions focus on increasing awareness and exploration of the environment; improving functional activities such as self-care, handwriting, and toileting; and education about safe and effective positioning (Frolek Clark et al., 2011).

**Assistive Technology**
Occupational therapists can work with the individual and family to determine special adaptive equipment and assistive technology to help with ADL (Boyse, 2010). Special considerations should be made for each individual and his or her caregiver to ensure that the equipment is the least restrictive device. Factors to consider include social implications of using equipment, the individual’s ability to use and troubleshoot technological equipment, and the long-term influence on the individual’s participation in the community (Hammel, 2003).

**Sensory Integration**
Sensory integration may help individuals with developmental delay who also have sensory modulation difficulties to help regulate emotions related to sensory stimuli in their environment (Roberts, King-Thomas, & Boccia, 2007; Shaaf & Miller, 2005).

**Transition Planning**
Transition planning begins when the individual is 14 years old and focuses on leaving the school environment and IEP for the community. The goal in transition planning is for the individual to be as independent as possible in the community (Kardos & White, 2006).

**Supported Employment**
Focusing on specific task training in a professional environment may increase individual self-efficacy, promote autonomy, and enhance productivity and participation within the community (Siporin & Lysack, 2004).

**Occupational Therapy and the Evidence**
Occupational therapists are part of an interdisciplinary team that includes caregivers, teachers, physical therapists, speech-language pathologists, nutritionists, and medical professionals (Frolek Clark et al., 2011). Occupational therapists may be included in the individual’s IFSP for early intervention services because research has shown that early intervention therapy before the age of 3 years has the most significant improvement on an individual’s development. Appropriately, recognizing a developmental delay early and identifying services has been shown to effectively enhance the lives of the individual and family throughout the life course (Edwards & Sarwark, 2005). As individuals age, it is important to include them in goal setting and intervention planning on their IEP because they can best express their needs and desires (Frolek Clark et al., 2011). Once individuals terminate the academic setting and IEP services, it is important to integrate them into the community through supportive employment opportunities to enhance their self-efficacy (Siporin & Lysack, 2004).
Interventions to increase fine and gross motor development early in an individual's life have shown to have lasting positive effects on physical, social, academic, and psychological skills (Riethmüller, Jones, & Okely, 2009). Using power mobility devices during early intervention therapy shows an increase later in life with skill transfer to powered wheelchairs (Deitz, Swith, & White, 2002). Interventions to increase self-modulation and awareness of emotional regulation have significant positive effects on the individual's social and academic performances. Sensory integration may help individuals to regulate emotions and focus on tasks in the classroom and interactions with peers (Roberts et al., 2007; Schaad & Miller, 2005). In combination with sensory integration techniques, sound therapy has positive effects on individual's emotional regulation (Hall & Case-Smith, 2007).

Caregiver Concerns

Often, being a caregiver to an individual with a developmental or intellectual delay is a lifelong role, and special considerations include seeking education for effective interventions and therapy, support from other families with developmental delay, and education on advocating for individuals and families with developmental delay (Hanson, 2003; O'Sullivan, 2007).

Resources

Organizations

- American Association of Intellectual and Developmental Disabilities
  501 3rd Street, NW Suite 200
  Washington, DC 20001
  Website: http://www.aaiidd.org

- National Down Syndrome Society
  666 Broadway
  New York, NY 10012
  Telephone: 1-800-221-4602
  Website: http://www.ndss.org

Books


Journals

- Journal of Intellectual Disability Research
- Research in Developmental Disabilities

Websites

- How Kids Develop
  Website: http://www.howkidsdevelop.com/index.html
  A Website that offers parents an easy-to-read guide about developmental milestones and possible steps to take if a child seems to have a delay in achieving one or more developmental milestones.

- Parent to Parent USA (P2P USA)
  Website: http://www.p2pusa.org
  An online resource for parents of children with a developmental delay, to seek emotional and informational support.

References


Eating Disorders

Theresa Griffin

Description

Severe changes in eating behavior and excessive concern about body shape or weight characterize eating disorders (Franco, 2011). As many as 24 million Americans and 70 million individuals worldwide have
Interdisciplinary Interventions

an eating disorder (The Renfrew Center Foundation, 2003). Women between the ages of 12 and 25 years make up 90% of Americans with eating disorders (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). According to a 10-year study, 86% of individuals with eating disorders reported onset by the age of 20 years, 10% at 10 years or younger, 33% between ages 11 and 15 years, and 43% between ages 16 and 20 years (National Association of Anorexia Nervosa and Associated Disorders [ANAD], 2011b). Additionally, 77% of those individuals reported a duration of 1 to 15 years (ANAD, 2011b). Eating disorders have the highest mortality rate of any mental illness (Sullivan, 1995). An estimated 480,000 individuals die each year due to eating disorders complications (The Renfrew Center Foundation, 2003).

Classifications

According to the American Psychiatric Association’s (APA; 2000) Diagnostic and Statistical Manual of Mental Health Disorders (4th ed., text rev.; DSM-IV-TR), eating disorders can be classified into three categories: anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified (EDNOS).

Anorexia nervosa is characterized by severe dieting and/or purging, resulting in weight loss at least 15% below normal body weight (ANAD, 2011a). The disorder has two subtypes: a restrictive type and a binge eating or purging type. With the restrictive type, an individual will restrict food intake and possibly exercise excessively to maintain an unhealthy weight. With the binge eating or purging type, an individual simultaneously restricts food intake and engages in binge eating or purging behavior like self-induced vomiting or misuse of laxatives and diuretics (Franco, 2011). The average onset occurs between the ages of 17 and 19 years. Anorexia nervosa is the third most common chronic illness among adolescents (ANAD, 2011a). It has a higher mortality rate than any other cause of death among females aged 15 to 24 years (ANAD, 2011b).

Bulimia nervosa is characterized by recurrent binging and purging. Its two subtypes include a purging and nonpurging type. The purging type involves self-induced vomiting or misuse of laxatives, diuretics, or enemas to purge the body of calories consumed. The nonpurging type involves inappropriate compensatory behaviors like fasting and excessive exercise to prevent weight gain (Franco, 2011). As many as 7% of U.S. females have had bulimia nervosa at some point in their lives. At any given time, an estimated 5% of the U.S. population has undiagnosed bulimia nervosa (National Eating Disorders Association [NEDA], 2008).

The category EDNOS, the most common eating disorder diagnosis in clinical practice, encompasses all other eating disorders that exhibit symptoms of the other two categories but do not strictly fall into either category. This includes binge eating disorders. Current estimates suggest that binge eating disorders affect up to 4% of the U.S. population (NEDA, 2008).

Etiology

Although no defined cause has been established, it is believed that genetics can increase the risk of developing an eating disorder by 50% to 80% (The Alliance for Eating Disorder Awareness [The Alliance], 2011). Social factors, such as media; psychological factors, such as depression; and interpersonal factors, such as a history of abuse or traumatic life events, may all contribute to the development of an eating disorder (The Alliance, 2011).

Symptoms

Symptoms for anorexia nervosa include the following:
- Avoidance of food, eating foods in small amounts, weighing food, or counting calories
- Absent or irregular menstrual periods
- Hair loss
- Fatigue and fainting

Symptoms for bulimia nervosa include the following:
- Repeated episodes of binging and purging
- Broken blood vessels in the eyes
- Abuse of laxatives, diuretics, or diet pills
- Frequent dieting

Symptoms for EDNOS include the following:
- Periods of uncontrolled, impulsive, or continuous eating beyond the point of fullness
- Sporadic fasts or repetitive diets
- Anxiety, depression and loneliness, as well as feelings of shame after binge eating (ANAD, 2011a; NEDA, 2004; SAMHSA, 2010)

Course and Prognosis

The presentation of eating disorders varies substantially in every individual. Although the DSM-IV-TR allows for specific diagnosis of eating disorders, many individuals will demonstrate a mixture of symptoms from all of the categories. For instance, about 50% of individuals diagnosed with anorexia nervosa will develop bulimic symptoms, and about 40% of individuals diagnosed with bulimia nervosa will develop anorexic symptoms (PsychCentral, 2010). Without medical treatment, up to 20% of individuals with eating disorders die. With treatment, about 60% make full recoveries and 20% will make partial recoveries (Healthy Place, 2008).

Risk Factors

Factors increasing the risk of developing an eating disorder include the following:
- Gender: Being female increases one’s risk.
- Age: Individuals in their teens and late 20s are at greater risk.
- Family history: Having a parent or a sibling with an eating disorder increases one’s risk.
- Family influence: Individuals are more susceptible to developing an eating disorder if their parents or siblings are overly critical or if they get teased about their appearance.
- Emotional disorders: Individuals with depression, anxiety disorders, or obsessive-compulsive disorder are more likely to develop an eating disorder (Mayo Clinic, 2010).

Complications

Complications of eating disorders may include any of the following: stunted growth, heart disease, depression, suicidal thoughts or behaviors, bone loss, seizures, severe tooth decay, and kidney damage (Mayo Clinic, 2010; NEDA, 2005; The Renfrew Center Foundation, 2003).

Interdisciplinary Interventions

Treatment for eating disorders depends on the specific type that an individual has. Professionals from various disciplines may collaborate to address the medical, dental, and nutritional components of this disorder. Treatment typically includes psychotherapy, nutrition education, and medication (Mayo Clinic, 2010). Additionally, because depression, substance abuse, and anxiety disorders often co-occur with eating disorders, it is also important to seek medical treatment for these conditions if necessary (Healthy Place, 2008).

Psychotherapy

The emphasis of individual therapy is on replacing unhealthy thoughts, behaviors, and habits with healthy ones. One specific type of psychotherapy called cognitive behavioral therapy is often used because it addresses the disorder’s behavioral components, as well as the irrational beliefs and illogical thought patterns related to body image, weight, and food (ANAD, 2011c).
Nutrition Education
Health care providers will help individuals establish an eating plan to achieve and maintain a healthy weight (ANAD, 2011c; SAMHSA, 2010). Emphasis is placed on a healthy diet and the development of normal eating habits.

Medication
Medications will not cure eating disorders, but they can help control binging and purging behaviors or manage preoccupation with weight loss. Additionally, antidepressants and antianxiety medications can help with any symptoms of depression or anxiety (Mayo Clinic, 2010).

Occupational Therapy Evaluations

Occupational Performance and Participation Level
- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Model of Human Occupational Screening Tool (MOHOST): overview of occupational functioning
- Occupational Self Assessment (OSA): self-report establishing priorities for change

Client Factors Level
- Depression, Anxiety, Stress Scale (DASS-42): self-report that measures the extent to which an individual has experienced these negative emotional states over the last week
- Domestic and Community Skills Assessment (DACSA): assesses an individual’s performance on essential tasks for living in the community
- Eating Disorder Inventory: a self-report scale measuring symptoms of disordered eating

Occupational Therapy Intervention

Occupational Performance
- Menu planning and meal preparation
- Development of independent living skills and lifestyle redesign
- Learning and developing leisure interests
- Learning money and time management skills (Chipman, 2009)

Sensory
- Challenging distorted beliefs with accurate, multisensory information including touching, smelling, laughing, seeing, talking, and hearing (Chipman, 2009)
- Teaching sensory preferences (Chipman, 2009)

Psychosocial
- Body image improvement
- Stress management
- Reflective writing (Haerti, 2007)

Education and Advocacy
- Relapse prevention
- Communication and assertion training

Caregiver Concerns
Treasure et al. (2008) found that caregivers and family members are often confused by the meaning of an eating disorder because they may share the traits of anxiety, compulsivity, and abnormal eating behaviors that contribute to their loved one’s eating disorder. Additionally, family members may become critical, hostile, or overprotective, and they may feel guilt and shame because of their loved one’s eating disorder. Treasure et al. (2008) suggested that these reactions may cause family members to accommodate or enable symptoms of the disorder in their loved ones. Therefore, caregivers and family members may benefit from strategies to help them to cope with and assist with a family member’s eating disorder. Johansson and Johansson (2009) highlighted the importance of offering support to caregivers by providing adequate information to them, and they found that strategies such as dinner arrangements and shared responsibility of food preparation helped caregivers handle the situation better. Balance among work, leisure, and rest is emphasized for both the caregiver and the individual with an eating disorder.

Occupational Therapy and the Evidence
Occupational therapy (OT) has a role in helping individuals cope with and recover from an eating disorder. Eating disorders can interfere with prior roles and occupations, as the new primary occupation becomes the unhealthy eating disorder and the rituals or behaviors needed to sustain it (Chipman, 2009). As further illustration, Singlehurst, Corr, Griffiths, and Beaulieu (2007) studied time use patterns of individuals with binge eating disorder in order to examine the disorder’s impact on daily occupations. The results indicated that the time use patterns of individuals with binge eating disorder were similar to those of individuals without the disorder, with the exception of eating and socializing. The findings suggest that the disorder has an impact on self-care, leisure, and productivity occupations, all of which are areas wherein occupational therapists can address in therapy. It is important for occupational therapists to keep this in mind when trying to understand the meaning and purpose of occupational engagement of an individual with an eating disorder (Singlehurst et al., 2007).

Additionally, an occupational therapist can address low self-esteem, anxiety, and altered body image that may accompany an eating disorder. By looking specifically at OT’s role in working with individuals with altered body images, Shearsmith-Farthing (2001) found that OT’s perspective on activity, which indicates that activity can act as a facilitator of change in occupational performance, can adequately address concerns related to altered body image. However, it is recognized that education and training for occupational therapists is essential if OT is to expand to this area of practice.

Orchard (2003) discusses how conflicts can impinge a therapeutic relationship when a therapist and a client with an eating disorder have differing viewpoints. These differences can limit the client’s engagement in the change process. It is suggested that motivational interviewing will enable the therapist and the client to work together towards reaching therapeutic goals (Orchard, 2003). Ultimately, occupational therapists can help a client with an eating disorder to explore new interests and to develop new behaviors while setting practical, healthy goals (Chipman, 2009).

Resources

Associations
- National Association of Anorexia Nervosa and Associated Disorders
  PO Box 7 Highland Park, IL 60035
  1-847-831-3438
  http://www.anad.org/
  A nonprofit organization dedicated to the prevention and alleviation of eating disorders.

- National Eating Disorders Association
  603 Stewart Street, Suite 803 Seattle, WA 98101
  1-800-931-2237
  http://www.nationaleatingdisorders.org
  An organization that promotes prevention and awareness of eating disorders.

Books
  A straightforward reference guide by a writer and therapist with more than 20 years of experience in treating eating disorders.

  The memoir of an actress who writes candidly about having anorexia.
Prevalence

Journals
- American Journal of Psychiatry
- Eating Disorders: The Journal of Treatment and Prevention
- International Journal of Eating Disorders

Websites
- The Renfrew Center Foundation
  http://www.renfrew.org
  A nonprofit organization also connected to treatment facilities, which works on professional and consumer education, prevention, research, and access to treatment.
- The Elisa Project: Overcoming Eating Disorders Through Knowledge
  http://www.theelisaproject.org/
  An organization dedicated to the prevention and effective treatment of eating disorders through support, awareness, education, and advocacy.

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what-causes-eating-disorders
eating-disorders/90020
for-parents-eating-disorders-are-a-serious-mental-health-issue/menu-id-58/

Hand and Wrist Conditions

Alissa Bonjuklian

Description
The American Occupational Therapy Association (AOTA) considers hand therapy a specialty practice area “concerned with treating orthopedic-based upper-extremity conditions to optimize the functional use of the hand and arm” (Amini, 2011b). Diagnostic conditions regularly treated by occupational therapists specializing in this area affect the integrity of all types of tissue present in the upper extremity. Fractures, particularly of the wrist, are commonly treated in the hand clinic. Nerve-related conditions include nerve entrapments, such as in carpal tunnel syndrome, and nerve lacerations and repair. Tenon- and ligament-related conditions include tendonitis, trigger finger, lateral and medial epicondylitis, De Quervain syndrome, and sprains. Care of postoperative wounds as well as burns and accompanying complications represent common skin-related conditions treated by occupational therapists. Other soft tissue conditions, such as Dupuytren’s disease, infections, and tumors, may present problems that require the expertise of an occupational therapist specializing in the treatment of the upper extremity (Cooper, 2007).

Prevalence
Epidemiological prevalence data related to general hand and wrist conditions typically pertains to the worker population. Hand injuries are consistently ranked as the second most common workplace injury; each year, 1,080,000 emergency room visits are generated by workers with hand injuries (Centers for Disease Control and Prevention, 2001). Injuries to the upper extremity account for over 23% of all workplace injuries, and carpal tunnel syndrome, in particular, accounts for an average of 28 days of lost work (U.S. Bureau of Labor Statistics, 2008). The prevalence rates of other hand or wrist conditions are as follows:

- Over one million adults, 50 years and older, were treated for fall-related forearm and/or wrist fractures in U.S. hospital emergency departments between 2001 and 2007 (Orches & Martinez, 2010). It has been estimated that fractures of the humerus, forearm, and wrist account for 27% of all fractures among older adults (Stevens, Corso, Finkelstein, & Miller, 2006).
- Dupuytren’s disease is present in 2% to 42% of the international population. The wide range is due to the gross prevalence in Northern European countries and near absence in other regions (Kakar, Giuffre, Skeete, & Elhassan, 2010).
- Trigger finger, a common tendon disorder, is prevalent in roughly 2% of the general population (McAuliffe, 2010).
- Carpal tunnel syndrome, a common nerve disorder, is estimated to be present in 4 to 10 million American adults (Lawrence et al., 2008).
- Mild, moderate, or severe hand osteoarthritis is present in approximately 27% of American adults older than age 26 years. This number reaches 80% among older adults, although only a minority experience pain as a result (Lawrence et al., 2008).
Etiology and Risk Factors

Due to the diverse nature of hand and wrist conditions, the range of causes and risk factors is quite broad. These conditions may be caused by blunt trauma or more subtle origins. Hand and wrist conditions are sometimes idiopathic; clients may report symptoms beginning spontaneously, following mild local trauma or a minor change in routine, such as performing unaccustomed manual activity (McAuliffe, 2010). Other possible causes of and risk factors for hand and wrist conditions include the following:

- **Trauma**: Acute traumatic incidents such as falls or job-related accidents can directly result in crush injuries, nerve lacerations, or fractures or breaks in the bones of the upper extremity. Falling is indeed cited as the “strongest single risk factor for fractures in older adults” (Thompson, Evitt, & Whaley, 2010, p. 213). Experience of a past traumatic injury may serve as a risk factor for repeat or recurring incidents in two ways: the integrity of the local tissue may be jeopardized, rendering it more vulnerable to future damage, or, particularly in the case of fall-related fractures, the initial fall may serve as the “sentinel event” that precedes a “cascade of reduced mobility,” which could lead to future falls and further injury (Thompson et al., 2010, p. 213).

- **Job-related factors**: Various aspects of occupational activity have been widely cited as both causes of and risk factors for upper extremity impairments in workers. Work factors, which have been linked with increased risk of upper extremity problems, include experience of physical strain during job performance (Aluoch & Vao, 2009), high perceived job-related stress, and monotonous or repetitive forceful work (Bongers, Kromer, & ter Laak, 2002).

- **Personal factors**: Age is a personal risk factor that may put an individual at greater risk for acquiring a particular hand or wrist condition. Older age has been associated with an increased risk of fall-related fractures (Thompson et al., 2010) and osteoarthritis (Lawrence et al., 2008), whereas middle age is considered a risk factor for tendon-related conditions such as carpal tunnel syndrome and tendonitis (Kakar et al., 2010; McAuliffe, 2010). Preexisting conditions may predispose individuals to other disorders; diabetes mellitus is considered a risk factor for both Dupuytren’s disease (Kakar et al., 2010) and tendon disorders (McAuliffe, 2010), and low bone mineral density, such as in osteopenia or osteoporosis, is considered a risk factor for fractures (Thompson et al., 2010). An individual’s gender may also alter his or her risk of developing an upper extremity condition: males were nine times more likely to exhibit signs and symptoms necessitating surgical intervention of Dupuytren’s disease (Kakar et al., 2010), whereas females accounted for 80% of adults treated for fall-related forearm and/or wrist fractures from 2001 to 2007 (Oresc & Martinez, 2010).

- **Lifestyle factors**: Certain lifestyle choices may alter the likelihood of developing hand or wrist conditions. Smoking and heavy alcohol consumption increase the likelihood of developing Dupuytren’s disease (Kakar et al., 2010), and low dietary calcium intake is a risk factor for upper extremity fracture (Thompson et al., 2010).

Symptoms

Although clinical presentation of symptoms will vary by client and by specific diagnosis, common symptoms across many hand and wrist conditions include pain, swelling, tingling, numbness, weakness, and stiffness (Cooper, 2007). In addition to physical symptoms, disruption in the client’s ability to manage daily occupations is a major complaint secondary to hand or wrist conditions.

Precautions

- **Skin integrity**: If a client’s condition indicates provision of a splint or cast, it is important to regularly check the underlying skin for redness, irritation, or any irregularity.

- **Pain**: Pain experienced during therapy is a sign that injury is occurring. Irreversible damage can result when clients, caregivers, or therapists injure tissue by applying painful force during activities such as stretching (Cooper, 2007).

- **Modalities**: All physical agent modalities should be used with caution. For one example, cryotherapy should not be used for clients with nerve injury or repair, sensory impairment, peripheral vascular disease, Raynaud’s phenomenon, lupus, leukemia, multiple myeloma, neuropathy, or cold intolerance (Cooper, 2007).

Interdisciplinary Interventions

Rehabilitation

Rehabilitation may be recommended for to maximize the client’s level of functioning in the period of time following a surgery. Rehabilitation is provided by an occupational or physical therapist who specializes in the treatment of the upper extremity. The therapist may be a certified hand therapist (CHT). Responsibilities of therapists practicing in this specialty area include the following:

- Evaluation of relevant client factors, occupations, and environments
- Making recommendations about the client’s prognosis and plan of care
- Preparing and implementing an evidence-based therapeutic intervention plan that is individually tailored for each client

Surgery

A hand or orthopedic surgeon may be consulted if a conservative approach to treatment is not effective. Common operative procedures include arthrodesis, arthroplasty, bone grafts, synovectomy, tenosynovectomy, tendon release, and tendon repair. The selection of the procedure is a function of the diagnosis’s treatment protocol as well as client factors such as age and personal preference (Amadio, 2007).

Medications

Medications, administered orally or via injection or iontophoresis, may be prescribed to help alleviate problematic symptoms or to assist in the treatment of certain conditions. Commonly prescribed medications include the following:

- Pain relievers
- Anti-inflammatory agents, that is, nonsteroidal anti-inflammatory drugs (NSAIDs) or corticosteroids
- Disease-modifying antirheumatic drugs (DMARDs)
- Botulinum toxin A (Amadio, 2007)

Occupational Therapy Evaluations

Occupation-Based and Quality of Life

- Canadian Occupational Performance Measure (COPM): semistructured interview that elicits the client’s self-assessment of performance and satisfaction in various areas of occupation over time
- Disabilities of the Arm, Shoulder, and Hand (DASH): a standardized questionnaire that rates disability and symptoms related to upper extremity musculoskeletal disorders
- Modified Hand Injury Severity Scale (MHISS): standardized scale to describe the pattern and severity of hand injury and to predict the amount of time needed to return to work
- Short Form-36 (SF-36): standardized scale that measures health related to quality of life

Biomechanical

- Range of motion, that is, goniometry
- Strength, grip, and pinch
- Sensory testing
- Edema
- Skin integrity
- Coordination testing

Occupational Therapy Intervention

Occupational therapy (OT) intervention for clients with upper extremity injuries or surgery focus on enabling clients to regain functional use of
Occupational Therapy and the Evidence

OT interventions have been found to generate positive functional outcomes in the area of hand and wrist rehabilitation. Case-Smith (2003) examined the effects of an OT intervention, which included splinting, therapeutic exercise, ADL, and physical agent modalities, for a group of 33 adults with various upper extremity conditions. Each client received an average of 13 hours of treatment. In addition, Case-Smith used the COPM to design intervention so that treatment remained consistent with the clients’ goals and priorities. Comparison of preintervention and post-intervention scores for three of the four outcome measures revealed statistically significant positive differences. Clinical interpretations of these data indicate improvement in the clients’ self-ratings of performance and satisfaction in their chosen goal areas, improvement in ADL performance, decreased levels of perceived pain, and improvements in social participation and leisure activities. Of the 25 participants who were employed at baseline, 20 returned to their prior occupations. A recent systematic review of literature pertaining to OT interventions for conditions of the forearm, wrist, and hand supports general use of the intervention techniques used in the Case-Smith study (Amini, 2011a). Jack and Estes (2010) describe a case study to illustrate the positive outcomes generated when therapists apply a client-centered, occupation-based approach to all levels of OT services. In the case study, initial evaluation, goal setting, and intervention strictly adhered to a biomechanical approach. The client became discouraged and her motivation decreased due to only minimal objective gains on nonfunctional biomechanical measures. She expressed disappointment that the major functional gains she was experiencing were not reflected in the biomechanical goals. The focus of intervention then shifted to occupational adaptation, and the COPM was administered so the client could self-identify functional goals. Biomechanical intervention techniques were supplemented with collaborative problem solving and identification of compensatory techniques to address the functional goals. Upon reassessment, COPM scores demonstrated significantly improved self-ratings of performance and satisfaction in the identified functional goals. Combining biomechanical principles with a more function-oriented, client-centered approach improved the client’s motivation and outlook and provided documentation that was more relevant to the functional gains experienced by the client.

References

Their affected body part so they may participate in necessary and desired occupations. Both biomechanical and occupation-based approaches should directly address clients’ relevant functional goals. Adjunct therapies can be used to prepare clients for function-based activity, and task and environmental modifications to enhance occupational performance should supplement client factor interventions (Case-Smith, 2003; Jack & Estes, 2010; Skiven, Osterman, Fedorczyk, & Amadio, 2011).

### Physical agent modalities

Modalities such as heat or ice are typically applied as an adjunct to OT intervention. Applied heat via heat packs, paraffin baths, fluidotherapy, or whirlpool may decrease pain and stiffness and improve circulation. Cold modalities may reduce pain, inflammation, and metabolic activity of the area being iced. For clients with acute soft tissue injuries, a combination of ice and exercise may reduce posttrauma and postsurgical pain (Amini, 2011a).

### Scar management

Scars, whether a direct result of the injury or corrective surgery, are common concern for clients with hand and wrist injuries. Scar management techniques include massage and silicone gel sheeting. Silicone gel sheeting reduces hypertrophic scarring and increases the elasticity of established scars. Scar massage can reduce pain and itching from scars associated with burns, decrease anxiety, and improve mood (Amini, 2011a).

### Splinting

Splints are typically fabricated for, or provided to, clients with hand injuries. Although the purpose of each splint is a function of the client’s condition, common purposes are to provide support, immobilize specific joints, or block a specific motion. Splinting has been found to be a “beneficial preparatory technique” for reducing signs and symptoms of osteoarthritis and carpal tunnel syndrome (Amini, 2011a, p. 30).

### Function-based activities

Function-based activities are intervention activities that simulate activities of daily living (ADL) tasks as opposed to engaging clients in contrived therapeutic exercise (Amini, 2011a). In one randomized control trial, individuals with acute and chronic hand injuries who were given ADL simulations had statistically significant higher levels of improvement in areas assessed than did those who underwent traditional exercise-based treatment (Guzelkucuk, Duman, Taskaynatan, & Dincer, 2007).

### Therapeutic exercise

Therapeutic exercise typically includes range of motion, strengthening, endurance building, and motor control exercises. Depending on the client’s needs, preferences, and ability, exercise focus may be on only one body part or the whole body. For clients with rheumatoid arthritis, “appropriate exercise” may lead to long-term changes in strength and short-term changes in hand stiffness. For clients with osteoarthritis, aerobic exercise may improve functional status as determined by client reports of pain and ability to engage in desired activities. A 2-year full-body strengthening program including gripper exercise has been associated with improved static and dynamic grip strength among adults with osteoarthritis (Amini, 2011a).

### Occupational Therapy and the Evidence

OT interventions have been found to generate positive functional outcomes in the area of hand and wrist rehabilitation. Case-Smith (2003) examined the effects of an OT intervention, which included splinting, therapeutic exercise, ADL, and physical agent modalities, for a group of 33 adults with various upper extremity conditions. Each client received an average of 13 hours of treatment. In addition, Case-Smith used the COPM to design intervention so that treatment remained consistent with the clients’ goals and priorities. Comparison of preintervention and post-intervention scores for three of the four outcome measures revealed statistically significant positive differences. Clinical interpretations of these data indicate improvement in the clients’ self-ratings of performance and satisfaction in their chosen goal areas, improvement in ADL performance, decreased levels of perceived pain, and improvements in social participation and leisure activities. Of the 25 participants who were employed at baseline, 20 returned to their prior occupations. A recent systematic review of literature pertaining to OT interventions for conditions of the forearm, wrist, and hand supports general use of the intervention techniques used in the Case-Smith study (Amini, 2011a). Jack and Estes (2010) describe a case study to illustrate the positive outcomes generated when therapists apply a client-centered, occupation-based approach to all levels of OT services. In the case study, initial evaluation, goal setting, and intervention strictly adhered to a biomechanical approach. The client became discouraged and her motivation decreased due to only minimal objective gains on nonfunctional biomechanical measures. She expressed disappointment that the major functional gains she was experiencing were not reflected in the biomechanical goals. The focus of intervention then shifted to occupational adaptation, and the COPM was administered so the client could self-identify functional goals. Biomechanical intervention techniques were supplemented with collaborative problem solving and identification of compensatory techniques to address the functional goals. Upon reassessment, COPM scores demonstrated significantly improved self-ratings of performance and satisfaction in the identified functional goals. Combining biomechanical principles with a more function-oriented, client-centered approach improved the client’s motivation and outlook and provided documentation that was more relevant to the functional gains experienced by the client.

### Resources

#### Associations and Websites

- American Society of Hand Therapists: http://www.ashth.org
- American Society for the Hand: http://www.ashs.org
- National Institute for Occupational Safety and Health: http://www.cdc.gov/niosh/

#### Books

- A prize-winning history professor describes her experience with arthritis in a way that is as much poetry as powerful analysis.

#### References

Prevalence is highest among African Americans or Blacks (1.8%), followed by Hispanics and Latinos (0.6%) and non-Hispanic Whites (0.2%) (CDC, 2011b).

Cause and Etiology

The primary mode of HIV transmission is through unprotected sexual contact with someone who is infected with HIV. Transmission is highest among men who have sex with men. It can also be transmitted, in order of decreasing risk, via heterosexual anal sex, vaginal sex, and oral sex (both same sex and opposite sex). Correct and consistent use of latex condoms during sexual intercourse greatly decreases the chances of HIV transmission. Nonsexual modes of transmission include, but are not limited to, the following:

- Sharing needles/syringes used for injection of illicit drugs (the second most common mode after homosexual anal sex)
- Mother-to-child transmission during pregnancy, birth, or breastfeeding
- Accidental needle sticks (i.e., in medical settings)
- Unsafe or unsanitary blood transfusions or injections (less common in the United States)

HIV is not spread by air or water, insects, saliva, sweat, tears, casual contact, or anything that doesn’t involve blood, semen, vaginal fluid, or breast milk (CDC, 2011a).

Typical Course, Symptoms, and Related Conditions

After infection with HIV occurs, a person typically begins to develop antibodies in 2 to 8 weeks; although in rare cases, this may take up to 6 months. Although tests for HIV may not detect the virus at this time, it is still active and very transmissible. Presentation of symptoms varies between individuals. Symptoms that may occur in early stages of HIV infection appear flu-like and include fever, headache, tiredness, and enlarged lymph nodes (National Institute of Allergy and Infectious Diseases [NIAID], 2009a). As the virus continues to destroy the immune system, symptoms progress and often include the following:

- Rapid and extreme weight loss
- Repeating fever
- Extreme fatigue
- Prolonged swelling of lymph glands
- Extended bouts of diarrhea
- Sores in the mouth, anus, or genitals
- Pneumonia or other severe illnesses
- Coughing and shortness of breath
- Blotches or on the skin or inside the mouth, nose, or eyelids
- Numbness or sensation loss, particularly in extremities
- Blurred and distorted vision
- Decrease in strength, range of motion (ROM)
- Memory loss, depression, and other neurological disorders (NIAID, 2009a)

Although there is no cure for HIV/AIDS, the virus can be controlled and the progression of symptoms slowed with the use of anti-HIV drugs. Infections and illnesses that would not be of major concern to healthy people are particularly dangerous and often fatal for people living with HIV/AIDS (PLWHA). Life expectancy for PLWHA in the United States has increased over the past few decades in large part due to advances in medication; following diagnosis, PLWHA in the United States have an estimated life expectancy of 20 to 25 years (Harrison, Song, & Zhang, 2010).

Considering the common modes of transmission of HIV, many PLWHA may have comorbid substance abuse addictions or participate in unsafe sexual activities that may lead to the acquisition of other sexually transmitted diseases. It is not unusual for clients to become stigmatized or marginalized due to these behaviors or as a result of their diagnosis of HIV/AIDS (Bravejan & Suarez-Balcazar, 2009; Opacic, 2008).
Caregiver Concerns

Interdisciplinary Interventions

Medication Therapy

Individuals diagnosed with HIV will begin an antiretroviral (ARV) medication regimen in order to decrease levels of HIV to trace amounts and therefore decrease the severity and progression of symptoms. ARVs are taken to control HIV and protect the immune system as much as possible by preventing HIV from replicating itself within the body; there is no cure for HIV, and it is still transmissible even when controlled by medication (NIAID, 2009b). Typically, one person is prescribed two or three medications from different classes of ARVs to be taken in combination—what is considered highly active antiretroviral therapy (HAART).

Social Work or Counseling

Due to the impact that an HIV diagnosis can have on the emotional, psychological, and social well-being of an individual, PLWHA are frequently referred to counseling or social work to help them obtain medical care, transportation and housing, child care, financial and legal advice, and other services and resources as they learn to manage HIV.

Occupational Therapy Evaluations

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of HIV/AIDS on occupational performance.

Occupation-Focused Assessments

- Pizzi Assessment of Productive Living for Adults with HIV Infection and AIDS (Pizzi, 1993)
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Worker Role Interview (WRI) (Braveman et al., 2005)
- School Function Assessment (SFA) (Coster, Deeney, Haltiwanger, & Haley, 1998)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Assessment of Motor and Process Skills (AMPS) (Fisher & Jones, 2010)
- Occupational Self-Assessment, Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)

Client Factor Assessments

- Whalen Symptom Index (Whalen, Antani, Carey, & Landefeld, 1994)
- The Revised Sign and Symptom Check-List for HIV (SSC-HIVrev) (Holzemer, Hudson, Kirksey, Hamilton, & Bakken, 2001)
- Pediatric Evaluation of Disability Inventory (PEDI) (Haley, Coster, Ludlow, Haltiwanger, & Andrellus, 1992)
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength

Occupational Therapy Interventions

Although interventions for PLWHA do not normally involve exposure to bodily fluids, occupational therapists should, as with any infectious disease, follow universal precautions to protect themselves from transmission of HIV. Interventions for PLWHA should always be client centered and have the goal of increasing their participation and satisfaction in occupations that are meaningful to and/or necessary for them. Because HIV/AIDS is a chronic disease, interventions tend to focus on lifestyle management to increase the potential for clients to participate fully.

On the person level, common occupational therapy (OT) interventions include the following:

- Environmental and/or task adaptations, potentially including assistive or adaptive devices, to facilitate continued or return to independence in activities of daily living (ADL), instrumental activities of daily living (IADL), and so forth
- Training in energy conservation techniques and time management
- Pain management, including relaxation techniques
- Health preservation techniques, including medication management
- Recommendations for ambulatory devices
- Guidance through role changes, including time management and adjustments of daily living routines, coping strategies for role disruption, training for finding and using assistance, and so forth
- Strategies to compensate for difficulties related to physical symptoms (e.g., low vision, decreased strength, and coordination), particularly for children with HIV/AIDS, motor control, strength and balance exercises, and/or sensory integration techniques to address sensorimotor needs
- Education for the prevention of spreading HIV
- Recommendation of community resources (e.g., support groups, transportation, palliative care) to facilitate coping and occupational participation
- Helping clients learn how to be self-advocates (Kielhofner, Braveman, Fogg, & Levin, 2008; Opacich, 2008)

In addition, occupational therapists can provide intervention at an organization or population level by advocating for disability rights and social justice issues, such as equal access and equal opportunity, for PLWHA. This can help reduce the stigma that is often attributed to HIV/AIDS and ensure that PLWHA have access to resources necessary to participate occupationally (Braveman & Suarez-Balcazar, 2009).

Occupational Therapy and the Evidence

When compared to a control group receiving standard care, an OT intervention group for PLWHA that focused on needs related to productive participation (e.g., health management, independent living skills, role development, vocational skills, self-advocacy) resulted in significantly higher levels of postintervention productive participation—that is, employment, attending school or training, or volunteering (Kielhofner et al., 2008).

Caregiver Concerns

HIV-positive parents must choose whether or not they are going to disclose their diagnosis to their children; not wanting to worry or scare their children and wanting them to have a “carefree childhood” are among the top reasons why some parents choose to delay disclosure to their children. However, most parents do tell their children about their diagnosis because they feel their children have a right to know and want them to hear it directly from them; the vast majority of parents do not regret disclosing their diagnosis to their children (Ostrom Delaney, Serovich, & Lim, 2008).

There is a stigma associated with being a caregiver of PLWHA, and greater levels of perceived stigma are correlated with increased depressive symptoms. The greater number of people that these same caregivers disclosed their caregiver status to, however, the fewer the depressive symptoms they reported (Mitchell & Knowlton, 2009). Some caregivers report health difficulties as a result of caring for PLWHA, including tension, headaches, and low energy. Psychological concerns include feeling pressure as a result of caring for their loved ones and feeling down and/or lonely. Overall, there is a greater concern for the PLWHA that they are caring for than for their own well-being (Darling, Omlstead, & Tiggelman, 2010). Although anxiety concerning death is lesser for caregivers than for PLWHA, it still impacts the quality of life of caregivers (Sherman, Norman, McSherry, 2010). Support groups may be beneficial for caregivers.
In the case of serodiscordant couples (one has a diagnosis of HIV/AIDS and the other does not), a common concern is the potential of sexual transmission of HIV. In order to participate and enjoy sexual activities, these couples must make any and all precautions possible (i.e., correct use of condoms) to prevent the spread of HIV to the undiagnosed partner. For opposite-sex couples who wish to have children, fertility techniques—such as “sperm washing” to remove the HIV from the male’s sperm prior to artificial insemination—and careful use of ARVs by an HIV-positive mother can decrease or eliminate the chance of a child being born with HIV (Gosselin & Sauer, 2011).

Resources

Organizations
- International AIDS Society—association for health professionals
- Joint United Nations Programme on HIV/AIDS (UNAIDS)—international program to increase access to HIV prevention, treatment, care, and support

Books

Websites
- http://www.cdc.gov/hiv
- http://AIDS.gov
- http://www.hivinfo.nih.gov/
- http://www.niaid.nih.gov/topics/hiv aids
- http://www.avert.org/

Appendix I: Common Conditions, Resources, and Evidence


Interdisciplinary Interventions

Homelessness

Pamela Vaughn

Description

According to the U.S. McKinney-Vento Homeless Assistance Act of 1987 (P.L. 100-77), a person who is homeless is defined as (1) an individual who lacks a fixed, regular, and adequate nighttime residence; and (2) an individual who has a primary nighttime residence—that is, (a) a supervised publicly or privately operated shelter designed to provide temporary living accommodations (including welfare hotels, congregate shelters, and transitional housing for the mentally ill); (b) an institution that provides a temporary residence for individuals intended to be institutionalized; or (c) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings. 

Homelessness can be classified as either episodic (wherein an individual is homeless for one night or a few nights) or chronic (wherein an individual is unaccompanied [single adult], disabled, and homeless continuously for 1 year or more or for four or more episodes in the past 3 years) (McKinney-Vento Homeless Assistance Act, 1987). Information provided in this resource sheet generally refers to homelessness in the United States and uses the aforementioned definition of “homelessness” as a guide: homelessness may have similar characteristics in other developed countries. However, the definition and characteristics of homelessness vary by country and by culture.

Incidence and Prevalence

Determining exact numbers—or even close estimates—of people who are homeless in the United States is extremely difficult. This is in part due to the high turnover rate of the homeless population, but other factors that make it difficult are that some people who are homeless have living situations in which they are less likely to be counted (e.g., with a relative, in a hotel or motel) or are living in places where community officials would have a difficult time finding them (e.g., in a car, at a campground) (National Coalition for the Homeless, 2009). According to the most recent Annual Homeless Assessment Report to Congress made by the U.S. Department of Housing and Urban Development (HUD; 2011).

- On a single night in 2010, 649,917 people in the United States (407,966 individuals; 241,951 persons in families accounting for 79,446 families) were homeless.
- 62% of these individuals were sheltered (in emergency shelters or transitional housing) and 38% were unsheltered (e.g., in streets, vehicles, abandoned buildings); families were more likely to be sheltered than individuals.
- This is an increase of 1.1% from the single night in 2009.
- Since 2007, however, this is a decrease of 3.3%.
- 109,812 (16.9%) of these people met the criteria for chronic homelessness.
- On this single night count (one individual may fall into more than one category),
  - 26.2% of adults had a serious mental illness;
  - 34.7% of adults had substance abuse;
  - 3.9% of adults had HIV/AIDS;
  - 12.3% were survivors of domestic violence; and
  - 1.1% were unaccompanied youth.
- In 2010, over 1.59 million people in the United States spent at least one night in an emergency shelter or transitional housing. Of these, 65% were individuals and 35% were persons in families.
- Although this total number has remained relatively stable since 2007, it represents an increase of about 94,000 persons in families—a 20% increase—and a decrease in about 72,000 individuals—a 6% decrease—since 2007.

Using the annual estimate to determine the characteristics of people who are homeless,
- 78% are adults (62% of these are male);
- 42% are white, non-Hispanic; 37% are black or African American; remaining 21% are members of other minority groups;
- 21.8% are under the age of 18 years, 23.5% are aged 18 to 30 years, 37% are aged 31 to 50 years, 14.9% are aged 51 to 61 years, and 2.8% are 62 years and older; and
- 36.8% of the adults have a disability.

Causes and Risk Factors

Homelessness can be caused by one or more personal, social, medical, or economic factors. People who are homeless make up a heterogeneous group—“they differ in demographics, subgroups, and their patterns of homelessness” (Helfrich, 2011, p. 611). The range of causes of and risk factors for homelessness include the following:

- Foreclosures and/or lack of affordable housing
- Poverty
- Domestic violence
- Unemployment
- Mental illness
- Substance addiction and abuse (Helfrich, 2011; Herzberg & Petrenchik, 2010; Schultz-Krohn, 2009)

Related Conditions

When people become homeless, drastic shifts in their physical environment are not all they experience. Their community and social environments have changed too, as have their affordances to participate in previous occupations. Because of the innumerable causes and effects of homelessness, it is necessary to look at each individual and/or family unit separately (Muñoz, Garcia, Lisak, & Reichenbach, 2006).

People may have medical and/or psychological conditions that either contributed to or came about as a result of becoming homeless. For example, individuals may develop depression, anxiety, or substance abuse after becoming homeless, but those same mental disorders can also be factors in individuals becoming homeless. Factors that may have contributed to an individual becoming homeless may have other implications (physical, mental, psychological, etc.) as well—for example, surviving domestic abuse or being a veteran.

As a result of living in shelters or transitional housing or of being unsheltered, many people are at an increased risk of contracting or developing medical conditions (e.g., general poor health and nutrition, lice, skin diseases, HIV/AIDS, physical injuries, tuberculosis, respiratory problems, high blood pressure, diabetes, cancer) and a lack of access to consistent and adequate health care may perpetuate these conditions (Herzberg & Petrenchik, 2010).

Due to stereotyping and stigma, individuals who are homeless frequently face barriers to receiving care and participating in necessary and/or meaningful occupations (Helfrich, 2011). In order to provide the best possible care, sensitivity to individual backgrounds and circumstances is essential.

Interdisciplinary Interventions

Interventions to Meet Basic Needs

When a person initially becomes homeless, he or she may be able to access local emergency assistance. Homeless shelters are more temporary than transitional housing; they provide a place to stay for 1 to 30 nights. Each shelter has different regulations and requirements (e.g., times that people must enter and exit, sobriety requirements, participation in events). Transitional housing programs provide temporary housing for up to 2 years. Some transitional housing programs have specific focuses (e.g., women and children survivors of domestic violence) and requirements for their inhabitants (e.g., participation in employment or education). Some shelters provide their clients with meals, facilities for bathing, and/or clothing donations.
Medical care or mental health counseling may be provided directly in these housing programs or through other community services. Organizations such as food pantries and soup kitchens can provide warm meals for people who may not have the resources to otherwise obtain them.

**Medical Interventions**

Medical needs of people who are homeless vary among individuals. Because there is an increased risk of developing medical conditions as a result of being homeless, medical services for this population may include the following:

- Prescription of medications
- Triage and wound care
- Immunizations
- HIV testing
- Screening for diseases such as tuberculosis
- Care of skin conditions
- Family planning and testing
- General health education

**Mental Health Interventions**

Mental health needs vary among individuals. Psychiatrists and psychologists may

- Perform mental health evaluations
- Provide psychotherapy and other interventions
- Psychiatrists and clinical nurse specialists may also provide prescrip- tions for medications

**Social Work, Counseling, Advocates, Treatment Coordinators, or Case Managers**

Assist people who are homeless by assessing their needs and finding appropriate resources, particularly financial entitlements when appropriate. They often act as liaisons among people who are homeless, other professionals, and shelters.

**Other Interventions**

Depending on the needs of the people or family who are homeless, other interventions may include substance cessation counseling, employment and education services, and legal representation.

**Occupational Therapy Evaluations**

The evaluation process focuses on what the person or family needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of homelessness on occupational performance.

**Occupation-Focused Assessments**

- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004)
- Occupational Self-Assessment, Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Model of Human Occupation Screening Tool, Version 2.0 (MOHOST) (Parkinson, Forsyth, & Kielhofner, 2006)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)
- Kohlman Evaluation of Living Skills (KELS) (McGourty, 1999)

**Client Factor Assessments**

- Allen Cognitive Level Screen (ACLS) (Allen et al., 2007)
- Beck Anxiety Inventory (BAI) (Beck, 1993)
- Beck Depression Inventory-II (BDI-II) (Beck, Steer, & Brown, 1996)
- Impact of Events Scale-Revised (IES-R) (Weiss & Marmar, 1996)

**Occupational Therapy Interventions**

Occupational therapy (OT) intervention for people who are homeless varies by individual. They may include direct OT services and/or consultations; examples may include the following (Helfrich, 2011; Herzberg & Petrenchik, 2010; Schultz-Krohn, 2009):

**Direct Occupational Therapy Interventions**

- Teach self-care skills (e.g., bathing, grooming, medication management).
- Teach food and nutrition management.
- Teach instrumental activities of daily living (IADL) skills (e.g., budgeting, shopping, home management, cleaning).
- Develop coping skills (e.g., stress management, anger management).
- For parents, develop strategies to maintain healthy parent–child relationships.
- For children, play intervention to promote positive socialization.
- Evaluate vocational skills and/or develop job-specific skills (including job-seeking skills and skills needed for the jobs themselves).
- Develop skills for self-advocacy.

**Consultation**

- Referral to other services
- Collaborate with shelter itself to assess the environment and identify potential barriers to occupational participation, develop program ming, create effective documentation, and so forth.

**Occupational Therapy and the Evidence**

A systematic review of published OT interventions with people who are homeless reports that the most common OT needs of this population are in the areas of employment and education, money management, coping skills, and leisure skills. Although there are relatively few published intervention studies (due to many factors, including the fact that homelessness is a relatively new area of practice and that many people who are homeless are unable to participate in research studies for various reasons), OT interventions do show evidence of being effective (Thomas, Gray, & McGinty, 2011).

OT interventions focusing on life skills for people with mental illness, who are at risk for repeated homelessness, resulted in increased knowledge of many life skills, as tested by practical skills tests (e.g., money management, safe community participation); individuals with higher scores on the ACLS showed greater improvements in self-care skills after intervention (Helfrich, Chan, & Sabol, 2011). In another study focusing on individualized life skills interventions for persons with mental illness who are at risk for homelessness, participants were grouped according to their readiness to change based on the transtheoretical model. Placement of participants into either the “engaged” (higher readiness-to-change scores) or “preengaged” (lower readiness-to-change scores) study groups did not predict intervention outcome (which included some increases in scores on practical skills tests among both groups), indicating that indi- viduals in various readiness-to-change classifications may benefit from OT intervention (Helfrich, Chan, Simpson, & Sabol, 2011). Interventions focused on professional development, specifically helping people who are homeless find and retain employment, resulted in more than 80% of the participants who completed the program becoming employed, and 40% choosing to pursue educational or vocational training in addition to their jobs (Muñoz, Dix, & Reichenbach, 2006).

**Resources**

**Organizations**

- National Coalition for the Homeless—a nonprofit organization for the advocacy of people who are homeless.
  2201 P St NW
  Washington, DC 20037
  Telephone: 202-462-4822
  info@nationalhomeless.org
  http://www.nationalhomeless.org
Incidence and Prevalence


Books


- Hannah, R., & Soper, B. (2010). A bum deal: An unlikely journey from hopeless to humanitarian. Naperville, IL: Sourcebooks. The story of Rufus Hannah, an individual who was previously homeless and suffered from alcoholism, who is now an advocate for rights of homeless people.

- Skalitzky, K. M. (2007). A recipe for hope: Stories of transformation by people struggling with homelessness. Chicago, IL: ACTA. A collection of first-person accounts from men and women who are or were homeless in the Chicago area.

Websites


- National Low Income Housing Coalition http://www.nlhhc.org

References


Mood Disorders: Depression and Bipolar Disorder

Danielle Sotelo

Description

A mood disorder is the term used to refer to a group of psychiatric dis-orders characterized by a pervasive disturbance of mood that is not due to medication, substance abuse, or other psychiatric conditions. Two of the most common mood disorders are depression and bipolar disorder. Depression is a mood disorder that affects one’s thoughts, moods, feelings, behavior, and physical health. The two most common forms of depression are major depression (which interferes with daily activities) and dysthymia (which lasts 2 years or longer with less severe symptoms). Less common forms of depression include seasonal affective disorder, psychotic depression, and postpartum depression (National Institute of Mental Health [NIMH], 2010a).

Bipolar disorder, also known as manic-depressive illness, is a brain disorder that causes unusual shifts in mood, energy, and activity levels—impeding the ability to function. Bipolar disorder is characterized by dramatic mood swings or episodes of mania and depression. Depending on the dominant mood, bipolar disorder is usually classified as bipolar I (symptoms of major depression, coupled with the occurrence of full-blown mania or mixed symptoms) or bipolar II (symptoms of major depression coupled with the recurrence of depressive episodes with hypomania) (NIMH, 2010b).

Incidence and Prevalence

Depression is the most common mental disorder and affects approxi-mately 9.5% of adult Americans (20.9 million people) (American
Psychological Association [APA], 2011; NIMH, 2010a). Depression typically occurs between the ages of 15 and 30 years and is more likely to occur in women than men. Bipolar disorder affects approximately 5.7 million American adults, about 2.6% of the adult population. The median age of onset is 25 years. An equal number of men and women develop bipolar disorder (NIMH, 2010b).

**Cause and Etiology**

The exact cause of depression is unknown, but it likely results from a combination of genetic, biochemical, environmental, and psychological factors. Trauma or stressful situations may trigger a depressive episode (NIMH, 2010a). Research indicates that bipolar disorder is genetic in nature as it tends to run in families. Research also indicates that environmental and biochemical factors can influence the expression of the gene (NIMH, 2010b).

**Course and Signs and Symptoms**

The onset of depression typically occurs between the ages of 15 and 30 years but can appear at any point throughout the life course. Symptom-related criteria for depression include prolonged sadness, insomnia or hypersomnia, weight loss or gain, changes in appetite, feelings of guilt and worthlessness, fatigue or loss of energy, inability to concentrate, inability to take pleasure in former interests, social withdrawal, and suicidal ideation (NIMH, 2010a).

Bipolar disorder often occurs in a person's late teens or early adult years. At least half of all cases begin before age 25 years, but symptoms may appear at any point throughout the life course. Bipolar disorder lasts a lifetime, with alternating episodes of mania and depression recurring throughout the life course. Symptoms related to episodes of depression are similar to the depressive symptoms described previously. Symptom-related criteria for episodes of mania include increased physical and mental activity and energy, exaggerated optimism and self-confidence, decreased need for sleep, grandiose thoughts, impulsive behavior and poor judgment, and delusions or hallucinations (NIMH, 2010b).

**Related Conditions**

Depression often co-occurs with heart disease, stroke, diabetes, cancer, Parkinson's disease, and other serious illnesses that may precede depression, cause it, or are consequence of it. Substance abuse and anxiety disorders (such as posttraumatic stress disorder and obsessive-compulsive disorder) often coexist in people with depression and bipolar disorder. People with bipolar disorder are also at a higher risk for heart disease, diabetes, obesity, and other physical illnesses (NIMH, 2010a, 2010b).

**Precautions**

Individuals with mood disorders are at high risk for harming themselves, suicidal ideation, and substance abuse. The primary risk factor for suicide is a mood disorder combined with substance abuse. Substance abuse also increases the risk of developing depression (Ramsey, Engler, & Stein, 2005).

**Interdisciplinary Interventions**

**Medications**

Depression is often treated with selective serotonin reuptake inhibitors (SSRIs), tricyclic and tetracyclic antidepressants, monoamine oxidase inhibitors (MAOIs), and serotonin and norepinephrine reuptake inhibitors (SNRIs). Bipolar disorder is often treated with antidepressants, mood stabilizers, and antipsychotic medications such as lithium, Risperdal, and Seroquel (NIMH, 2010, 2010b).

**Cognitive Behavioral Therapy**

Cognitive behavioral therapy (CBT), focused directly on changing beliefs and psychoeducation, when combined with pharmacological treatment, may be beneficial in treating mood disorders (Beynon, Soares-Weiser, Woolacott, Duffy, & Geddes, 2008). CBT can help individuals with mood disorders learn how to obtain more satisfaction and rewards through their own actions. CBT helps clients change negative styles of thinking and behaviors often associated with depression or depressive symptoms (Beers & Miller, 2005). Current evidence shows that computerized CBT for children, adults, and adolescents with depression is effective (Andrews, Guijters, Craske, McEvoy, & Titov, 2010; Richardson, Stallard, & Velleman, 2010).

Psychoeducation, as part of a multicomponent approach, can be effective in preventing relapse and hospitalization and increasing awareness of the illness and symptoms. Treatment includes teaching individuals with bipolar and depression (along with their family members or caregivers) about the illness and how it is treated as well as how to recognize symptoms and identify triggers (Hollon & Ponniah, 2010; Rouget & Aubry, 2007).

**Electroconvulsive Therapy**

Electroconvulsive therapy (ECT) is a psychiatric treatment in which electric currents sent through the brain induce seizures, often showing an immediate improvement in symptoms (Lisanby, 2007). It is used to treat people with severe depression or acute mania. The use of ECT is controversial, but some studies cite 80% improvement in symptoms for people with severe depression, although relapse usually occurs (Mental Health America [MHA], 2011).

**Occupational Therapy Evaluations**

Along with observations, interviews, and history taking, the following assessments can be used to evaluate the occupational performance of a person with a mood disorder:

**Basic and Instrumental Activity of Daily Living Skills**
- Kohlman Evaluation of Living Skills (KELS)
- Milwaukee Evaluation of Daily Living Skills (MEDLS)
- Routine Task Inventory-2 (RTI-2)
- Assessment of Living Skills and Resources (ALSAR)
- Cooking Assessment of Motor and Process Skills
- Establishment of routines or skills training for activities of daily living

**Occupational Questionnaire (OQ)**

- Assessment of Occupational Functioning (AOF)
- Allen Cognitive Level Test-90 (ACLS-90)
- Occupational Self-Assessment (OSA)

**Psychosocial Skills**

- Role Activity Performance Scale (RAPS)
- Assessment of Occupational Functioning (AOF)
- Occupational Performance History Interview II (OPHI-II)

**Cognition and Emotional**

- Allen Cognitive Level Test-90 (ACLS-90)
- Loewenstein Occupational Therapy Cognitive Assessment (LOTCA)
- Mini-Mental State Exam (MMSE)
- Beck Depression Inventory

**Self-Perception or Quality of Life**

- Canadian Occupational Performance Measure (COPM)
- Occupational Questionnaire (OQ)
- Occupational Self-Assessment (OSA)
- Role Checklist

**Occupational Therapy Interventions**

Occupational therapists often assist with the remediation and maintenance of occupational performance of a client with a mood disorder. Both individual and group therapy is used in mental health settings and can focus on the following areas:

**Activities of Daily Living or Instrumental Activities of Daily Living**

- Establishment of routines or skills training for activities of daily living (ADL), including grooming, dressing, and hygiene
- Management of medication routines

Psychosocial Factors of Daily Living or Instrumental Activities
- Financial management
- Place management
- Time management
- Self-care
- Personal hygiene
- Personal appearance
- Food and nutrition
- Physical activity
- Vocational effects
- Social interference
- Leisure
- Self-esteem
- Self-awareness
- Awareness of the illness and symptoms
- Treatment includes teaching individuals with bipolar and depression (along with their family members or caregivers) about the illness and how it is treated as well as how to recognize symptoms and identify triggers (Hollon & Ponniah, 2010; Rouget & Aubry, 2007).
Depression and Bipolar Support Alliance
Community mobility and safety, such as accessing public and knowing when to ask for help
Establishment or reestablishment of normal routines
Psychoeducation concerning symptoms and triggers

Social Participation and Leisure
Assistance in the exploration of new leisure interests
Encourage for self-exploration and self-expression
Integration or reintegration into the community or social group

Work and Education
Referral to work programs, such as supported employment programs
Exploration of vocations based on skills, limitations, and interests
Stress and time management skills
Instruction on realistic goal setting

Occupational Therapy and the Evidence
Occupational therapists are among the many professionals who are qualified to use CBT during mental health interventions. The use of CBT is one of the most effective therapeutic modalities to treat depression, whether used alone or in combination with pharmacotherapy. CBT reduces negative thinking associated with depression, lessens symptoms, and decreases the chance of relapse (Beck & Miller, 2005; Powell, Abreu, de Oliveira, & Sudak, 2008). CBT is a valuable tool for increasing self-control and increasing the amount of time between episodes for people with bipolar disorder. CBT, when combined with mood stabilizers, results in fewer bipolar episodes, fewer hospital admissions, better coping with manic symptoms, and higher functioning (Ball, Mitchell, & Corry, 2006; Lam et al., 2003). There is additional evidence that group psychoeducation combined with medication improves perceived quality of life in terms of physical functioning in individuals with bipolar disorder (De Andres et al., 2006; Huxley, Parikh, & Baldessarini, 2000).

Current evidence also suggests that participation in valued leisure activities, physical exercise, and meditation are valuable tools for immediately decreasing symptoms of depression (Arias, Steinberg, Banga, & Trestman, 2006; Tsang, Chan, & Cheung, 2008). Occupational therapists have the skill necessary to assist with supported employment. People with mood disorders often experience high rates of unemployment, even though they desire to work. Supported employment is effective in helping people with mental illness obtain competitive employment (Crowther, Marshall, Bond, & Huxley, 2001). Occupational therapists have the skills to assist in job placement, job training, and supported employment for individuals with mood disorders.

Caregiver Concerns
Caring for people with mood disorders exacts a toll on their families and caregivers, often impacting their health and performance in work and leisure activities. Missed work hours and lower productivity caused by stress add a financial burden on the caregiver. As such, it is important for caregivers to make their mental and physical health a priority (National Alliance on Mental Illness [NAMI], 2011). They should also understand the signs and symptoms of mood disorders, the course of the disease, and the fact that the risk of suicide is always present.

Resources

Organizations and Websites
- American Psychiatric Association
  - 1000 Wilson Boulevard
  - Suite 1825
  - Arlington, VA 22209
  - Telephone: 703-907-7300
  - Website: http://www.psych.org

- Depression and Bipolar Support Alliance
  - 730 N. Franklin St.
  - Suite 501
  - Chicago, Illinois 60610
  - Telephone: 800-826-3632
  - Website: http://www.dbsalliance.org

- National Institute of Mental Health
  - National Institutes of Health
  - 6001 Executive Blvd.
  - Room 8184, MSC 9663
  - Bethesda, MD 20892
  - Telephone: 301-443-4513 or 866-615-6464
  - Website: http://www.nimh.nih.gov

- National Foundation for Depressive Illness
  - PO Box 2257
  - New York, NY 10116
  - Telephone: 800-248-4344
  - Website: http://www.depression.org

Books
- Smith, H. (2010). Welcome to the jungle: Everything you ever wanted to know about bipolar but were too freaked out to ask.
- Welcome to the jungle: Everything you ever wanted to know about bipolar but were too freaked out to ask.
This book targets young people diagnosed with bipolar disorder. It offers honest insight into living with bipolar and answers common questions.

References


Multiple Sclerosis

Sarah Stultz

Multiple sclerosis (MS) is a chronic, progressive neurological condition characterized by patches of demyelination of nerves in areas of the brain and the spinal cord, which results in distorted or interrupted transmission of nerve impulses to and from the brain (Beers & Berkow, 1999). MS is considered to be an autoimmune disease in which the body’s own defense system attacks the myelin sheath that surrounds and protects the nerve fibers of the central nervous system (CNS). The sites where myelin is lost appear as hardened scoleric (scared) areas in the CNS and cause various physical and neurological symptoms (Reed, 2001).

Prevalence/Incidence

Approximately 400,000 Americans and 2.5 million people worldwide have MS, and approximately 200 more people are diagnosed each week. Most people with MS are diagnosed between the ages of 20 and 50 years, and it is two to three times more common in women than men. The cause of MS is not completely understood, but it is likely that genetics and the environment play a role. Although MS occurs predominantly in adults, there are an estimated 8,000 to 10,000 children (defines as younger than 18 years of age) diagnosed with MS, and another 10,000 to 15,000 who have experienced at least one symptom of the disease (National Multiple Sclerosis Society [NMSS], n.d.). Due to the unique nature of pediatric MS, the NMSS has established six Pediatric MS Centers of Excellence across the country to study and treat this population.

Course

MS is characterized by four different disease courses, each of which can be mild, moderate, or severe (NMSS, n.d.).

Relapsing-Remitting

Clearly defined and unpredictable relapses or exacerbations and episodes of acute worsening of neurological function. During these episodes, which can last days or months, present symptoms may worsen and new ones may appear. There are also partial or complete recovery periods (remissions) during which the person is free of disease progression. This is the most common form of MS at time of initial diagnosis (~85%).

Primary-Progressive

A slow but nearly continuous worsening of the disease from the onset, with no distinct relapses or remissions. However, there are variations in rates of progression over time, occasional plateaus, and temporary minor improvements. This course is relatively rare (~10%).

Secondary-Progressive

An initial period of relapsing-remitting disease followed by a steadily worsening, unpredictable disease course. About 50% of people with relapsing-remitting MS developed this form of the disease within 10 years of their initial diagnosis.

Progressive-Relapsing

A steadily worsening disease from the onset but also has clear acute relapses, with or without recovery. In contrast to relapsing-remitting MS, the periods between relapses are characterized by continuous disease progression. This course is relatively rare (~5%).

Prognosis

MS is not a fatal diagnosis, and a normal life course can usually be expected. Most people die from the similar causes as the rest of the population (Simon, 2009). In rare cases, some people with a more severe disability may die of infectious complications (NMSS, n.d.). Because of the symptoms of the condition, which are unpredictable and vary widely from one individual to another, there is a negative effect on quality of life (QOL). Most individuals do not become severely disabled, and about two-thirds of people remain ambulatory 20 years after being diagnosed (Simon, 2009).

Symptoms

- Fatigue and weakness
- Vision problems, including vision loss, optic neuritis, blurred vision, double vision, or involuntary rapid eye movement
- Balance and coordination problems: loss of balance, tremors, ataxia, vertigo, or clumsiness
- Spasticity
- Pain and altered sensations, including tingling, numbness, burning, or sensitivity to heat
- Bladder and bowel problems
- Problems with sexual functioning: impotence, decreased arousal, and loss of sensation
- Cognitive problem: mainly executive function such as loss of short-term memory, concentration, judgment, or problem solving
- Emotional changes: depression, mood swings, irritability, or pseudo-bulbar affect (uncontrollable laughing and crying)
Occupational Therapy Evidence

- Slowed or slurred speech or dysphagia
- Other symptoms can include headaches, seizures, hearing problems, respiration problems, and itching

**Interdisciplinary Intervention**

Intervention focuses on modifying the disease course, treating exacerbations, managing symptoms, and improving function and safety.

**Medications**

- There are nine U.S. Food and Drug Administration (FDA)–approved disease-modifying treatments for use with relapsing MS and one specifically for secondary-progressive MS. Eight of these medications are administered by injection, and one (Gilenya) is an oral medication. These medications have shown effectiveness in modifying the natural course of MS by altering the rate and/or extent of disease progression and reducing the frequency and severity of relapses. Medication management with these “disease modifiers” is recommended as early as possible for individuals with a relapsing course (NMSS, n.d.).
- Corticosteroids shorten acute attacks, reduce inflammation, and ease symptoms (for exacerbations). More potent medications are being developed that are effective in slowing down MS that is rapidly worsening or becoming progressive (Beers & Berkow, 1999).
- Various medications are available to help manage specific symptoms.
- Complementary and alternative medicines (CAMs) may include exercise, diet, food, supplements, stress management, and lifestyle changes. Because CAMs have not been thoroughly tested by the FDA, the safety of these methods remains inconclusive (NMSS, n.d.).

**Rehabilitation**

**Physical Therapy**

Physical therapy focuses primarily on mobility and the use of mobility aids, muscle strength and tone, and physical fitness. Personalized exercise programs may help people recover muscle control and strength after an exacerbation. There is significant evidence associating aerobic exercise with improved QOL, mobility, endurance, and reduction in fatigue (Mostert & Kesselring, 2002).

**Speech Therapy**

In progressive forms of MS, problems with speech or swallowing due to muscle weakness or a lack of coordination may need to be addressed.

**Psychosocial Support or Counseling**

Individual or group therapy can help individuals with MS and their families to deal with depression, anxiety, and the unpredictability of the disease process. Evidence suggests that a personalized psychosocial rehabilitation program encourages active participation, increased autonomy, and improved QOL (Ferriani et al., 2002).

**Occupational Therapy Evaluations**

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of MS on occupational performance.

**Occupation-Focused Assessments**

- Functional Independence Measure (FIM): measures functional status and assistance needs (used primarily in rehabilitation hospitals)
- MS Impact Scale (MSIS-29): measures physical and psychological impact of MS
- Barthel Index (BI): assesses activities of daily living (ADL) function
- Fatigue Impact Scale and the Modified Fatigue Impact Scale (MFIS): measures impact of fatigue on daily life
- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations

**Client Factors Assessments**

- Berg Balance Scale: measures balance among older people
- The Dallas Pain Questionnaire: assesses how pain affects daily function
- Minimal Assessment of Cognitive Function in MS (MACFIMS): assesses cognitive domains affected by MS
- Behavioral Rating Inventory or Executive Function for Adults (BRIEF-A): client and caregiver self-report of executive function
- Range of Motion (ROM), Manual Muscle Test (MMT) and Grasp Dynamometry
- Tinetti Assessment Tool: used to measure gait and balance

**Occupational Therapy Interventions**

The role of the occupational therapist is to provide assessment and intervention to improve functional performance in ADL and instrumental activities of daily living (IADL), manage fatigue and cognitive symptoms, and support the client to effectively participate in desired roles (Fielayson, Shevil, & Cho, 2009).

**Interventions**

- ADL and cognitive retraining
- Energy conservation
- Assistive technology
- Environmental, employment, and home modifications
- Pain and stress management
- ROM/endurance/strengthening for desired activities
- Safety awareness
- Splinting

**Educating Clients and Care Providers About**

- Disease process
- Energy conservation strategies
- Cognitive strategies
- Grading activities
- Use of mobility aids and assistive technology
- Safety awareness
- Work or home modification

**Occupational Therapy Evidence**

Meta-analysis suggests that occupational therapy (OT) is effective in treating the deficits associated with MS, particularly for outcomes in the capacity and ability, and task and activity levels of performance. Studies that examined a specific intervention method, such as exercise, fatigue management, and cooling and transcutaneous electrical nerve stimulator application for pain, were effective for capacities and ability outcomes (Baker & Tickle-Degnen, 2001).

In a study designed to understand how people with MS experience engagement in occupations, participants reported decreased engagement in meaningful occupations, which led to a belief they were different people and now live their lives differently than they did before (Lexell, Lund, & Iwarsson, 2009). One reason for this life shift is fatigue, a symptom reported in 75% to 90% of individuals with MS and described as the most disabling symptom interfering with performance in daily occupations (Matuska, Malbiowitz, & Finlayson, 2007).

Although courses to teach energy conservation have been effective for individuals with mild-to-severe MS, some studies suggest that
participants do not use the strategies (Holberg & Finlayson, 2007). The progressive nature and variability of the disease, effect of fatigue on everyday life, amount of social supports, struggles with sense of self, lack of resources, and physical and social environments may all influence strategy use. Strategies involving rest were the most effective, and peer interaction was beneficial (Holberg & Finlayson, 2007; Matuska et al., 2007; Vanage, Gilbertson, & Mathiowetz, 2003). Research has also demonstrated that OT can be beneficial in the areas of balance and mobility, self-care, transfers, and homemaking tasks. Specifically, inpatient OT can help increase independence in ADL, particularly tub and toilet transfers, toileting, bathing, and dressing (Maitra et al., 2010). Although individual studies document positive outcomes related to OT interventions, a meta-analysis suggests more inconclusive findings. Due to the constantly changing nature of the disease, it is challenging to conduct randomized controlled trials with this population (Steultjens et al., 2004). However, Finlayson and colleagues (2009) found that OT services to discuss cognitive symptoms were useful for mental health and well-being among people aging with MS. More definitive intervention effectiveness research is indicated.

Caregiver Concerns

MS affects people in their most productive years: young adults readying themselves to leave home in pursuit of academic, vocational, or social goals; men and women starting their careers and families of their own; and those in middle age who are enjoying their productive years and planning for retirement. Because individuals with MS report that their ability to engage in occupations is dependent on other people, caregiver support is critical to enable people with MS to continue living in the community (Finlayson et al., 2009; Khan, Pallant, & Brand, 2007). Occupational therapists may educate the client’s family about the disease process, including the client’s and caregiver’s perceptions of cognitive symptoms. Caregivers of those with cognitive symptoms reported spending more time caregiving, and discrepant perceptions could increase caregiver distress (Finlayson et al., 2009). Interventions for caregivers that focused on reducing caregiver strain are important for the well-being of the care recipient, thus a combined patient–caregiver intervention approach is recommended.

Resources

**Associations**
- National Multiple Sclerosis Society
  - 733 Third Avenue
  - New York, NY 10017
  - Telephone: 800-344-4867
  - Website: [http://www.nmss.org](http://www.nmss.org)
- Multiple Sclerosis Association of America
  - 706 Haddonfield Road
  - Cherry Hill, NJ 08002
  - Telephone: 856-488-4500
  - Website: [http://www.msassociation.org](http://www.msassociation.org)
- Multiple Sclerosis Foundation
  - 6520 North Andrews Avenue
  - Fort Lauderdale, Florida 33309-2130
  - Telephone: 888-MSFOCUS
  - Website: [http://www.msfocus.org](http://www.msfocus.org)
- Consortium of Multiple Sclerosis Centers
  - 359 Main Street, Suite A
  - Hackensack, NJ 07601
  - Telephone: 201-487-1050
  - Website: [http://www.mscare.org/](http://www.mscare.org/)
- Through the Looking Glass
  - 3075 Adeline Street, Suite 120
  - Berkeley, CA 94703
  - Telephone: (510) 848-1112
  - Website: [http://www.lookingglass.org](http://www.lookingglass.org)

**Websites**
- Multiple Sclerosis International Federation: [http://www.msif.org](http://www.msif.org)
- MS Neighborhood: [http://www.msneighborhood.com](http://www.msneighborhood.com)
- MS Active Source: [http://www.msactivesource.com](http://www.msactivesource.com)

**References**


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**First-Person Accounts**

**Interdisciplinary Interventions**

**Obesity, Diabetes, and Hypertension**

_Danielle Sotelo_

**Description**

_Overweight_ (body mass index [BMI] of 25 to 29.9) and _obesity_ (BMI of 30 or higher) are terms used to describe the ranges of weight that are considered to be unhealthy for a certain height. These ranges are also associated with increased risk for certain diseases and health problems, such as diabetes and hypertension (Centers for Disease Control and Prevention [CDC], 2010b).

_Diabetes mellitus_ (or “diabetes”) is a condition that causes blood sugar to rise to dangerous levels (fasting blood glucose of 126 mg/dL or more). Type 1 diabetes, previously known as _juvenile diabetes_, is diagnosed in children and young adults and occurs when the body does not produce insulin—a hormone needed to convert sugar, starches, and other foods into energy. Type 2 diabetes, which is closely associated with obesity and physical inactivity, occurs when the pancreas does not make enough insulin or when the body develops insulin resistance (occurs when the body cannot use insulin efficiently) (American Diabetes Association [ADA], 2011a; American Heart Association [AHA], 2011a).

_Hypertension_, or high blood pressure, is a common condition in which the force of blood against the artery walls is elevated (140/90 mm Hg or higher), causing damage to the artery walls over time. There are two types: primary and _secondary hypertension_ (AHA, 2011b).

**Incidence and Prevalence**

In 2008, 1.5 billion adults aged 20 years or older were classified as overweight. Of these, nearly 200 million men and 300 million women were obese (World Health Organization [WHO], 2011). In the United States, 68% of adults and 17% of children are overweight (CDC, 2010a).

The 15.8 million children and adults in the United States (8.3% of the population) have diabetes, with 7 million of those people undiagnosed. Additional 79 million people are prediabetic. The majority of this population is 65 years or older (26.9%). Hispanic and African Americans are more likely to be diagnosed with diabetes (ADA, 2011a).

About 74.5 million people in the United States aged 20 years and older have high blood pressure (one in three adults). It is more common in people who are middle aged or older, overweight or obese, physically inactive, or have diabetes (AHA, 2011b).

**Cause and Etiology**

The cause of obesity is complex, but it is believed to result from various factors including genes, metabolism, behavior, environment, culture, and socioeconomic status. Behavior and environment play a large role in obesity and are the greatest areas for focus and treatment (CDC, 2010b). There are several factors that increase a person’s risk for developing type 2 diabetes, including family history, ethnic background, age, overweight or obesity, physical inactivity, hypertension, smoking, and excessive alcohol consumption (AHA, 2011a). Risk factors for developing high blood pressure include family history, advanced age, gender-related risk patterns (more men than women until 45 years; more women than men after 64 years), lack of physical activity, poor diet (especially too much salt), overweight and obesity, and excessive alcohol consumption. Possible contributing factors include stress, smoking and second-hand smoke, and sleep apnea (AHA, 2011b).

**Course and Signs and Symptoms**

Insulin resistance and prediabetes are precursors to full-blown diabetes. In response to insulin resistance, the pancreas releases excessive amounts of insulin to keep blood sugar levels normal. Over time, the cells in the pancreas become defective and are unable to regulate blood sugar levels, causing prediabetes and, eventually, full-blown diabetes (AHA, 2011a). The symptoms of type 2 diabetes are as follows:

- Frequent urination
- Unusual thirst
- Extreme hunger
- Unusual weight loss
- Extreme fatigue and irritability
- Frequent infections
- Blurred vision
- Cuts/bruises that are slow to heal
- Peripheral neuropathy: tingling, numbness, or sensation loss in the hands or feet
- Recurring skin, gum, or bladder infections (ADA, 2011a)

Most people do not realize they have hypertension because they have little or no symptoms. People with advanced cases of hypertension may have the following symptoms:

- Severe headache
- Confusion
- Nausea
- Visual disturbances
- Seizure (AHA, 2011b)

**Related Conditions**

Obesity, diabetes, and hypertension can lead to serious health risks, such as heart disease, stroke, musculoskeletal disorders (osteoarthritis), and certain types of cancer (endometrial, breast, and colon) (WHO, 2011). Adult obesity is associated with psychosocial and societal problems, such as reduced quality of life, stigmatization, social isolation, and discrimination (CDC, 2010a, 2010b). Individuals who are obese may face limitations in performing daily activities, especially if they have medical complications such as diabetes or heart disease (American Occupational Therapy Association [AOTA], 2010). Over time, diabetes may damage and cause blindness, glaucoma, cataracts, kidney disease, neuropathy, and amputation, whereas chronic hypertension causes the walls of the arteries to stretch, resulting in vascular weakness and scarring (ADA, 2011a; AHA, 2010a). It also increases the risk of blood clots, plaque buildup, tissue or organ damage, and increases the workload on the circulatory system. Chronic hypertension can cause changes in the blood vessels in the retina, thickening of the heart muscle, kidney failure, and brain damage (AHA, 2011b).

**Precautions**

People who are obese are at a higher risk for developing depression (ADA, 2011b). People who are obese or overweight must pay special attention to their nutrition and lifestyle choices because they are more likely to develop heart disease and related conditions like diabetes or hypertension (AHA, 2011a). In addition, people with diabetes must take special care to keep their feet clean, dry, and free of cuts or wounds (ADA, 2011a). Other precautions include special attention to one’s diet, participation in physical activity, and adherence to their medication schedule. People with hypertension should pay special attention to monitoring their blood pressure because they are at increased risk for stroke (AHA, 2011b).

**Interdisciplinary Interventions**

Many health care settings use a multidisciplinary team approach to provide intervention for people with chronic conditions such as overweight, obesity, diabetes, and hypertension. Team members may include physicians (bariatric, cardiologists, endocrinologists), nurses, dieticians, social workers, case managers, pharmacists, physical therapists, and occupational therapists (AOTA, 2010). The treatment of obesity usually focuses on shaping people’s behavior choices so that they make healthier lifestyle choices (WHO, 2011). Common medications used to reduce weight include appetite suppressants, lipase inhibitors, and medications...
for depression. Surgical interventions include gastric bypass surgery and the LAP-BAND System (CDC, 2010b). Diabetes is treated by close monitoring of blood glucose levels, healthy lifestyle choices, and medications such as insulin, sulfonylureas, meglitinides, and biguanides (ADA, 2011a). Control and treatment for hypertension includes adopting a healthy lifestyle (nutrition and exercise) and taking medication such as diuretics, angiotensin-converting enzyme (ACE) inhibitors, beta-blockers, or angiotensin II receptor blockers (AHA, 2011b).

**Occupational Therapy Evaluations**

Along with observations, interviews, and history taking, the following assessments can be used to evaluate the ability of a person with a chronic illness to perform relevant occupations:

**Participation and Activity**
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005): self-report of performance and satisfaction with occupations
- Health Status Questionnaire (SF-36): assesses patient’s perceptions of health and physical limitations
- Activity Card Sort (ACS): helps clients describe instrumental and social activities
- Assessment of Occupational Functioning-Collaborative Version (AOF-CV): identifies factors likely to influence functional ability by looking at personal causation, values, roles, habits, and skills
- Occupational Performance History Interview II (OPHI II): gathers information about client’s occupational adaptation over time by looking at critical life events, daily routines, and occupational roles
- Occupational Questionnaire (OQ): assesses time use patterns
- Occupational Profile of Sleep (Pierce & Summers, 2011)
- Stress diary

**Basic and Instrumental Activity of Daily Living Skills**
- Kohlman Evaluation of Living Skills (KELS): assesses the ability to live safely and independently in the community by looking at self-care, safety, work, and leisure
- Assessment of Motor and Process Skills (AMPS): assesses motor and process skill in context of performing familiar functional tasks

**Client Factors**
- Beck Depression Inventory-II (BDI-II): assesses the intensity of depression

**Occupational Therapy Interventions**

Occupational therapy (OT) practitioners can provide services to enhance the functional capabilities and self-management of individuals who have chronic conditions. Intervention can focus on the following:

- Activities of daily living (ADL), such as bathing, dressing, and toileting, especially for activities that require reach and flexibility
- Instrumental activities of daily living (IADL), such as cleaning, meal preparation, and child care
- The use of proper and safe, durable medical equipment
- Therapeutic exercises to increase strength for improved stamina and fitness
- Grading of functional tasks to gradually improve physical endurance
- Functional mobility, such as transfers out of bed and during bathing
- Safety in the home and community, especially in car transfers and moving in small spaces
- Home modifications to improve access to environment
- Task modifications to safely increase energy expenditure to enhance weight loss/management
- Establishment of healthy routines for food shopping and meal preparation
- Energy conservation
- Wellness groups for individuals and their families to support health promotion through lifestyle change (AOTA, 2010)

OT interventions specifically for clients with diabetes include the following:

- Patient and family education about monitoring of blood glucose levels, blood pressure, weight, and skin/foot health (including self-inspections)
- Techniques for medication management
- Protective or compensatory techniques for sensory loss in activities involving exposure to heat, cold, sharp, and so forth
- Interventions for secondary complications such as vision impairments, sensation loss, and amputations
- Education for techniques to structure time and prevent depression (Sokol-McKay, 2011)

**Occupational Therapy and the Evidence**

Occupational therapists support health promotion, disease prevention, and occupational performance in people who have chronic conditions, such as overweight and obesity, diabetes, and hypertension. Occupational therapists create individualized, client-centered interventions to address performance skills to enable people to engage in meaningful activities and occupations and identify barriers that may interfere with performance (Cozzolino, Henshaw, Kleumper, & Hermann, 2010; Sokol-McKay, 2011). They can assist and support lifestyle changes for individuals with obesity through interventions that focus on health promotion, prevention, remediation, adaptation, and maintenance (Clark, Reingold, & Salles-Jordan, 2007). The focus on living healthy lifestyles and managing weight can also be applied to the management of other chronic conditions such as diabetes and hypertension.

Specifically, occupational therapists help individuals with these conditions modify their lifestyle, control their weight, and engage in meaningful activities (Clark et al., 2007). Intervention approaches address health-related concerns, such as lifestyle change, weight control, and medication management. Client education, coupled with individualized and collaborative intervention planning, may promote effective health promoting routines and habit (Clark et al., 2007; Cohn et al., in press). Intervention also considers environmental adaptations or modifications that make engagement of meaningful activities of everyday life possible (Bondoc & Siebert, 2011; Forhan, Law, Vrkljan, & Taylor, 2010).

**Caregiver Concerns**

Caring for a family member with diabetes can be challenging. Special care must be paid to blood sugar monitoring, administration of medication, the nutritional content of food, and skin and foot care (Caswell, 2009). Caregivers of people with hypertension should be well informed of their loved one’s physical, mental, and medical needs (Pulmonary Hypertension Association [PHA], 2011).

**Resources**

**Organizations and Websites**

- American Diabetes Association
  1701 North Beauregard Street
  Alexandria, VA 22311
  Website: http://www.diabetes.org

- American Heart Association
  7272 Greenville Ave.
  Dallas, TX 75231
  Website: http://www.heart.org

- The Obesity Society
  8757 Georgia Avenue, Suite 1320
  Silver Spring, MD 20910
  Website: http://www.obesity.org
The number of annual fractures among children has increased over the past several decades and has a current prevalence of over 2% of children 65 years and older (National Center for Health Statistics, 2011).

Ortopedetic Conditions

Pamela Vaughn

Description and Diagnosis

Orthopedetic conditions pertain to the musculoskeletal system and include any injury, disease, or deformity of bones, joints, and their related structures (muscles, tendons, ligaments, nerves). Conditions that occupational therapists commonly encounter are fractures—particularly of the upper extremity and hip—and joint replacements (Javaherian, 2007). Orthopedic surgeons and physicians refer clients to occupational therapy (OT) after surgery or initial stabilization or diagnosis of the condition.

Incidence and Prevalence

The number of annual fractures among children has increased over the past several decades and has a current prevalence of over 2% of children per year; the forearm and wrist are the most common fracture locations in children (Hedström, Svensson, Bergrström, & Michno, 2010).

Hip fractures among older adults have declined in recent years but still occur in approximately 1.5% to 3% of U.S. older adult population; the incidence increases with age (Stevens & Rudd, 2010).

In the United States, total knee replacement (TKR) and total hip replacement (THR) surgeries have increased over the past two decades, with 25.9 TKRs and 11.7 THRs among adults aged 45 to 64 years per 10,000 population in the year 2006 to 2007; the figures increase to 82.1 and 33.3 per 10,000, respectively, among adults aged 65 years and older (National Center for Health Statistics, 2011).

Cause and Etiology

Falls are the leading cause of nonfatal injuries in the United States (Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, 2009) and are the most common mechanism of fractures in children and adolescents (Hedström et al., 2010). Other common traumatic events that cause orthopedetic conditions are motor vehicle accidents, sports injuries, and work-related accidents; cumulative trauma (e.g., stress fractures) can also result in these conditions. There may be circumstances in which clients, particularly children, sustained orthopedetic injuries as a result of abuse; it is necessary to follow protocol for mandatory reporting if this is suspected (Javaherian, 2007).

Orthopedetic conditions can be secondary to diseases, such as osteoarthritis and osteoporosis, or due to congenital anomalies as well (Javaherian, 2007; Maher & Bear-Lehman, 2008).
Typical Course, Symptoms, and Related Conditions
Because orthopedic conditions involve the musculoskeletal system, they tend to affect occupations that involve the use of that body part.

Fractures
Some fractures—including most hip fractures—require initial surgical repair to set the bone. Physical healing time depends on the location and extent of the injury and can last weeks to months (Maher & Bear-Lehman, 2008). Symptoms of a fracture typically include pain at the site of injury, swelling, bruising, deformity, and an inability to bear weight or experience pressure on the bone/joint (Javaherian, 2007). Individuals with osteoporosis are particularly at risk for fractures (Oyen et al., 2011).

Joint Replacements
A severe fracture or significant and lasting decrease in functionality—from osteoarthritis—of a joint often indicate the need for joint replacement surgery (Javaherian, 2007). The prosthetic joint, made of metal and plastic and designed to perform like a healthy joint, can last for more than 10 years (American Academy of Orthopaedic Surgeons, 2007).

Interdisciplinary Interventions
Medication Therapy
Postoperative procedures, that is, pain management medications, antibiotics, and anticoagulants, are standardly used following joint replacement procedures.

Physical Therapy
General strengthening and range of motion (ROM) exercises to rehabilitate the affected and adjoining body structures are the focus of physical therapy interventions. The physical therapist will also train the client to properly use any ambulatory devices (crutches, walker, and/or cane) required for lower extremity conditions.

Occupational Therapy Evaluations
The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors make impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the orthopedic condition on occupational performance.

Occupation-Based Assessments
- Role Checklist (Oakley, Kielhofner, Barris, & Reicher, 1986): assesses clients’ participation in and value placed on occupational roles
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004): a semistructured interview used to gather occupational performance and participation over time
- Activity Measure for Post-Acute Care (AM-PAC) (Jette, Hayley, Coster, & Ni, 2007): used in rehabilitation settings to assess mobility, daily activities, and cognition
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008): an observational tool to assess client’s functional mobility, personal care, and home management
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005): a semistructured interview that elicits the client’s self-assessment of performance and satisfaction in various areas of occupation over time
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995): a standardized scale that measures health-related quality of life

Assessments of Client Factors
- Disability of Arm, Shoulder, and Hand (DASH) (Hudak, Amadio, Bombardier, & the Upper Extremity Collaborative Group, 1996): a standardized questionnaire that rates disability and symptoms related to upper extremity musculoskeletal disorders
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Manual muscle testing
- Measures of grasp and pinch strength
- Measures of edema

Occupational Therapy Interventions
The primary goal of OT intervention in orthopedics is to restore clients to occupational functioning. This takes different forms depending on the condition and stage of recovery. Proper precautions, for example, movement and weight-bearing restrictions after surgery, should be considered at all times and communicated regularly to clients (Maher & Bear-Lehman, 2008).

Acute Stage of Recovery
Following surgery or medical stabilization, occupational therapists help educate clients on safe and proper methods to keep their injury/surgery site clean and protected in order to facilitate healing. When medically cleared, occupational therapists evaluate client factors and therapeutic goals (e.g., current ROM and strength, desire to return to previous roles and occupations) and begin to help remediate the muscles and joints surrounding the site via controlled movement and strengthening exercises. Splints, braces, and slings may be used to provide the client with additional support and/or comfort throughout the healing and early rehabilitative process (Javaherian, 2007).

Activities of Daily Living Retraining
Occupational therapists develop and teach clients compensatory strategies for dressing, feeding, bathing, toileting, functional mobility, personal care, and participating in sexual activities. These compensatory strategies may include the use of adaptive devices (e.g., long-handled equipment, pump bottles), task modification, or environmental modification. Depending on the condition, these strategies will either be temporarily or permanently implemented (Maher & Bear-Lehman, 2008).

Environmental Assessment and Fall Prevention
Just prior to or immediately following discharge after surgery, occupational therapists may visit the home or workplace of the client in order to perform an environmental assessment and, if necessary, recommend modifications to increase mobility and participation following injury. In the case of lower extremity conditions, suggestions for community mobility can be made (Maher & Bear-Lehman, 2008). Fall prevention education may be beneficial, particularly for older adults, in preventing exacerbation or a repeat of the current condition.

Occupational Therapy and the Evidence
OT in acute care settings for older adult clients with hip fractures has been shown to be effective in increasing recovery of ambulatory ability, improving functional recovery, decreasing length of stay in hospital, increasing lower extremity strength, and increasing fall-related self-efficacy (Chudyk, Jutai, Petrella, & Speechley, 2009). The use of the COPM was reported as an effective outcome measure with this population as well, although it should be noted that most clients do not return to the same level of function that they were at prior to injury (Edwards, Baptiste, Stratford, & Law, 2007).

Early mobilization following orthopedic injuries of upper extremity joints via ROM exercises has been shown to be somewhat effective in decreasing pain and swelling and facilitating quicker return to previous occupations (Amini, 2011; von der Heyde, 2011).
Hoehn and Yahr Stages of Parkinson’s Disease

Caregiver Concerns
Nahn, Resnick, Orwig, Magaziner, and DeGreizia (2010) reported that caregivers of individuals with hip fractures reported the following:

- Concern about their loved ones now being in a state of frailty
- Feeling tired and overwhelmed by the demands placed on them as caregivers
- Frustration with the health care system—lack of communication from health care providers and rough transitions between stages of recovery (e.g., acute care to rehabilitation facility)
- Wanting more information and resources

Resources
Organizations
- American Association of Orthopaedic Surgeons: a research and advocacy organization for patients and health care practitioners in the field of orthopedics.
  6300 North River Road
  Rosemont, IL 60018
  Telephone: (847) 823-7186
  Fax: (847) 823-9125
  E-mail: orthoinfo@aao.org
  Website: http://www.aao.org

Books
  A children's book about broken bones and the healing process.

Websites
- http://orthoinfo.aao.org/

References

Parkinson’s Disease

Therese Griffin

Description
Parkinson’s disease (PD) is a chronic, idiopathic, progressive neurodegenerative disorder of the central nervous system characterized by damage to dopamine-producing brain cells. The four primary symptoms include tremors at rest; bradykinesia; stiffness or rigidity of arms, legs, or trunk; and postural instability (National Parkinson Foundation, 2011). The average age of onset of PD is 60 years; however, estimates indicate the incidence has increased by 10% for those younger than the age of 40 years. Currently, 1.5 million Americans are living with PD, and there are 50,000 to 60,000 new cases of PD diagnosed each year (National Institute of Neurological Disorders and Stroke [NINDS], 2011).

Hoehn and Yahr Stages of Parkinson’s Disease

Doctors categorize the severity of the disease based on the Hoehn and Yahr staging system, with stage 1 representing the earliest form and stage 5 representing the end stage.

- Stage 1: There are mild movement-related symptoms on one side of the body, but the individual is able to function without disability.

- Stage 2: The movement-related symptoms on one side of the body become more noticeable and the individual must compensate by moving the other side.

- Stage 3: The movement-related symptoms affect both sides of the body equally, and the individual may have difficulty performing daily activities.

- Stage 4: The movement-related symptoms become severe, and the individual may require assistance with daily activities.

- Stage 5: The movement-related symptoms are so severe that the individual is no longer able to walk or stand independently.

The DASH (disabilities of the arm, shoulder, and hand) [corrected]. American Journal of Industrial Medicine, 29, 602–608. Erratum in: American Journal of Industrial Medicine, 30, 372.
Interdisciplinary Interventions

**Medications**

There are three categories of medications for PD. The first category aims to increase the dopamine levels in the brain. For example, levodopa converts into dopamine in the brain; however, its benefits may become less stable as PD progresses (National Library of Medicine, 2011). The second category influences neurotransmitters to ease symptoms of PD. For example, an anticholinergic drug inhibits the uptake of acetylcholine, which helps to reduce tremors. Medication side effects from the first two categories can include orthostatic hypotension, cardiac arrhythmias, and dystonic movements. The third category of medication controls nonmotor symptoms such as depression (NINDS, 2011).

**Surgery**

Surgery is used for individuals with PD that has progressed to the point wherein medications are not effective. A pallidotomy destroys the globus pallidus in the brain, which reduces symptoms of tremor, bradykinesia, and rigidity and improves gait and balance. A thalamotomy involves the removal of part of the thalamus, which may reduce tremors. Deep brain stimulation, which is often used because it does not involve the removal of brain tissue, stops the symptoms of PD by exciting an electrode implanted in the brain (NINDS, 2011).

**Therapies**

Physical therapy focuses on improving activities of daily living (ADL), stride length, and walking speed (Ellis et al., 2005). Speech therapy focuses on improving voice and speech function (de Swart, Willemsse, Maassen, & Horstink, 2003).

**Occupational Therapy Evaluations**

PD specific and some general occupational therapy (OT) assessments may be appropriate for evaluating reduced control of muscular movements, strength, endurance, speech, and psychosocial functions.

**Participation and Activity Level**

- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Parkinson’s Disease Quality of Life Questionnaire—39 Item Version (PDQ-39): self-report that includes the following:
  - Assessment of problems with health and well-being during the last month
  - Eight subscales including mobility, ADL, emotional well-being, stigma, social support, cognition, communication, and bodily discomfort
- Unified Parkinson’s Disease Rating Scale (UPDRS): a rating tool that follows the longitudinal course of PD and offers insight about disease progression
  - Categories include evaluation of mentation, behavior, and mood; self-evaluation of ADL; and clinician-scored motor evaluation
- Functional Independence Measure (FIM): assesses functional performance in self-care, transfers, locomotion, communication, and social cognition

**Client Factor Level**

- Hoehn and Yahr staging of PD
- Unified Parkinson’s Disease Rating Scale Balance Test
- Range of motion (ROM) testing
- Manual muscle testing
- Rigidity testing
- Mini-Mental State Examination (MMSE): assesses cognition
- Geriatric Depression Scale (GDS): basic screening measure for depression in older adults
- Fatigue Severity Scale (FSS): self-report questionnaire evaluating the impact of fatigue

**Occupational Therapy Intervention**

OT intervention helps individuals with PD function optimally in daily life and enables individuals to participate in meaningful occupations (American Occupational Therapy Association, 2007).

**Activities of Daily Living or Instrumental Activities of Daily Living**

- Teach use of adaptive techniques and tools to reduce the effect of tremors (Lyons, 2003).
- Provide strategies to assist with medication routines.

**Sensorimotor**

- Facilitate joint movement, maintain ROM, and prevent contractures by stretching.
- Improve motor planning and increase speed by adding cues such as music with beats (Marchese, Diverio, Ziacchi, Lentino, & Abbruzzese, 2000).

**Psychosocial**

- Group intervention can increase client functioning and perceptions of capabilities and self-esteem (Kimchi, Tamir, & Pessach, 2010).
- Educate in self-management skills, such as knowing how to respond to changing symptom displays, when to seek medical help, and how to improve self-efficacy (Lyons, 2003; Tickle-Degnen, Ellis, Saint-Hilaire, Thomas, & Wagenaar, 2010).
- Promote engagement in productive activities and leisure with suitable challenges (Sunvisson & Eknan, 2001).
- Encourage discussion of roles within the family and living unit.
- Educate the family about difficulties affecting social interaction, such as facial masking and oral rigidity (Lyons & Tickle-Degnen, 2003).

**Environment**

- Suggest home modifications for increased safety.
- Encourage client and family to participate in support groups.
- Help client and family explore the community for resources.

**Caregiver Concerns**

Caregivers may experience financial strains, fear of losing employment, depression, and social isolation. Additionally, when neuropsychiatric conditions such as dementia and depression co-occur with PD, there is an increase in caregiver burden (Stella, Banzato, Barasnevicius Quagliato, Aparecida Viana, & Christofolletti, 2009). Caregivers may need support to effectively manage this new role (Bhatia & Gupta, 2003). Frequent breaks and social support can decrease the effects of caregiver burden and improve caregiver quality of life (Goldworthy & Knowles, 2008).

**Occupational Therapy and the Evidence**

Because disability can advance in this progressive disease even with optimal pharmacological treatment, OT has a role in rehabilitation anywhere along the continuum of care. Recognizing this, it is important to consider what therapeutic techniques and OT interventions...
may be effective in supporting individuals living with PD. Evidence supports the use of external cueing during functional tasks, such as sit to stand (Mak & Hui-Chan, 2004), reaching (Ma, Trombly, Tickle-Degnen, & Wagenaar, 2004), and walking (Rochester et al., 2004), indicating that this may be an effective technique to use in order to help individuals reach their therapeutic goals. Meek et al. (2010) determined that a large portion of OT interventions developed to optimize independence involved goals related to equipment provision and environmental adaptations; mobility, transfer, and ADL training; and review, discussion, and teaching of new techniques. Additionally, these goals correspond with the OT outcomes of functional independence and mobility that Clarke et al. (2009) found to be the most relevant for optimizing independence in individuals with PD.

Multidisciplinary interventions are used with individuals throughout the progression of PD to address various motor and nonmotor outcomes; yet, research does not substantiate an impact on motor outcomes. Johnston and Chu (2010) review of available literature indicates that motor outcomes will continue to decline over time despite the use of multidisciplinary intervention. However, Tickle-Degnen et al. (2010) found that an interdisciplinary self-management rehabilitation program may improve health-related quality of life. Additionally, they hypothesized that the self-management strategies and skills could continue to help individuals manage changes in their lives as the PD progressed. Therefore, motor problems may remain constant or continue to decline with intervention, but despite motor challenges, an individual’s health and well-being can improve over time. These findings suggest that a self-management program should be considered in early to middle stages of PD to improve and sustain health-related quality of life. Ultimately, Tickle-Degnen et al. (2010) recognized that a theory- and evidence-based self-management program that takes a client-centered, goal-directed approach leads to successful rehabilitation outcomes.

It is important to keep in mind that PD can affect facial, gestural, and vocal expression of motivation. Therefore, to be client-centered, OT practitioners should vary their emotional tone when questioning clients with PD and assessing motivation (Takahashi, Tickle-Degnen, Coster, & Latham, 2010).

References

Books

  An autobiography chronicling Fox’s life; he shares his first symptoms of PD and what life is like living with PD.
  A true story with scientific and medical information interwoven with the personal story of a man with PD.
  Personal guidelines and tips on how to live with PD by a man who has PD.

Journals

- Archives of Neurology
- Journal of Gerontology
- Journal of Neurology, Neurosurgery, and Psychiatry
- Movement Disorders
- Neurology
- Parkinsonism and Rehabilitation

Websites

- Parkinson’s Disease Foundation (PDF) http://www.pdf.org
  This is a national foundation that focuses on research, education, and advocacy for PD. One of the primary goals of the foundation’s Website is to disseminate accurate, accessible information about PD to individuals with the disease and their families.
- Parkinson’s Resource Organization http://www.parkinsonresource.org
  This organization helps families affected by PD by offering emotional and educational support programs, providing information and referral services, promoting public awareness, and publishing a monthly newsletter about family issues.

Resources

Associations

- American Parkinson Disease Association, Inc. 135 Parkinson Ave Staten Island, NY 10305 Telephone: 800-223-2732 Website: http://www.apdaparkinson.org
  An association dedicated to funding PD research. They offer medical information, as well as public or professional education and support services.
- Michael J. Fox Foundation for Parkinson’s Research Church Street Station PO Box 780 New York, NY 10163 Telephone: 800-708-7644 Website: http://www.michaeljfox.org/
  A foundation dedicated to finding a cure for PD by funding current research. This foundation is also interested in the development of improved therapies.
- National Parkinson Foundation 1501 N.W. 9th Avenue Bob Hope Road Miami, Florida 33136-1494 Telephone: 800-327-4545 Website: http://www.parkinson.org
  A nationwide network of chapters and support groups that offer patient services, clinical studies and research, and public and professional education.


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**Peripheral Nerve Injury**

*Pamela Vaughn*

**Description and Diagnosis**

Peripheral nerve injury (PNI) is any injury that affects the nerves outside of the brain and spinal cord, including nerve roots, ganglia, plexi, autonomic nerves, and sensory and motor nerves. A *mononeuropathy* is when one nerve is affected; a *polyneuropathy* involves multiple nerves. Examples of PNIs include carpal tunnel and brachial plexus injuries (e.g., Erb’s palsy). PNIs are diagnosed via neurological examinations that may also include the use of magnetic resonance imaging (MRI), electromyography (EMG), computed tomography (CT) scans, or nerve conduction velocity (NCV) tests to determine location, cause, extent, and type of injury (National Institute of Neurological Disorders and Stroke [NINDS], 2004).
Physical Therapy
Although evidence is mixed regarding efficacy, physical therapy after PNI focuses on strengthening muscles and maintaining range of motion (ROM) of joints affected by the injured nerve as well as on facilitating nerve regeneration with techniques such as phototherapy and electrical stimulation (Deumens et al., 2010).

Occupational Therapy Evaluations
The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of PNI on occupational performance.

Occupation-Focused Assessments
- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986): assesses client’s participation in and value placed on occupational roles
- Occupational Performance History Interview II (OPHI-II) (Kielhofner et al., 2004): a semistructured interview used to gather occupational performance and participation over time
- Activity Measure for Post-Acute Care (AM-PAC) (Jette, Hayley, Cushing, M., & Latov, N. 2009): used in rehabilitation settings to assess mobility, daily activities, and cognition
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008): an observational tool to assess client’s functional mobility, personal care, and home management
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005): a semistructured interview that elicits the client’s self-assessment of performance and satisfaction in various areas of occupation over time
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995): a standardized scale that measures health-related quality of life
- Activity Card Sort (ACS) (Baum & Edwards, 2008): a tool to help clients describe instrumental activities of daily living (IADL), leisure, and social activities.

Client Factor Assessments
- Disabilities of the Arm, Shoulder, and Hand (DASH) Outcome Measure (Hudak, Amadio, Bombardier, & the Upper Extremity Collaborative Group, 1996): a standardized questionnaire that rates disability and symptoms related to upper extremity musculoskeletal disorders
- Various sensory tests (e.g., two-point discrimination tests, Moberg Pickup Test [Ng, Ho, & Chow, 1999])
- ROM
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Measures of muscle strength, grasp, and pinch strength

Occupational Therapy Interventions
Sensory Reeducation
Sensory reeducation is a commonly used technique, particularly in hand therapy, in which therapists assist clients to “relearn” tactile sensations that, as a result of the injury, were no longer recognized by the clients—Delong’s (1988) clinical example was of patients with upper extremity PNI who could not correctly identify coins using only touch sensation in their hands. The neurological mechanism that facilitates this relearning is the retraining of the cortical map that correlates with touch sensation in the affected part of the body (Oud, Beelen, Ejffinger, & Nollet, 2007).

Hand Therapy
When PNI occurs in the distal upper extremity, occupational therapists trained in hand therapy use splinting to maintain correct anatomical positioning during the initial stages of recovery. Later, therapists can use occupation-based strategies (e.g., handwriting, holding and using kitchen utensils to cook a meal) to strengthen muscles and tendons of the hand for functional use (Guzelkucuk, Duman, Taskaynatan, & Dincer, 2007).

Prevention
Occupational therapists can educate clients in preventive measures—such as proper ergonomics, work station adjustments, and body mechanics—to reduce the likelihood of incurring PNI due to misuse or repetitive stress (Shiri et al., 2011).

Consultation
Because individuals with PNI report a temporary decrease in participation in employment, activities of daily living (ADL), and IADL as well as a prolonged decrease in participation in leisure activities (Novak et al., 2011), occupational therapists can assist clients in the process of finding new and alternative occupations to increase and enhance their participation after injury (Meiners, Coert, Robinson, & Meek, 2005).

Occupational Therapy and the Evidence
Although limited, the evidence regarding sensory reeducation after PNI shows that this technique results in improved functional sensation in the upper limb (Oud et al., 2007). Amini (2011) reports that many intervention approaches commonly used in occupational therapy for clients with upper extremity injuries and conditions, including PNI, show positive outcomes—for example, decreased pain, increased function—including the use of sensory reeducation, and that occupation-based interventions resulted in improvements in affected areas of occupation.

Resources

Organizations
- Foundation for Peripheral Neuropathy (FPN) 485 Half Day Road Suite 200 Buffalo Grove, IL 60089 Telephone: 877-883-9942 E-mail: info@tfppn.org http://www.foundationforpn.org/ FPN is an educational resource for clients and professionals and raises funds to further research of neuropathy.

Books

Websites
- http://www.neuropathy.org

References

Prematurity
Samantha Slocum

Description and Diagnosis
Infants who are born prior to 37 weeks of gestation are considered premature and often referred to as preterm infants or “preemies” (Lee, 2010). Babies who are born preterm are at risk for a wide range of serious health problems and medical complications as a result of low birth weights and underdeveloped organs (March of Dimes, 2010). Premature infants typically receive care in the neonatal intensive care unit (NICU) until they are strong and stable enough to go home (Lee, 2010; March of Dimes, 2010; Torpy, 2003).

Incidence and Prevalence
Approximately 12% of infants (500,000) born in the United States each year are preterm (March of Dimes, 2010). Certain risk factors may increase the likelihood of delivering prematurely including previous preterm births, birth defects of the infant, and maternal uterine or cervical abnormalities (Lee, 2010; March of Dimes, 2010; Nemours Foundation, 2011). Premature births are more likely to occur in women who are African American, younger than 17 years or older than 35 years, and of low socioeconomic status (Lee, 2010; March of Dimes, 2010).

Cause and Etiology
The cause of premature birth is often unknown, and various factors could lead to prematurity. Early labor may be induced intentionally as a result of pregnancy complications or health problems; however, most premature births result from spontaneous preterm labor (March of Dimes, 2010). Multiple pregnancies (twins, triplets, etc.) are a major cause of prematurity, accounting for approximately 15% of all preemies. Other health conditions and pregnancy-related issues that may increase the likelihood of preterm labor include diabetes, heart disease, infections (especially of amniotic membranes or urinary tract), use of drugs or alcohol, lack of prenatal care, poor nutrition before and during pregnancy, stress, preeclampsia, placenta previa, obesity, working for long hours, and being underweight (Lee, 2010; March of Dimes, 2010; Nemours Foundation, 2011).

Typical Course, Symptoms, and Related Conditions
As a result of medical advancements, the survival rate of preterm infants has increased significantly; of babies born at 28 weeks or later, 90% survive. Some premature infants develop typically and have no long-term health complications caused by their prematurity. However, most preemies will likely present with transient developmental differences because they will be exposed to unique extraterrestrial experiences at gestational ages in which full-term infants would experience in utero. These differences vary but may include thin and wrinkled skin with a transparent appearance, soft body hair known as lanugo—covering the face and body, difficulty breathing due to underdeveloped lungs, less activity and lower muscle tone than full-term infants, feeding difficulties, and decreased body fat (Lee, 2010; March of Dimes, 2010). Once premature infants reach the age of 2 years, they are expected to reach the typical growth patterns and developmental milestones of full-term infants.


**Occupational Therapy Interventions**

Related conditions that a premature infant may experience include the following:

- Difficulty maintaining body temperature (Lee, 2010; Torpy, 2003)
- Bradycardia: low heart rate (Torpy, 2003)
- Respiratory distress syndrome (RDS): difficulty breathing caused by the absence of pulmonary surfactant, a detergent-like protein that prevents the collapse of air sacs
- Apnea: interruption or cessation of breathing
- Intraventricular hemorrhage (IVH): bleeding in the brain
- Patent ductus arteriosus (PDA): heart condition resulting from an arterial duct not closing properly after birth
- Necrotizing enterocolitis (NEC): intestinal problem that may lead to feeding problems and abdominal swelling
- Retinopathy of prematurity (ROP): damage to retinas that may lead to visual impairment
- Jaundice
- Anemia
- Infections (Lee, 2010; March of Dimes, 2010)

Long-term complications of prematurity may include delayed growth and development, mental or physical disabilities or delays (e.g., mental retardation, cerebral palsy, learning disabilities, behavior problems), chronic lung disease, continuing health/medical complications, and hearing or visual impairments (Lee, 2010; March of Dimes, 2010; Torpy, 2003).

**Precautions**

It is important to closely monitor a preemie’s vital signs and be aware of possible abnormalities; some irregularities may affect respiratory, cardiovascular, visual, and auditory functioning. Feeding problems, as a result of swallowing and sucking difficulties due to immaturity, and hypoglycemia are also common in premature infants (Lee, 2010).

**Interdisciplinary Interventions**

**Medical Interventions**

- Body temperature: Incubators and warming pads may be used to keep temperature within a normal range, which is crucial to development (Lee, 2010; Nemours Foundation, 2011).
- Nutrition and growth: Most preemies cannot feed directly from breast or bottle until after 32 weeks, so feeding tubes may be placed through the nose or mouth to the stomach. In very preterm or sick infants, nutrition may also be provided intravenously (Lee, 2010; Nemours Foundation, 2011).
- Breathing and lungs: Mechanical ventilation, continuous positive airway pressure (CPAP), or oxygen delivered through nasal prongs or an oxygen hood may be used (Lee, 2010).
- Continuous monitoring of vital signs (Lee, 2010)
- Synthetic surfactant may be given to premature infants experiencing breathing difficulties and has been shown to be effective to prevent respiratory distress syndrome (RDS) as well as in reducing pneumothorax and death in preemies (Soll, 2009).
- Sucrose (sugar) given to babies, often on pacifiers, during painful procedures, such as needles or heel pricks, has been shown to be effective in decreasing pain, crying time, and behaviors such as grimacing (Stevens, Yamada, & Ohlsson, 2010). Local analgesics may also be used for pain prevention.

**Interdisciplinary Interventions**

Care in the NICU is family centered and focuses on caregivers as well as the premature infant. Most of the care and treatment provided in the NICU is interdisciplinary and, therefore, role crossover is very common. A preemie’s interdisciplinary care team may include physical therapy (to address mobility needs and assist with improving lung function), speech therapy (to address feeding and swallowing needs), respiratory therapy (to provide equipment and monitoring devices to help with breathing), and nursing (to provide constant care and monitoring). Skin-to-skin care, also known as kangaroo care, has been found to be very successful in keeping infants warm and content, decreasing stress, and promoting development among other benefits (Vergara & Bigsby, 2004; Zieve, 2009).

**Occupational Therapy Evaluations**

- Neurobehavioral Assessment of the Preterm Infant (NAPI): assesses neurobehavioral maturity for stable preemies functioning in range of 32 to 42 weeks (Stanford School of Medicine, 2011)
- Naturalistic Observations of Newborn Behaviors (NONB): for infants who are too fragile for handling (Vergara & Bigsby, 2004)
- Assessment of Preterm Infant Behavior (APIB): for stable preterm infants (<30 to 32 weeks) (Als, Butler, Kosta, & McAnulty, 2005)
- NICU Network Neurobehavioral Scale (NINNS): assesses neurological and functional behavior of stable preterm infants (Lester & Tronick, 2004)
- Neurologic Assessment of the Preterm and Full-Term Newborn Infant (NAPIF); assesses function of the nervous system in infants who can tolerate handling (Dubowitz, Dubowitz, & Mercuri, 1999)

**Occupational Therapy Interventions**

Occupational therapists in the NICU focus on promoting and enabling preemies to engage in the expected neonatal and infant occupations. Because the safety and comfort of the preemie should be taken into consideration first and foremost, interventions may be implemented by the member of the transdisciplinary team who is available at the most appropriate time (March of Dimes, 2010; Vergara & Bigsby, 2004).

Several of the following interventions fall into the category of developmental care, targeted to minimize the impact of stressors in the NICU environment on the preemie: environmental modulation, positioning, cue-based care, and so forth. Programs such as the Newborn Individualized Developmental Care and Assessment Program (NIDCAP) are designed to use a combination of developmental care strategies, individualized to the needs of each preemie (Symington & Pinelli, 2009).

- **Family and caregiver support and education**: Occupational therapists may teach parents appropriate handling and holding techniques, ways to position and interact with their baby as well as read and understand the preemie’s cues and reactions to the environment to reduce stress (Vergara & Bigsby, 2004; Zieve, 2009).
- **Monitoring sensory environment**: Establishing a NICU environment that resembles the intrauterine environment as closely as possible and protects the infant from the averse sensory stimulation of the NICU is most appropriate to promote neurobehavioral, motor, and sensory development of preemies and minimize stress. Eliminating excessive stimulation when possible, minimizing handling, clustering care activities, and providing longer rest periods are important to decrease stress for the infant. Aspects of the environment that should be considered are lighting, sound, temperature, humidity, and movement. Modifications of the environment and sensory stimulation should be constantly assessed and modified to provide individualized, developmentally supportive care that compliments the infant’s age, medical status and stability, and state of readiness (Symington & Pinelli, 2009; Vergara & Bigsby, 2004).
- **Therapeutic positioning**: Crucial for infants to foster growth and development, reduce the risk of acquired positional deformities, and allow for neurobehavioral organization. Positioning should be comfortable and secure with extremities flexed and toward the midline to promote hand-to-mouth activity. This position will also help the infant feel calm, peaceful, and organized. Use of soft-rolled blankets create a secure “nest” that closely resembles the intrauterine environment. Positioning should be individualized and based on infant cues (Hellman, 2009).
- **Promote infant suck reflex**: For nipple feeding and oral-motor skills. The occupational therapist can provide alternative feeding strategies,
equipment, methods, techniques, feeding position, or changing the type or flow rate of liquid (Lee, 2010; Vergara & Bigsby, 2004).

- Early intervention: Long-term risks or disabilities as a result of prematurity may indicate the need for early intervention services once the premature infant has been discharged home (Vergara & Bigsby, 2004).

Occupational Therapy and the Evidence

Individualized developmentally supportive care has been shown to be effective in improving various outcomes for premature infants in the NICU. Modification of external stimuli, specifically when concurrent with the intrauterine environment at the gestational age of the preemie, may improve short-term growth outcomes, decreased lengths of stay, and enhanced neurodevelopmental outcomes such as organization and self-regulation. Some research has shown that preemies receiving NIDCAP required less respiratory support (McAnulty et al., 2009; Symington & Pinelli, 2009). McAnulty et al. (2009) also found that NIDCAP resulted in decreased morbidity, as well as improved posture, motility, quality of life, and response rate in preemies. There is also some evidence that shows NIDCAP interventions provide long-term effects. Children who received NIDCAP as preemies showed better medical outcomes, behavioral functioning (organization and self-regulation), and motor responses at 8 years of age (McAnulty et al., 2010). Overall, individualized developmental care for preemies in the NICU has been shown to provide beneficial short- and long-term outcomes for premature infants (McAnulty et al., 2009; Symington & Pinelli, 2009).

Caregiver Concerns

Premature infants will likely spend a significant amount of time in the NICU, and this experience can be physically and emotionally stressful for caregivers. It is important for caregivers to become familiar with the specific needs of their infant and be aware of the subtle cues, signs, and symptoms their preemie gives. It is also helpful for caregivers to learn as much as they can about their baby’s condition, medications, and care schedule. Involvement in his or her care in the NICU will promote increased knowledge and preparedness for when the preemie is discharged. Caregivers need to understand that their preemie may be difficult to console. The needs and delays of a preterm infant may continue to change and develop as they age. Keeping in touch with other families from the NICU or joining support groups may also be beneficial (March of Dimes, 2010; Vergara & Bigsby, 2004).

Resources

Organizations

- March of Dimes (National Office)
  1275 Mamaroneck Avenue
  White Plains, NY 10605
  Telephone: (914)-977-4488
  Website: http://www.marshofdimes.com
  Local chapter contact information may be obtained from the Website.

- The American Academy of Pediatrics
  11313 Rockville Pike
  Elkins Park, PA 19027
  Telephone: (240)-898-5337
  Website: http://www.aap.org

Books

  This book provides information and suggestions on all aspects of raising a premature infant from birth to long-term parenting. It focuses on experiences, feelings, and relationships.

  This book is a first-hand account of one preemie’s journey, targeted for siblings of preterm infants. The book details the complexities of preterm birth, life in the NICU, and bringing home a preemie in clear and simple language for children to understand.

  This book is a great resource for practitioners. It uses easy-to-understand terminology and provides various information and techniques to use when working with preterm infants in the NICU.

Journals

- Pediatrics
- Physical and Occupational Therapy in Pediatrics
- Infants and Young Children

Websites

- March of Dimes (http://www.marchofdimes.org)—This Website provides news, events, and resources to support caregivers of preterm infants as well as professionals. It provides an online community for families of preemies to connect and support each other. This Website has a wide range of information on prematurity facts and what to expect when caring for a preterm infant.

- Premature Baby, Premature Child (http://www.prematurity.org)—This Website provides resources for parents and caregivers of preterm infants and children. It offers information on raising preemies as well as connections with other families of premature children and resources such as books, research, and personal stories.

Occupational Therapy Resources

- AOTA’s NICU Knowledge and Skills Paper: A thorough outline of the advanced skills and knowledge necessary to provide quality care to preemies and their families in the NICU. Available from the AOTA Website.

References


Appendix I: Common Conditions, Resources, and Evidence

- March of Dimes (http://www.marchofdimes.org)—This Website provides news, events, and resources to support caregivers of preterm infants as well as professionals. It provides an online community for families of preemies to connect and support each other. This Website has a wide range of information on prematurity facts and what to expect when caring for a preterm infant.
- Premature Baby, Premature Child (http://www.prematurity.org)—This Website provides resources for parents and caregivers of preterm infants and children. It offers information on raising preemies as well as connections with other families of premature children and resources such as books, research, and personal stories.
Interdisciplinary Interventions


Pulmonary Conditions

Pamela Vaughn

Description and Diagnosis

Any condition or disease that affects or is located in the lungs is considered a pulmonary condition. Examples include chronic obstructive pulmonary disease (COPD), which includes both emphysema and chronic bronchitis, asthma, cystic fibrosis, pneumonia, and tuberculosis. Of these conditions, occupational therapists are most likely to encounter clients with COPD.

- COPD: a condition in which airflow blockages that create breathing-related problems; includes emphysema and/or chronic bronchitis
- Emphysema: a type of COPD characterized by permanent damage to the alveoli (air sacs that are responsible for the carbon dioxide–oxygen exchange) in the lungs, resulting in shortness of breath and difficulty exhaling
- Chronic bronchitis: a type of COPD characterized by the inflammation (and eventual scarring) of the lining of the bronchial tubes, producing thick mucus and restricting airflow. Chronic bronchitis is diagnosed when a person has a mucus-producing cough most days of the month, 3 months of a year for two successive years without other underlying disease to explain the cough (American Lung Association [ALA], 2011; Centers for Disease Control and Prevention [CDC], 2011; National Heart Lung and Blood Institute [NHLBI], 2010).

When an individual presents with symptoms, a physician will perform tests to determine whether the symptoms are caused by COPD or other conditions (e.g., heart failure or asthma). Tests may include lung function tests (e.g., spirometry to measure the volume and velocity of exhaled air), computed tomography (CT) scans, chest X-rays, and arterial blood gas level tests (NHLBI, 2010).

Prevalence

- In 2009, more than 2% of U.S. adults aged 18 years and older (n = 4.9 million) were living with a diagnosis of emphysema.
- In 2009, more than 4% of U.S. adults aged 18 years and older (n = 9.9 million) were living with a diagnosis of chronic bronchitis (Pleis, Ward, & Lucas, 2010).
- Chronic lower respiratory diseases are the fourth leading cause of death in the United States. The death rate of people with these diseases has remained stable over the past decade at just more than 5% of all deaths annually; with a growing population, this indicates that the number of deaths due to COPD is increasing annually (National Center for Health Statistics, 2011).

Cause and Etiology

Almost all cases of COPD are due to long-term exposure to and inhalation of lung irritants. The most common COPD-causing irritant in the United States is cigarette smoke, although other forms of tobacco smoke (e.g., cigar, pipe) can cause the disease as well. The risk of developing COPD is greater with first-hand inhalation than second-hand exposure, but both modes are common. Examples of other substances that can cause COPD with long-term inhalation are air pollution, dust, and chemical fumes. Individuals who have the genetic condition alpha-1 antitrypsin (AAT) deficiency—a condition in which the body produces low levels of a lung-protective protein—have an increased risk of developing COPD, especially if they smoke (NHLBI, 2010).

Typical Course, Symptoms, and Related Conditions

There are four stages of COPD (I to IV, corresponding with mild, moderate, severe, and very severe COPD) according to the extent to which airflow is limited based on spirometry. The symptoms at each stage vary between individuals. In the mild stage, clients may not even be aware that their lung functioning is atypical. Most often, the symptoms develop slowly and may not initially interfere with daily activity. Some individuals may attribute symptoms to having a cold, ageing, or being physically out of shape (Eckert, 2007).

Symptoms of Chronic Obstructive Pulmonary Disease (NHLBI, 2010)

<table>
<thead>
<tr>
<th>Initial</th>
<th>With disease progression</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Persistent cough or a cough that produces large amounts of mucus</td>
<td>• Edema in the ankles, feet, or legs</td>
</tr>
<tr>
<td>• Shortness of breath (“dyspnea”), particularly during and after physical activity</td>
<td>• Weight loss and muscle atrophy</td>
</tr>
<tr>
<td>• Wheezing</td>
<td>• Decreased endurance, fatigue</td>
</tr>
<tr>
<td>• Chest tightness</td>
<td>• Bluish-colored lips and/or fingernails</td>
</tr>
<tr>
<td></td>
<td>• Severe and constant dyspnea that inhibits even talking</td>
</tr>
<tr>
<td></td>
<td>• Rapid heartbeat</td>
</tr>
<tr>
<td></td>
<td>• Decreased alertness</td>
</tr>
</tbody>
</table>

As a result of COPD, many individuals contract colds, the flu, or other illnesses frequently. In addition, clients will experience decreases in occupational performance and participation—because of lack of energy, inability to increase respiratory rate to keep up with activities, and so forth—often leading to decreased quality of life and self-efficacy. Even eating becomes exhausting (Huntley, 2008). Many clients develop a comorbid diagnosis of depression. Other common comorbid conditions include hypertension, high cholesterol, and osteoporosis (Barr et al., 2009).

Interdisciplinary Interventions

Pulmonary rehabilitation is a comprehensive and multidisciplinary individualized therapeutic and educational program that educates clients about their pulmonary condition and teaches both physical and psychosocial strategies and techniques to live functionally with the condition. Smoking cessation programs are often one aspect of pulmonary rehab. Occupational therapists play an integral role on the multidisciplinary team. Other team members may include respiratory therapists, thoracic surgeons, physicians, nurses, physical therapists, psychologists, social workers, nutritionists, and so forth (Ries et al., 2007).

Medication Therapy

Inhalers containing bronchodilators and/or anti-inflammatory drugs are commonly prescribed for COPD. These are used either on a
maintenance level to control symptoms or on an as-needed basis when symptoms are acutely exacerbated. To combat the potential contraction of illnesses, antibiotics may be prescribed as well (Eckert, 2007; Garvey, 2011).

**Oxygen Therapy**

When lung function declines to the point that an individual is no longer able to consistently inhale sufficient oxygen to meet the body’s needs and meet the demands of activities, oxygen supplementation may be used. A physician or respiratory therapist will work with a client to determine the best form of supplemental oxygen to meet his or her lifestyle needs. Forms include compressed oxygen containers, liquid oxygen containers, and oxygen concentrators. These come in various sizes and can be stationary or portable (Garvey, 2011).

**Surgery**

Some clients may be candidates for lung surgery. Types of surgery used include lung transplants, lung volume reduction (removes damaged portions to increase ventilation ability), and removal of damaged or diseased alveoli (Garvey, 2011).

**Occupational Therapy Evaluations**

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-focused assessments followed by specific evaluation of the potential impact of pulmonary conditions on occupational performance.

**Occupation-Focused Assessments**

- Role Checklist (Oakley, Kielhofner, Barris, & Reichler, 1986)
- Occupational Performance History Interview II (OPHH-II) (Kielhofner et al., 2004)
- Occupational Self-Assessment (OSA) Version 2.2 (Baron, Kielhofner, Iyenger, Goldhammer, & Wolencki, 2006)
- Performance Assessment of Self-Care Skills (PASS) (Holm & Rogers, 2008)
- Canadian Occupational Performance Measure (COPM) (Law et al., 2005)
- Short Form-36 (SF-36) (Hays, Sherbourne, & Mazel, 1995)
- Activity Card Sort (ACS) (Baum & Edwards, 2008)

**Client Factor Assessments**

- Chronic Respiratory Disease Questionnaire Self-Administered Standardized (CRQ-SAS) (Schünemann et al., 2005)
- Beck Depression Inventory-II (BDI-II) (Beck, Steer, & Brown, 1996)
- Borg Rating of Perceived Exertion (RPE) scale (Borg, 1998)
- Range of motion (ROM)
- Measures of pain (e.g., Visual Analog Scale [VAS])
- Monitoring of vital signs (particularly respiratory rate and blood oxygen saturation)

**Occupational Therapy Interventions**

Separately or as part of a pulmonary rehab team, occupational therapists provide interventions to assist clients in maintaining or increasing their occupational performance and participation while living with pulmonary conditions. Depending on the clients’ needs and desires, intervention may include the following:

- Teaching energy conservation techniques: to minimize respiratory exertion; may include environmental adaptations, breathing techniques, and so forth
- Retraining in activities of daily living (ADL): for example, grading activities to optimize participation without causing excessive strain; using assistive devices, if necessary
- Upper extremity strength and ROM training: Some medications for pulmonary conditions weaken muscles. Because clients with these conditions often use their shoulder girdle muscles to assist in inhalation, maintaining strength in these muscles is necessary.
- Educating client and family members about the risk factors of respiratory conditions and measures to be taken to remain healthy and functional (i.e., smoking cessation)
- Lifestyle modification: for example, identify new or alternate occupations that allow client to participate satisfactorily without exacerbating the pulmonary condition
- Environmental assessment, particularly if supplemental oxygen is prescribed
- Medication management
- Recommendations of support groups and resources within the community (Eckert, 2007; Huntley, 2008)

**Occupational Therapy and the Evidence**

In a qualitative study on the lived experience of clients with COPD, participants revealed that they needed to change their occupations (i.e., ADL, instrumental activities of daily living [IADL], and leisure) to accommodate for their symptoms and that they often viewed this change as a loss. However, many techniques learned and suggestions garnered in therapy helped them maintain or return to occupational satisfaction (Kerr & Ballinger, 2010).

Occupational therapy (OT) interventions (or multidisciplinary pulmonary rehab including OT) has been shown to increase physical function, quality of life, and independence and efficiency in ADL and IADL and to decrease dyspnea in clients with COPD (Chan, 2004; Puhan et al., 2009; Vincent, Stephenson, Omlavi, & Vincent, 2008). OT for COPD also can result in improvements in social functioning, overall physical health, and psychological health (Hand, Law, & McColl, 2011). Pulmonary rehab provides clients with a positive support system and relevant social outlet (Halding, Wahl, & Heggdal, 2010).

**Caregiver Concerns**

As COPD increases in severity, client reliance on friends and family members increases as well. This often results in caregivers experiencing decreased quality of life and/or depression, feeling burdened with the task of assisting their loved ones to complete occupations, and becoming one of the client’s only emotional and social outlets. Caregivers need to be supported and educated regarding the best ways to help their loved ones while still keeping themselves physically and emotionally healthy (Caress, Luker, Chalmers, & Salmon, 2009).

**Resources**

**Organizations**

- American Association of Cardiovascular and Pulmonary Rehabilitation
  401 North Michigan Avenue, Suite 2200
  Chicago, IL 60611
  Telephone: 312-321-5146
  E-mail: aacvpr@aacvpr.org
  Website: http://www.aacvpr.org

- American Lung Association
  1301 Pennsylvania Ave. NW, Suite 800
  Washington, DC 20004
  Telephone: 202-785-3355
  E-mail: info@lungusa.org
  Website: http://www.lungusa.org

- American Thoracic Society
  25 Broadway, 18th Floor
  New York, NY 10004
  Telephone: 212-315-8600
  E-mail: atsinfo@thoracic.org
  Website: http://www.thoracic.org
Etiology and Risk Factors

- COPD Foundation
  20 F Street NW, Suite 200-A
  Washington, DC 20001
  Telephone: 866-731-COPD (2673) (general office); 866-316-COPD (COPD information line)
  E-mail: info@copdfoundation.org
  Website: http://www.copdfoundation.org

Books


Websites

- Global Initiative for Chronic Obstructive Lung Disease (GOLD) http://www.goldcopd.org/

- National Heart Lung and Blood Institute (NHLBI; part of National Institutes of Health [NIH]) http://www.nhlbi.nih.gov/

References


schizophrenia have not yet been identified. Later environmental stressors, such as urbanicity, cannabis use, or exposure to trauma, coupled with early risk factors, are more associated with the development of positive psychotic symptoms, such as hallucinations and delusions (Dominguez, Saka, Lieb, Wittchen, & van Os, 2010).

## Symptoms

Characteristic symptoms of schizophrenia include delusions, hallucinations, disorganized speech (e.g., frequent derailment or incoherence), grossly disorganized or catatonic behavior, and negative symptoms, for example, affective flattening, alogia, or avolition. Characteristic symptoms of schizoaffective disorder include the symptoms of schizophrenia, with the addition of any of the following:

- Major depressive episode, which may include depressed mood for most of the day, diminished interest or pleasure in activities, weight loss or gain, change in sleep pattern, or feelings of worthlessness or guilt
- Manic episode, which may include inflated self-esteem or grandiosity, decreased need for sleep, increased talkativeness, increased distractibility, or excessive involvement in pleasurable activities with high potential for painful consequences
- Mixed episode, which is characterized by criteria met for both a major depressive and manic episode nearly every day for at least 1 week (APA, 2000)

## Precautions

- Suicide
- Cigarette smoking
- Cannabis use
- Weight gain

## Interdisciplinary Interventions

The treatment of schizophrenia requires various approaches. Psychiatrists, psychologists, nurses, case managers, social workers, occupational therapists, and other health care professionals make unique contributions to the recovery process based on their training and expertise. Combining pharmacological and psychosocial intervention yields the most effective outcomes in improving clients’ overall functioning and quality of life (Dixon, Perkins, & Calmes, 2009).

## Medication

Antipsychotic medications are prescribed by psychiatrists to manage symptoms and help clients establish a stable base to benefit from other interventions. The first generation of drugs, conventional neuroleptic agents, were introduced in the 1950s; these drugs are referred to as “typical” antipsychotics. A second generation of antipsychotic tranquilizing medications were developed in the 1990s; these drugs are referred to as “atypical.” Both generations of drugs act as antagonists of dopamine in the frontal context and limbic system, impacting behavior and affect. The atypical drugs are less likely to cause problematic extrapyramidal motor control side effects. The advantages and disadvantages of the two categories are debated, and although atypical are preferred, typical agents may be more appropriate for some clients. “Medication selection is informed by current symptoms, co-occurring conditions, the client’s medication history, concurrent treatments, and preferences” (Dixon, Perkins, et al., 2009, p. 2).

Commonly prescribed first generation drugs include the following:

- Chlorpromazine
- Molindone
- Perphenazine
- Haloperidol

Commonly prescribed second generation drugs include the following:

- Clozapine
- Olanzapine
- Quetiapine
- Risperidone
- Ziprasidone

Side effects are common among both generations of medications, which may include the following:

- Metabolic changes (weight gain)
- Extrapyramidal symptoms (tardive dyskinesia, akinesia, or other movement disorders)
- Sedation or drowsiness
- Cardiac effects (hypertension or hypotension)
- Anticholinergic symptoms (blurred vision, dry mouth, constipation, urinary retention) (Dixon, Perkins, et al., 2009)

Because schizoaffective disorder is characterized by abnormal mood patterns in addition to psychotic symptoms, these individuals are often prescribed a supplementary mood stabilizer. A newer atypical antipsychotic, paliperidone, has been found to be particularly helpful in managing both the psychosis- and mood-related symptoms of schizoaffective disorder (Canuso, Turkoz, Fu, & Bossie, 2010).

## Occupational Therapy Evaluation

### Activities of Daily Living or Instrumental Activities of Daily Living

- Independent Living Scales (ILS)
- Independent Living Skills Survey (ILSS)
- Kohlman Evaluation of Living Skills (KELS)
- Medication Management Ability Assessment (MMAA)
- Milwaukee Evaluation of Daily Living Skills (MEDLS)
- Test of Grocery Shopping Skills (TOG-SS)
- UCSD Performance-Based Skills Assessment (UPSA)

### Client, Caregiver, and Staff Perceptions of Impact on Occupational Performance

- Canadian Occupational Performance Measure (COPM)
- Client Assessment of Strengths, Interests, and Goals/Staff Observations and Client Information (CASIG/SOCI)
- Illness Perception Questionnaire for Schizophrenia—Relatives Version (IPQ—Relatives)
- Profile of Occupational Engagement for Schizophrenia (POES)

## Cognition

- Allen’s Cognitive Levels (ACL)
- Assessment of Motor and Process Skills (AMPS)
- Cognitive Assessment Interview (CAI)
- Schizophrenia Cognition Rating Scale (SCoRS)

## Occupational Therapy Intervention

Occupational therapists may use the following interventions to enable clients with schizophrenia or schizoaffective disorder to participate in meaningful occupations.

### Assertive Community Treatment

Assertive community treatment (ACT) is a multidisciplinary team-based approach for clients living in the community to improve their psychiatric and social functioning and quality of life. Key elements of ACT include a medicine prescriber, a shared caseload among team members, direct service provision by team members, a high frequency of client contact, low client-to-staff ratios, and outreach to individuals in the community. ACT has been found to reduce hospitalization rates and homelessness; improve outcomes in the areas of accommodation, employment, and client satisfaction; and increase the likelihood of clients staying in contact with mental health
services (Dixon, Dickerson, et al., 2009; Dixon, Perkins, et al., 2009; Jung & Newton, 2009).

Peer Support
Peer support involves consumers in the planning, provision, and evaluation of mental health services (Dixon, Dickerson, et al., 2009). Consumers may run their own independent agencies, serve as members of regular clinical teams, or be providers of peer-to-peer services, which may include Internet support groups, clubhouses, and peer partnerships (Dixon, Dickerson, et al., 2009; Dixon, Perkins, et al., 2009). Although research examining the effects of peer support is limited, it is hypothesized that empowering consumers facilitates the sharing of lived experiences, helps consumers serve as role models for one another, and helps remove "inappropriate hiring barriers" faced by individuals with mental illness (Dixon, Dickerson, et al., 2009, p. 61).

Cognitive Behavioral Therapy
Cognitive behavioral therapy (CBT) aims to change behavior through the collaborative identification of target problems or symptoms, such as negative thought patterns, and developing rational or adaptive coping responses. Sessions may be conducted in an individual or group format and typically last for approximately 4 to 9 months (Dixon, Dickerson, et al., 2009; Jung & Newton, 2009). Although there is a limited evidence that CBT is effective for individuals experiencing acute psychotic symptoms at the time of intervention (Dixon, Perkins, et al., 2009), recent evidence supports the role of CBT in improving clients' short-term mental state (Jung & Newton, 2009), reducing positive and negative symptoms, and improving social functioning (Dixon, Dickerson, et al., 2009).

Family-Based Services
Family-based services involve engaging and collaborating with clients and their family members during an acute episode and may include illness education, emotional support, and training in how to cope with illness symptoms and how to access providers during crises (Dixon, Dickerson, et al., 2009; Dixon, Perkins, et al., 2009). Outcomes of family-based services include decreased rates of relapse and hospitalization, increased treatment adherence, and improved social and vocational outcomes for clients. For families, outcomes include decreased family burden and levels of perceived stress, increased knowledge about schizophrenia, and improved family relationships and perceptions of professional support (Dixon, Dickerson, et al., 2009; Dixon, Perkins, et al., 2009; Jung & Newton, 2009).

Social Skills Training
Social skills training uses behavioral demonstrations, role-play activities, feedback, prompting, coaching, modeling, shaping, and out-of-session assignments to help participants develop the skills necessary for communication, social adaptation, and interpersonal relationships. Interventions focus on the specific needs of the participants and are supplemented with strategies to apply learned skills in the context of everyday life (Dixon, Dickerson, et al., 2009). Social skills training improved participants' knowledge about social interaction and participation, social skills performance within the clinic, as well as broader functional outcomes regarding communication in the workplace and with health care professionals (Dixon, Perkins, et al., 2009).

Supported Employment
Supported employment helps individuals obtain and retain competitive employment by individually tailoring job development and engaging the client in a rapid job search and placement, rather than an extended period of preemployment preparation. Other key components include an emphasis on client preference, availability of ongoing supports, and integration of vocational and mental health services. Supported employment programs are consistently supported by research in yielding positive vocational outcomes for individuals with schizophrenia, such as an increase in hours worked, wages earned, and likelihood of obtaining competitive employment (Dixon, Dickerson, et al., 2009).

Healthy Living
Evidence consistently indicates that individuals with mental illness commonly practice unhealthy habits, such as smoking and poor nutritional and exercise routines, which lead to medical problems such as obesity and cardiovascular disease. Healthy living interventions typically focus on smoking cessation and weight and nutrition management (Bradshaw, Lovell, & Harris, 2005). Interventions typically consist of individual or group education sessions, although smoking cessation interventions may include the prescription of bupropion. Although the body of literature surrounding healthy living interventions is small, Bradshaw et al. (2005) found that smoking cessation interventions, which provided nicotine replacement, and group therapy reduced smoking.

Occupational Therapy and the Evidence
Numerous studies demonstrate that occupational therapy (OT) interventions have resulted in positive functional outcomes for individuals with schizophrenia and schizoaffective disorder. In a systematic review of the literature, Arbesman and Logsdon (2011) found that OT intervention is particularly helpful in preparing this population for vocational pursuits. Supported employment programs, particularly those with high fidelity to an individual placement and support model, have demonstrated outcomes such as increases in earnings, hours worked, and rate of employment. These outcomes are stronger when combined with cognitive or social skills training. The evidence supporting the effectiveness of supported education programs is also strong. A biweekly, 12-session OT intervention based on supported education principles helped participants improve their professional behaviors and social skills. This intervention consisted of classroom–laboratory group modules and individual mentoring on time management, public speaking, computer use, and other topics that support vocational efforts (Gutman, Kerner, Zombek, Dulek, & Ramsey, 2009). In a systematic review of available evidence, Gibson, D’Amico, Jaffe, and Arbesman (2011) reported several effective OT interventions that support recovery in the areas of community integration and normative life roles for people with serious mental illness. Moderate-to-strong evidence was reported for interventions addressing social participation, such as social skills training and assertiveness training. Moderate evidence for the effectiveness of life skills and instrumental activities of daily living (IADL) training was found, although Arbesman and Logsdon (2011) note more positive outcomes when life skills interventions are highly structured, manual driven, and combined with social skills training. In a longitudinal study investigating the effectiveness of a manualized life skills intervention based on skills training for individuals with mental illness who have been homeless, Helfrich, Chan, and Sabol (2011) reported increases in and maintenance of life skills knowledge over time.

Resources

Associations and Websites

- National Alliance on Mental Illness (NAMI) http://www.nami.org/
- National Alliance for Research on Schizophrenia and Depression (NARSAD) http://www.narsad.org/
- National Institute of Mental Health (NIMH) http://www.nimh.nih.gov/
- Schizophrenia International Research Society (SIRS) http://www.schizophreniaresearchsociety
- Schizophrenia and Related Disorders Alliance of America (SARDAA) http://www.sardaa.org/
Sensory Processing Disorder

Pamela Vaughn

Description and Diagnosis

Sensory processing disorder (SPD) is a condition in which a person has difficulty organizing and integrating sensory information for use. As a result, individuals with SPD experience challenges in acting on and adapting to sensory information, making it difficult to participate in and enjoy many everyday tasks (Miller, Nielsen, Schoen, & Brett-Green, 2009). SPD can affect one or multiple sensory systems—vision, auditory, gustatory (taste), olfactory (smell), tactile (touch), proprioceptive (joint position sense), and vestibular (balance and movement). Three proposed subtypes of SPD are the following:

- Sensory modulation disorder (SMD), including sensory underresponsivity, sensory overresponsivity, and sensory seeking responses
- Sensory discrimination disorder (SDD)
- Sensory-based motor disorder (SBMD), including postural disorders and dyspraxia (Miller, Anzalone, Lane, Cermak, & Osten, 2007)

SPD, first described by A. Jean Ayres (1972) as “sensory integration dysfunction,” is not considered a stand-alone diagnosis according to the latest editions of medical diagnostic manuals, such as the American Psychiatric Association’s Diagnostic and Statistical Manual. Some occupational therapists are among those advocating for SPD to be included as a separate and valid disorder in future editions; others hold the perspective that sensory processing is a client factor—a neurological function—that can affect all human performance but is not a specific diagnostic condition. SPD may occur alone but is sometimes comorbid with or contributing to other conditions, such as autism spectrum disorders, attention deficit disorder, learning disabilities, and anxiety and panic disorders (American Occupational Therapy Association [AOTA], 2011; Gouze, Hopkins, LeBallay, & Lavigne, 2009).

Incidence and Prevalence

The conservative estimated prevalence of SPD among kindergarteners in 2000 was 5.3% or 1 out of 20 (Ahn, Miller, Milberger, & McIntosh, 2004). Sensory overresponsivity of school-aged children has been estimated to be 16.5% or 1 out of 6 children (Ben-Sasson, Carter, & Briggs-Gowan, 2009). The incidence of sensory processing challenges is higher in males and in individuals with other disorders, including autism spectrum disorders, attention deficit disorder, learning disabilities, and anxiety and panic disorders (American Occupational Therapy Association [AOTA], 2011; Gouze et al., 2009; Rogers & Ozonoff, 2005).

Cause and Etiology

The cause of SPD is still undetermined, although various studies have cited genetics, environmental factors, and prenatal factors such as stress or alcohol exposure as potential influencing factors (Goldsmith, Van Hulle, Arneson, Schreiber, & Gernsbacher, 2006; Schneider et al., 2008). As Ayres (1972) and many others have proposed that SPD is caused by atypical brain processing and/or an immature brain, recent research has focused on determining whether SPD presents neurologically. In one study, electroencephalographic (EEG) measurements were taken while typically developing children, and children with an occupational therapy (OT) diagnosis of SPD were presented with auditory stimuli (Davies & Gavin, 2007). Results revealed a difference between the two groups—based on interpretation of EEG measurements, children with SPD were found to be “deficient in their ability to suppress (i.e., filter out) repeated or irrelevant sensory input and failed to selectively regulate the sensitivity of cortical responses to additional incoming sensory stimuli” when compared to their age-matched typically developing peers (Davies & Gavin, 2007, p. 186).
Typical Course, Symptoms, and Related Conditions

Although SPD is considered to be a lifelong condition that can affect people of all ages due to the impact it has on everyday functioning, SPD is usually identified in childhood (AOTA, 2011). Sensory sensitivity in infants and change in early sensitivities were found to be associated with the presence of sensory overresponsivity (one of the classifications under subtype SMD) in the same children at school age (Ben-Sasson, Carter, & Briggs-Gowan, 2010). Adults who go undiagnosed or who do not learn coping mechanisms at a younger age may experience mental health symptoms, such as depression and anxiety as well as decreased quality of life and participation (Kinnealey, Koenig, & Smith, 2011). Symptoms vary depending on the individual but only constitute SPD if they interfere or inhibit function and participation in occupations (Koenig & Rudney, 2010). Examples of symptoms may include, but are not limited to, the following:

- Frequent distraction from tasks; restlessness
- Poor motor skills and praxis; poor posture
- Distress or aversion to sensory stimuli present in daily activities
- Irritation, pain, or unpleasant feelings when experiencing a sensation
- Lack of expected response to sensory stimuli (e.g., does not pull finger back when pricked with a pin)
- Seeks opportunities for excessive or extreme sensory stimulation
- Difficulty discriminating between sensory stimuli
- Inability to self-regulate emotions, behaviors, and so forth (AOTA, 2009, 2011)

Interdisciplinary Interventions

Physical Therapy and Speech-Language Therapy

Although occupational therapists most frequently provide intervention for SPD, physical therapists and speech-language pathologists may also be included on an intervention team depending on the needs of the client.

Occupational Therapy Evaluations

The evaluation process focuses on what the client needs, wants, or is expected to do and analyzes what factors may impact desired occupational performance. The evaluation begins with occupation-based assessments followed by specific evaluation of the potential impact of sensory processing on occupational performance.

Evaluations of Sensory Processing

- Sensory Integration and Praxis Tests (SIPT) (Ayres, 1989)
- Sensory Profiles: Infant/Toddler Sensory Profile (Dunn, 2002), Sensory Profile (Dunn, 1999), Adolescent/Adult Sensory Profile (Brown & Dunn, 2002)
- Sensory Processing Measure (Miller-Kuhaneck, Henry, Glennon, Parham, & Ecker, 2007)
- Direct and clinical observation
- Parent/caregiver/teacher interviews

Occupational Therapy Interventions

Ayers Sensory Integration

Ayers Sensory Integration (ASI), based on theory and research originally done by Ayres (1972), is the most intensive form of OT using sensory integration (SI) theories. The goal of ASI is for clients to create adaptive responses to sensory stimuli in their environment so they can more fully participate in desired occupations. Using specialized suspended equipment and providing opportunities for exploration of various sensory stimuli, the therapist adjusts therapeutic activities, customized for the client, to improve the efficiency of the client’s nervous system to interpret and use sensory information. Some major elements of ASI intervention are the following:

- It occurs within an environment that is rich in tactile, proprioceptive, and vestibular opportunities and that creates both physical and emotional safety for the child.
- Therapist presents or modifies activities so child can experience success in response to a challenge.
- All therapeutic activities are child directed and therapist supported.
- Therapeutic activities will challenge the child to develop ideas about what to do; the therapist encourages the child to plan out these ideas and then successfully carry out the plans.
- Therapeutic activities are conducive to attaining or sustaining client’s optimum level of arousal by modifying the environment (Parham et al., 2007).

Best practice guidelines recommend that practitioners obtain additional training in ASI before administering this intervention.

Sensory-Based and Sensorimotor Approaches

Sensory-based and sensorimotor approaches also focus on remediating impaired sensory processing in order to increase occupational performance and participation in desired activities.

<table>
<thead>
<tr>
<th>Examples of Sensory-Based Approaches</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted vests—Wearing weighted vests provides calming deep pressure to meet tactile and proprioceptive needs.</td>
<td>Students were able to focus on tasks for increased periods of time after wearing weighted vests (VandenBerg, 2001).</td>
</tr>
<tr>
<td>Sensory diets—A carefully designed, customized activity plan that provides sensory input a client can use throughout the day to meet sensory needs.</td>
<td>Uses sensory diet framework to improve quality of life for adults with neurological conditions (Fenech &amp; Baker, 2008).</td>
</tr>
<tr>
<td>Therapeutic listening—The use of music and auditory stimuli, modified to include different frequencies, to “train” the auditory system to more effectively modulate sounds.</td>
<td>Children showed improvements in behaviors related to sensory processing after undergoing an 8-week therapeutic listening program (Hall &amp; Case-Smith, 2007).</td>
</tr>
<tr>
<td>Hippotherapy—Therapeutic horse riding to increase posture, balance, and muscle tone and to increase participation and socialization.</td>
<td>Children attended a camp that featured therapeutic riding; parents reported positive changes in children’s behaviors related to sensory processing after attending camp (Candler, 2003).</td>
</tr>
</tbody>
</table>

Sensory intervention approaches have also been used in mental health settings; for example, with individuals with schizophrenia or posttraumatic stress disorder, with the rationale that when an individual’s sensory processing (viewed as a neurological function) is impaired, “such activities may provide calming and/or alerting sensory experiences . . . and become meaningful ways to help [a] person self-organize, remain safe and in control” (Champagne, 2005, p. 2).

Performance-Oriented Approaches

These approaches focus on directly improving performance and participation and include the following:

- Direct skills teaching (e.g., teaching a client to ride a bike)
- Cognitive-based approaches (e.g., Cognitive Orientation to daily Occupational Performance [CO-OP], a program to help client identify and use cognitive strategies in order to learn and perform tasks) (Polatajko & Cantin, 2010)

Compensatory Lifestyle Approaches

Compensatory approaches help clients develop specific skills or coping skills that use environmental and task adaptations to regulate their sensory needs. Sensory diets and the Alert Program: “How Does Your Engine
Consultation

Occupational therapists can also provide an indirect form of intervention to help family members, teachers, or others understand the nature of sensory processing and how it influences occupational performance.

Occupational Therapy and the Evidence

A systematic review of the effectiveness of SI interventions based on 27 studies concluded that “there is a trend for positive results from the SI approach, especially in contrast to no treatment” and that “occupational therapists can use this information to begin to support the use of the SI approach within their professional domain of practice with a variety of outcomes, particularly sensory and motor outcomes and individually identified client-centered goals” (May-Benson & Koomar, 2010, p. 411).

Although this research is promising, low sample sizes and lack of fidelity to the theoretical postulates of SI intervention principles highlight the need for further research (May-Benson & Koomar, 2010). Polatajko and Cantin (2010) reviewed studies using non-SI approaches to intervention and found performance-oriented approaches to show positive outcomes as measured by increases in motor skills and coordination.

Caregiver Concerns

Many parents of children with SPD report concerns about their children's social participation. Parents are seeking help to set up and maintain their children's behavior, to support their children's growth, and to advocate for their children. Gaining an appreciation for sensory processing and how it may impact occupational performance helps parents develop realistic expectations for their children (Cohn, 2001).

Resources

Organizations

- The Spiral Foundation at OTA-Watertown: a nonprofit organization to further the understanding of SPD through research and community education. 124 Watertown Street Watertown, MA 02472 (617) 923-4410 http://www.thespiralfoundation.org/index.html

- Sensory Processing Disorder Foundation: conducts research about, and found performance-oriented approaches to show positive outcomes as measured by increases in motor skills and coordination.

- Pediatric Therapy Network: a therapy and research center with resources for professionals and caregivers regarding, and advocates for the recognition of SPD. 5420 S. Quebec Street, Suite 135 Greenwood Village, CO 80111 (303) 794-1182 http://www.spdfoundation.net

- Physical and Occupational Therapy in Pediatrics, 23(3), 51–64. doi:10.1006/sosp.2000.0005


Symptoms and Complications


Spinal Cord Injury

Larissa Sachs

Description and Classification

*Spinal cord injury (SCI)* involves damage to the axons of spinal nerve cells due to compression, bruising, tearing, or severing of spinal cord tissue. The damage results in impairment or loss of sensory and motor function corresponding with the level at which the injury occurs. SCIs are classified as either complete or incomplete, and the resulting paralysis is categorized as either tetraplegia or paraplegia. A complete injury indicates a lack of all sensory and motor function below the level of injury, and an incomplete injury indicates some remaining sensory or motor function below the affected area. Tetraplegia involves an impairment of function in the upper and lower extremities, trunk, and pelvic organs; depending on the level of injury, paraplegia involves functional impairment of the trunk, legs, and pelvic organs but spares the upper extremities (Mayo Clinic, 2009; National Institute of Neurological Disorders and Stroke [NINDS], 2011).

Etiology

An SCI may be either traumatic or nontraumatic. SCIs in the United States are most often caused by trauma. Motor vehicle crashes are the leading cause, accounting for over 40% of SCIs. Falls, the most common cause after age 65 years, account for 27.3% of SCIs. Acts of violence, often involving gunshot and knife wounds, account for 15% of SCIs, and recreational sporting activities cause 7.9% of SCIs. Alcohol use is a contributing factor in about one-quarter of all cases. Common causes of nontraumatic SCI include arthritis, cancer, inflammation or infections of the spinal cord, and disk degeneration of the spine (Mayo Clinic, 2009; National Spinal Cord Injury Statistical Center [NSCISC], 2010).

Incidence and Prevalence

There are approximately 262,000 people living with SCI in the United States, and about 12,000 new cases occur each year. Males account for 80.8% of all SCIs. SCI predominantly affects young adults, and, among those affected, 66% are Caucasian and 27% are African American (NSCISC, 2010).

Typical Course

The median length of stay in an acute care unit immediately after injury is 12 days followed by a median stay of 38 days on a rehabilitation unit. The length of overall hospitalization in both acute care and rehabilitation units depends on the severity of the SCI and any related injuries. Individuals with higher level or complete injuries often require longer and more intensive treatment than do individuals with lower level or incomplete injuries (NSCISC, 2010). Furthermore, individuals with an incomplete injury have a better prognosis than those with a complete injury (Kirshblum, Millis, McKinley, & Tulsky, 2004). Mortality rates significantly decrease after the first year postinjury, but life expectancies of individuals with SCI remain less than those of individuals without SCI (NSCISC, 2010). Although neural recovery commonly occurs after SCI, most motor and sensory return takes place within the first 6 months postinjury, and the recovery rate decreases with time (Kirshblum et al., 2004). Individuals with SCI will continue to live with functional limitations based on their level and type of injury. They may also continue to experience chronic pain, bladder and bowel dysfunction, and other secondary medical complications, all of which must be handled daily to promote successful recovery. Advancements in interventions, rehabilitation, and technology continue to promote improvements in the functional capabilities of people with SCIs (NINDS, 2011).

Symptoms and Complications

**Major Signs**

- Paralysis: loss of motor function
- Paresis impairment of motor function
- Sensory deficits: impairment or loss of sensory function
- Spasticity: increase in excitability of the stretch reflex
- Respiratory dysfunction: compromised breathing resulting from paralysis of diaphragm and respiratory muscles (most common for individuals with high level injuries)
- Orthostatic hypotension: sudden drop in blood pressure upon assuming an upright position
- Bladder and bowel dysfunction
- Pain
- Reproductive and sexual dysfunction (Mayo Clinic, 2009; NINDS, 2011)
Complications
- Autonomic dysreflexia: sudden dangerous rise in blood pressure in response to a noxious stimulus below the level of injury
- Heterotopic ossification: abnormal bone growth at joints
- Deep vein thrombosis: formation of a blood clot
- Observe body temperature; people with SCI often have problems with temperature regulation
- Watch for signs of autonomic dysreflexia, including headache, hypertension, sweating, congestion, blurred vision, difficulty breathing, and chest tightness; if signs are present, immediately move the client into an upright position and remove any constricting materials or obvious noxious stimuli
- Monitor the respiration of clients with high-level injuries, especially those on a ventilator
- Assess the client for pain, spasticity, hypertonia, decreased range of motion, and subluxation to prevent further injury during treatment (Atkins, 2008).

Precautions
- Monitor the client's skin for redness or pressure ulcers; individuals with SCI must perform pressure relief regularly to reduce the risk of skin breakdown.
- Monitor blood pressure, check for dizziness, and encourage the client to move slowly when shifting positions to prevent orthostatic hypotension.
- Observe body temperature; people with SCI often have problems with temperature regulation.
- Watch for signs of autonomic dysreflexia, including headache, hypertension, sweating, congestion, blurred vision, difficulty breathing, and chest tightness; if signs are present, immediately move the client into an upright position and remove any constricting materials or obvious noxious stimuli.
- Monitor the respiration of clients with high-level injuries, especially those on a ventilator.
- Assess the client for pain, spasticity, hypertonia, decreased range of motion, and subluxation to prevent further injury during treatment (Atkins, 2008).

Interdisciplinary Interventions
- **Immobilization**: The spine and neck are immobilized immediately following injury to prevent further damage.
- **Medication**: Corticosteroids, such as methylprednisolone, reduce inflammation near the site of injury and decrease damage to nerve cells; if administered within 8 hours of injury onset, individuals may experience mild improvement in recovery. Medications are also used to address SCI symptoms, helping with pain management, control of muscle spasticity, and improvement in bladder and bowel control.
- **Surgery**: It is often needed to decrease compression of the spine by removing bone fragments, foreign objects, herniated discs, or fractured vertebrae.
- **Rehabilitation**: In addition to receiving continuing medical care during the postacute phase of recovery, the rehabilitation team for individuals with SCI often includes physical therapists, occupational therapists, social workers, recreational therapists, rehabilitation psychologists, rehabilitation nurses, and dietitians. The focus of rehabilitation is on maintaining health, restoring strength and function, redeveloping fine motor skills, using equipment and technology, addressing psychosocial concerns, providing client and caregiver education, and developing compensatory strategies to promote as much client independence as possible (Mayo Clinic, 2009; NINDS, 2011).

Occupational Therapy Evaluations

**Motor and Sensory Function Evaluations**
- American Spinal Injury Association (ASIA) Impairment Scale
- Manual muscle testing
- Range of motion testing using a goniometer
- Pinch and grip strength using a dynamometer

**Activities of Daily Living and Instrumental Activities of Daily Living Evaluations**
- Functional Independence Measure (FIM): measures type and amount of assistance needed for safe and effective activity performance
- Barthel Index (BI): assesses self-care abilities and level of assistance needed
- Klein-Bell ADL Scale: measure of ADL independence
- Frenchay Activities Index (FAI): measure of ADL and IADL participation
- Quadriplegia Index of Function (QIF): assessment of performance in functional activities in interview format
- Tetraplegia Hand Activity Questionnaire (THAQ): measure of arm and hand function in ADL and IADL
- Spinal Cord Independence Measure (SCIM): evaluates ADL performance

Quality of Life Evaluations
- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Quality of Life Profile for Adults with Physical Disabilities (QOLP-PD): measures quality of life in the domains of being, belonging, and becoming
- Short-Form Health Survey (SF-36): evaluates health-related quality of life

Occupational Therapy Interventions
Occupational therapists use a combination of intervention approaches to facilitate participation in meaningful occupations and desired contexts.
- **Biomechanical**: improve strength, range of motion, endurance, balance, and mobility
- **Skill acquisition**: promote skills necessary for participation in ADL, IADL, work, education, leisure, and social participation
- **Adaptive/Compensatory**: energy conservation, environmental adaptation, and adaptive equipment/assistive technology to support participation in occupations
- **Educational**: client, caregiver, family, and staff education and training
- **Psychosocial**: enhance self-efficacy, self-esteem, and self-management skills (Atkins, 2008)

Caregiver Concerns
Between 40% and 45% of individuals with SCI require assistance with daily activities, and family members often face numerous challenges as the primary caregivers for their loved ones. Caregivers commonly experience stress resulting from concerns about finances, work, home accessibility, providing appropriate care, and lifestyle adjustments. To enhance quality of life and promote healthy relationships, caregivers must take time to manage their own health. Important approaches for maintaining caregiver well-being include adopting a healthy lifestyle, practicing stress management techniques, finding time to relax, seeking the help of others, and learning to solve problems effectively (Lindsey, 2008).

Occupational Therapy and the Evidence
Research evidence supports the efficacy and importance of various occupational therapy interventions throughout the rehabilitation process to facilitate the occupational and social participation of individuals with SCI (Guidetti, Asaba, & Tham, 2009; Pillastrini et al., 2008; Ward, Mitchell, & Price, 2007). Occupational therapists use various approaches to support overall occupational participation (Ward et al., 2007), to promote independence in self-care activities (Guidetti et al., 2009), and to improve independence in performance of functional tasks, such as transfers and wheelchair use (Pillastrini et al., 2008). Effective approaches include the use of occupation-based, client-centered practices (Ward et al., 2007) and the development of a positive therapeutic relationship (Guidetti et al., 2009).
References

Research evidence also documents the effectiveness of more specific interventions for clients with SCI. Functional electrical stimulation, used to restore useful movements, has been found to promote positive health and fitness outcomes among individuals with SCI (Hamzaid & Davis, 2009). Effective strategies to improve arm and hand functioning in individuals with SCI include motor training (Spooren, Janssen-Potten, Kerckhofs, & Seelen, 2009) and activity-based interventions, which combine intense and repetitive input to the central nervous system (Backus, 2008). Harvey, Lin, Glinsky, and De Wolf (2009) suggest that fitness training, strength training, and gait training demonstrate the greatest effectiveness among physical interventions for individuals with SCI. Furthermore, cognitive behavior therapy approaches following SCI have a significant positive impact on clients’ short-term psychological outcomes, including assertiveness, coping, self-efficacy, depression, and quality of life (Dorstyn, Mathias, & Denson, 2011).

Resources

Associations
- National Spinal Cord Injury Association
  1 Church Street #600
  Rockville, MD 20850
  Helpline: (800) 962-9629
  Fax: (866) 387-2196
  Website: http://www.spinalcord.org/
- United Spinal Association
  75-20 Astoria Boulevard, Suite 120
  Jackson Heights, NY 11370
  Telephone: (800) 404-2898
  Fax: (718) 803-0414
  Website: http://www.unitedspinal.org
- Christopher Reeve Spinal Cord Injury and Paralysis Foundation
  636 Morris Turnpike, Suite 3A
  Short Hills, NJ 07078
  Telephone: (800) 225-0292
  Website: http://www.christopherreeve.org

Books
  This book chronicles the effects of a car accident on an entire family, discussing the wife’s process of recovery from an SCI and the struggles they encounter while trying to put their lives back together.
  This is the story of Brooke Ellison’s life, from the automobile accident that left her paralyzed as a young girl to her graduation from Harvard University. Brooke and her mother cowrote this book, detailing their individual experiences with the situation and their journey together.
  Christopher Reeve’s autobiography chronicles his life with tetraplegia after a horseback riding accident, offers insights into his recovery, and details his journey to reclaim his life.
  In this sequel, Christopher Reeve shares aspects of how to successfully live with an SCI and deal with major life issues. Snippets from speeches, personal anecdotes, and remarks from talk shows are interspersed throughout Reeve’s book.

Journals
- Spinal Cord
- American Journal of Physical Medicine & Rehabilitation
- Journal of Rehabilitation Research & Development
- Journal of Neurotrauma

Websites
- Spinal Cord Injury Information Network
  http://www.spinalcord.uab.edu
  This Website provides educational and research information about various issues along the spectrum of SCI care and contains helpful links to other organizations, publications, and resources.
- Foundation for Spinal Cord Injury Prevention, Care, and Cure
  http://www.fscip.org/index.html
  Promoting SCI public awareness, education, and research, this is a helpful resource for individuals living with SCI and their family members to locate information and support.
- National Institute of Neurological Disorders and Stroke
  http://www.ninds.nih.gov/disorders/F Strand/sci.htm
  This Website is a useful resource for locating current SCI-related information, publications, organizations, news, and research.
- MedlinePlus
  This Website provides comprehensive SCI information and links to several other helpful resources, including organizations, journal articles, tutorials, and client handouts.

References


Substance Use Disorders

Christine M. Carifio

Description and Diagnosis

Substance use disorders are the harmful and hazardous use of psychoactive substances, which includes alcohol, illicit drugs, and psychotherapeutics (National Institute on Drug Abuse [NIDA], 2010). Illicit drugs include marijuana, cocaine, heroin, hallucinogens, and inhalants. Psychotherapeutic use refers to the nonmedical use of pain relievers, tranquilizers, stimulants, and sedatives (Substance Abuse and Mental Health Services Administration [SAMHSA], 2007). Substance use disorders according to the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association [APA], 2000) can either be classified as abuse or dependence. Substance dependence is the more serious condition. Its key characteristics include the individual having the strong desire to continue using the substance regardless of negative consequences, difficulty in controlling use, increased tolerance, prioritizing the substance, and experiencing a physical withdrawal from the substance. Substance abuse, in contrast, does not reach the point of increased tolerance or withdrawal symptoms; yet, the individual does experience negative consequences and continues to use (APA, 2000).

Incidence and Prevalence

The following are statistics according to the 2006 National Survey on Drug Use and Health (NSDUH) about substance use disorders:

- The 52% of Americans (125 million people) aged 12 years and older are current regular drinkers (at least 12 drinks in the past year).
- The 23.7% of Americans aged 12 years and older participated in binge drinking, which is defined as having five or more drinks on the same occasion on at least 1 day in the past 30 days.
- The harmful use of alcohol leads to 2.5 million deaths each year.
- The 20.4 million Americans (8.7% of the population) aged 12 years and older are current illicit drug users (SAMHSA, 2007).
- The 16.7 million people have used marijuana, 7 million people have used psychotherapeutics, 1.6 million people have used cocaine, 1.3 million people have used hallucinogens, and 502,000 people have used methamphetamine in the past month (SAMHSA, 2007).

Cause and Prognosis

Substance use disorders are chronic, addictive disorders that may develop over a period of years and can begin at any age. The exact cause is not known; however, genetics, the preferred drug, temperament, sociocultural influences, emotional distress, anxiety, depression, and environmental factors can all contribute. Oftentimes, substance use will co-occur with other mental health conditions (APA, 2000; SAMHSA, 2007). There is no cure, and the individual with a substance use disorder may go through intermittent periods of sobriety, remission, and relapse. Relapse rates range widely from 50% to 90%. Relapse depends on many variables including, but not limited to, substance abused, severity of addiction, length of treatment, gender, readiness for change, environmental and societal factors, and many other elements (SAMHSA, 2007). Substance dependence and abuse may lead to a fatal drug overdose (United States National Library of Medicine, 2010).

Appendix I: Common Conditions, Resources, and Evidence

Stages of Substance Use

Substance use can be divided into four categories:

- Experimental use is typically done recreationally with peers.
- Regular use is when the user may increasingly prioritize the substance over other things, isolate self from family or friends not involved with the substance, or show increased tolerance to the substance.
- Daily preoccupation occurs when the user loses all motivation for other things besides the substance. The user may experience behavior or relationship changes and may start using more dangerous substances.
- Dependence is when the user cannot face his or her daily life without drugs and loses control over use (United States National Library of Medicine, 2010).

Symptoms of Substance Abuse

Substance use disorders influence the individual in a myriad of ways depending on the substance and severity of use. Symptoms include, but are not limited, to changes in the following:

- Cognition: includes confusion, distorted perception, or decreased emotional regulation
- Personality: violent or hostile when confronted about substance use
- Behavior: continuation of drugs despite negative consequences, lack of control
- Performance patterns: missing work, school, changes in eating or sleeping habits, unkempt in self-care, lack of enjoyment in activities (American Occupational Therapy Association [AOTA], 2008; National Institute of Drug Abuse, 2010).

Symptoms of Withdrawal

Withdrawal symptoms exhibit the overreactivity of the autonomic nervous system and may include headache, nausea, anxiety, agitation, insomnia, rapid heart rate, fever, convulsions, and hallucinations (National Institute of Health, 2010).

Effects of Substance Abuse on the Body

Heavy substance abuse can negatively affect almost every body structure and system and is linked to serious medical conditions such as heart disease, cancer, HIV/AIDS, and mental illness. Substance abuse can lead to the following complications:

- Internal organ damage, especially the liver and pancreas; cancers of the mouth, lungs, stomach, breast, liver, and pancreas
- Lung and heart disease including cardiac damage, elevated heart rates, heart attack, and stroke
- Decreased immune system
- Cognitive functioning impairments including mental health issues, hallucinations, memory loss, paranoia, and aggression
- Psychosocial functioning impairments including anxiety and depression
- Respiratory depression including difficulty breathing
- Sexually transmitted diseases
- Bacterial endocarditis, blood clots, pulmonary emboli, and many other issues (United States National Library of Medicine, 2010)

Treatment

Treatment for individuals with substance use disorders can occur in various settings such as hospitals, emergency rooms, drug or alcohol rehabilitation centers, mental health facilities, private medical or psychological offices, prisons, and self-help groups (SAMHSA, 2007). The most effective treatment for a substance-related disorder is a dual approach of both pharmaceutical and psychosocial interventions. Medications can reduce the positive effects of the illicit drug and decrease cravings, whereas the psychosocial cognition component of
treatment addresses readiness to change, mental illness, and addiction (Carey, Carey, Maisto, & Purnine, 2002; Gutman, 2006). Interdisciplinary care is common and includes a team of doctors, psychologists, social workers, occupational therapists and other appropriate allied health professionals for the individual (Gutman, 2006). After care, outpatient facilities and support groups are key factors in preventing relapse (United States National Library of Medicine, 2010).

Occupational Therapy Evaluations

The type and method of evaluation used in practice will be determined by the client’s treatment preferences, the presence of cognitive impairments, and comorbid conditions (Stoffel & Moyers, 2004).

- Alcohol Use Disorders Identification Test: a screening that identifies people whom are alcohol dependent and at risk for alcohol abuse (Babor, Higgins-Biddle, Saunders, & Monteiro, 2010)
- Addiction Severity Index (ASI): a semistructured interview about client’s life
- Beck Depression Inventory II (BDI-II): a self-report measure of depression
- CAGE-AID Screening Test: a screening to determine further alcohol testing
- Coping Behaviors Inventory (CBI): assesses behaviors and thoughts of clients
- Canadian Occupational Performance Measure (COPM): a self-report of performance and satisfaction with occupations
- Occupational Questionnaire: evaluates how substance use affects a client’s weekly schedule and routine
- Role Checklist: assesses occupational roles
- Routine Task Inventory 2 (RTI-2): assesses function through everyday tasks with self-report or observation
- University of Rhode Island Change Assessment Scale (URICA): evaluates motivation for change

Occupational Therapy Interventions

Occupational therapy (OT) must recognize and respect the individual’s stage of recovery and should be sensitive to a client’s particular needs (SAMHSA, 2007). OT intervention goals with clients that have substance use disorders may include improving health habits and routines; self-care; developing skills in self-regulation and impulse control; experiencing group participation; learning communication strategies; preparing for a vocational role; and education about job, leisure, life management, coping, social skills, life roles, identity, and community resources (Stoffel & Moyers, 2004).

Types of Occupational Therapy Interventions

- Brief intervention: One or several sessions may provide the client with screening; education about the risks of substance abuse and coping strategies; group therapy sessions; goal setting; referrals; encouragement to change; and participation in meaningful, healthy activities (Stoffel & Moyers, 2004).
- Cognitive behavioral therapy (CBT): It emphasizes the development of coping behaviors and self-efficacy to change what a person thinks and does regarding substance abuse. This approach connects to relapse prevention (Stoffel & Moyers, 2004).
- Motivational techniques: They facilitate the client’s motivation for change (Stoffel & Moyers, 2004).
- Twelve-step facilitation: Social and spiritual support groups encourage maintenance of abstinence. Occupational therapists may assist an individual with finding support groups in his or her area and incorporating them into his or her schedule (Stoffel & Moyers, 2004).
- Harm reduction model: It is a controversial approach; clients learn practical strategies that help reduce the negative results of substance use. Although individuals do not completely abstain from substances, the goal is to increase an individual’s readiness to change behaviors (Harm Reduction Coalition, n.d.).

Occupational Therapy and the Evidence

Substance dependence and abuse may impact an individual’s performance in almost all areas of occupation. Through working with OT, clients may identify how their substance use is affecting performance patterns, daily routines, and life roles. Occupational therapists should emphasize helping the individual engage, without the use of substances, in meaningful and healthy occupations within various contexts. Individuals may also learn coping, self-regulation, and other educational strategies. Interventions that are modified to include an occupational perspective, such as brief interventions, CBT, motivational strategies, and 12-step programs are effective treatments that occupational therapists may use. In addition, peer-supported community programs run by occupational therapists, with opportunities for socialization, mutual support, and self-determination, may provide a significant reduction in relapse. Although positive change in occupational performance may occur in supportive environments, sustaining a healthy lifestyle may be challenged when clients confront obstacles, therefore emphasizing OT’s important role in empowering clients to engage in healthy occupations and use strategies to maintain healthy living behaviors (AOTA, 2008; Boisvert, Martin, Grosek, & Clarie, 2008; Huhman, 2008; Stoffel & Moyers, 2004).

Caregiver Concerns

Family members and friends play a pivotal role in the treatment and recovery of individuals who abuse substances. Families are the key in an alcohol or drug intervention. A professional interventionist may guide family members to speak openly and honestly about the individual and how his or her substance abuse influences everyone around them. The goal is for the individual to enter a rehabilitation program to receive treatment. Family and friends can also help an individual with substance abuse by attending family and group counseling where concerns can be discussed and where family members can receive advice and support for living with and promoting a healthy lifestyle for a person with substance use challenges. Finally, rehabilitation after care, such as 12-step programs and follow-up counseling are important resources that families and other loved ones can use for support (Croft, 2009, NIDA, 2010).

Resources

Associations

All of the following are spiritual support group organizations with a 12-step focus for individuals experiencing substance abuse and their family and friends.

- Al-Anon/Alateen
  Al-Anon World Service Office
  1600 Corporate Landing Parkway
  Virginia Beach, VA 23454-5617
  Telephone: 1-800-4AL-ANON
  Website: http://www.al-anon.alateen.org/
- Narcotic Anonymous
  NA World Services, Inc.
  PO Box 9999
  Van Nuys, CA 91409-9099
  Telephone: 1-818-773-9999
  Website: http://www.na.org

Books

Traumatic Brain Injury

Anne LeBorgne

Description
A traumatic brain injury (TBI) is an alteration in brain function, or other evidence of brain pathology, caused by an external force. A TBI may produce a diminished or altered state of consciousness that results in impairment of cognitive abilities or physical functioning as well as disturbances of behavioral, sensory, and emotional function. These impairments may be either temporary or permanent and may cause partial or total functional disability or psychosocial maladjustment (American Occupational Therapy Association [AOTA], 2011; Brain Injury Association of America [BIAA], 2011).

Types of Traumatic Brain Injury
- Penetrating or missile (open) injuries: result from penetration of the skull. The injury usually results in various types of skull fracture. Firearms are the single largest cause of death from TBI.
- Nonpenetrating, closed head injuries: result from rapid acceleration or deceleration of the brain within the skull, causing damage at the point of impact (coup injuries) or at the opposite pole (contre-coup injuries). Closed head injuries include diffuse axonal injury, concussion, contusion, second impact syndrome, or recurrent TBI locked in syndrome. Overall closed head injuries involve large amounts of swelling and an increase in intracranial pressure; brain tissue can also be compressed, which causes further injury (BIAA, 2011).

Incidence and Prevalence
- Each year, an estimated 1.4 million Americans sustain a TBI.
- More than 5 million Americans currently live with a TBI resulting in a permanent need for help in performing daily living activities.
- The 75% of TBIs that occur each year are mild brain injuries, such as concussions.
- Most TBIs are seen primarily in males between the ages of 18 and 23 years (BIAA, 2011; Centers for Disease Control and Prevention [CDC], 2010; National Institute of Neurological Disorders and Stroke [NINDS], 2011).
- Due to the fact that most TBIs occur during young adulthood, there is a major impact on role development, specifically in the realm of education, social, employment, marital relationships, and adult independence (Golisz, 2009).

Primary Causes
The primary causes leading to TBI are falls, motor vehicle traffic crashes, struck by or against events (colliding with a moving or stationary object), and assaults (CDC, 2010).

Typical Prognosis
No two brain injuries are exactly the same; the course of a TBI is complex and can vary greatly between individuals. Early prediction of outcome and prognosis is difficult because of the complex interaction of various factors, including the cause, location, and severity of injury; age; length of posttraumatic amnesia; increased intracranial pressure; and/or alteration of consciousness. Accurate prognosis requires repeated observations over weeks or months to predict the level of recovery and the amount of rehabilitation needed (BIAA, 2011).

Possible Symptoms/Deficits
Depending on the location and severity of the injury, deficits may be present in the areas of cognition, behavioral/emotional, physical, and/or sensory functioning. Symptoms and deficits range widely and can include aphasia, dysarthria, blurred vision, seizures, numbness in extremities, decreased balance/coordination, as well as changes in visual and auditory functions (AOTA, 2011; NINDS, 2011).

Ranchos Los Amigos Levels of Cognitive Functioning Scale
The Rancho Los Amigos Scale, a nonstandardized method of organizing and describing clinical observations of cognitive performance in
Occupational Therapy Intervention

**Acute Stages of Recovery**
- Biomechanical approaches including positioning; active range of motion (AROM), active assistive range of motion (AAROM), and passive range of motion (PROM) exercises; splinting and casting
- Sensory stimulation
- Patient and family education and support

**Inpatient Rehabilitation**
- Optimize gross and fine motor functioning and abilities through meaningful tasks and activities.
- Optimize visual-perceptual functioning and abilities through environmental adaptations, compensatory techniques, and assistive devices such as low-vision aids.
- Maximize cognitive functioning and abilities with compensatory or remedial strategies that optimize the areas of orientation, attention, and memory.
- Increase independence in ADL and instrumental activities of daily living (IADL).

**Postacute Rehabilitation**
- Community reintegration including the development of effective routines and schedules, relearning social skills, and memory compensation techniques.
- Environmental modifications such as using lighting to improve attention and vision or labeling drawers to help with cognitive challenges and the use of adaptive equipment.
- Restore competence in ADL and IADL through training and adaptation.
- Participation in previous or new leisure and/or work activities, as well as social skills training.
- Patient and family education and support including consulting with employers or educational systems (AOTA, 2011)

**Occupational Therapy and the Evidence**
Occupational therapy (OT) plays an integral role as a part of an interdisciplinary rehabilitation team for individuals with TBI in multiple settings, including inpatient, outpatient, and community settings. Evidence has shown OT to be effective in improving occupational performance through participation in functional tasks and activities for individuals with TBI. Tromblay, Radomska, Trexel, and Burnett-Smith (2002) concluded that participation in goal-specific outpatient OT that focuses on teaching compensatory strategies is strongly associated with the achievement of self-identified goals and the reduction of disability in adults with mild-to-moderate brain injury. Dirette (2002) found that clients with brain injury slowly developed awareness of their deficits when they were in situations that enabled them to compare current performance to performance prior to brain injury. Giles (2010) determined that the use of neurofunctional techniques such as task analysis, cue experimentation, and errorless learning programs for skill acquisition can be effective in the development of independent living skills for clients who have had a TBI when implemented in addition to standard care. These techniques are especially relevant for clients whose short-term goals relate to independent living rather than return to work or school. A goal-setting process that consists of a collaboration between the client, therapist, and significant others can enhance goal-directed rehabilitation in a community setting (Doig, Fleming, Cornwall, & Kuipers, 2009).

**Caregiver Concerns**
Families and caregivers require education and support for the many behavioral, emotional, and personality changes that can occur in an individual following a TBI. A study by Verhaeghe, Defloor, and Gypen (2005) concluded that the better the family members can cope with the situation following a TBI, the better the patient’s recovery. This has clinical implications as therapists work with the entire
family not only the individual with the TBI. Caregivers may have numerous concerns during the recovery of a loved one following TBI, possibilities include management of agitation and low frustration tolerance; personality and behavioral changes following injury; difficulty with communicating; concerns about reintegration and adaptation; lack of awareness of deficits/denial; deficits in higher level executive cognitive functions, including orientation, attention, and memory; disinhibition of inappropriate behavior; depression; long-term need for assistance/care; a change in family and societal roles; or safety concerns/awareness (BIAA, 2011).

References


Visual Impairments

Emily Meibeyer

Description and Diagnosis

Low vision is characterized as a visual impairment that cannot be corrected by medical or surgical intervention and is severe enough to interfere with daily functioning but allows some usable vision. Low vision includes having decreased acuity and/or a decreased visual field. Legal blindness is defined as having best corrected vision of at least 20/200 or a visual field of 20 degrees or less. Blindness is a visual impairment in which the person has no object or light perception and cannot use vision to complete daily occupations (Warren, 2008). Low vision can result from various ophthalmologic and neurologic disorders; the most common causes of low vision in the United States include the following:

- Age-related macular degeneration (AMD): a disease associated with aging that affects the macula and gradually destroys sharp, central vision, and ability to see fine detail (American Optometric Association [AOA], 2011d).
- Glaucoma: a group of diseases that causes damage to the eye’s optic nerve when there is an increase of fluid pressure inside the eye; causes gradual failing of peripheral vision (AOA, 2011c).
- Diabetic retinopathy: a disease associated with both type 1 and 2 diabetes caused by damage to the blood vessels in the retina, resulting in blurred vision or spotty areas of vision loss called scotomas (AOA, 2011b).
- Cataracts: clouding of the lens in the eye, causing blurred vision; generally related to aging; dulls color and blurs visual details throughout the visual field (AOA, 2011a).

Incidence and Prevalence

Over 2.4 million people older than 40 years old in the United States have low vision, and approximately 937,000 people older than 40 years are blind (Congdon et al., 2004). AMD is the leading cause of visual loss in Americans 60 years of age and older; the number of Americans with AMD is estimated at 1.8 million. Two million Americans presently have glaucoma, and approximately 40% of the 10.2 million Americans with diabetes have diabetic retinopathy (National Eye Institute [NEI], 2008).

Cause and Etiology

Aging is the single best predictor of low vision and blindness. Other risk factors associated with glaucoma include race, family history of glaucoma, medical conditions (e.g., diabetes, hypertension, and heart disease), physical injuries to the eye, and corticosteroid use (AOA, 2011c). Severe hyperopia (farsightedness), smoking, nutrition, light eye color, and family history are risk factors of AMD (NEI, 2010). Caucasians are at higher risk for AMD than other races; however, glaucoma is the leading cause of low vision for African Americans and Hispanic Americans. Sunlight exposure, smoking, alcohol intake, and poor nutrition are additional risk factors for cataracts (AOA, 2011a). For diabetic retinopathy, diabetes is the most prevalent risk factors, especially related to severity of diabetic disease, age of onset, and poorly controlled blood sugar; other risk factors involve obesity and high blood pressure.

Typical Course and Symptoms

- AMD: gradual loss of ability to see objects clearly, objects appear distorted in shape, straight lines look wavy or crooked, loss of color vision, dark or empty area appears in the center of vision, difficulty with reading (AOA, 2011d)
- Glaucoma: peripheral vision is lost first; central vision is lost, and total blindness can result if left untreated; difficulty with mobility (AOA, 2011c)
- Diabetic retinopathy: seeing spots or floaters in your field of vision, blurred vision, having a dark or empty spot in the center of vision, difficulty seeing well at night (AOA, 2011b)

Precautions

There are many safety precautions for individuals with vision loss, including:

- Falls and safety with mobility
- Safety with using kitchen appliances (e.g., stove)
- Medication management
- Driving: Adults with low vision need to be evaluated before they should be permitted to continue driving.

Interdisciplinary Interventions

Medical/Surgical Interventions

Ophthalmologists and optometrists are the medical professionals most involved in the treatment of visual impairments. Medical treatments for AMD include laser surgery, macular translocation surgery, and injections that reduce inflammation and stop blood vessel growth (NEI, 2010). However, no cure exists for AMD. Glaucoma can be treated with eye drops to slow progression of disease, if diagnosed early, before significant damage is done to the optic nerve. Laser surgery and other surgical techniques are also used to treat glaucoma. Diabetic retinopathy can be treated with laser photocoagulation or intraocular surgery to destroy the leaking blood vessels in the retina, but minimal gains are typically seen. Surgical treatment of cataracts consists of removing the existing lens and replacing it with a synthetic intraocular lens; this is generally successful in restoring vision (AOA, 2011a; NEI, 2010). It is important that clients with low vision are provided with best correct vision through refraction by optometrists or ophthalmologists before receiving services from occupational therapy (OT).

Occupational Therapy Evaluations

For clients with low vision, occupational therapists should collaborate with clients to identify the activities and occupations that provide meaning and purpose to the client’s life. The occupational therapists should also complete a visual assessment in coordination with optometry/ophthalmology. Evaluation of the client’s living context and environment, as well as his or her occupational performance in activities of daily living (ADL) and/or instrumental activities of daily living (IADL), are also necessary to assess the client’s abilities and limitations, as well as barriers and supports in his or her environment.

Visual Skills Assessments

- Amsler grid testing: assesses central vision and visual fields; determines areas of scotoma or distortion
- Pursuits/tracking: assesses ability to track a moving object with a stationary head
- Saccades: assesses ability for sequenced, rapid eye movements
- Convergence: assesses ability of eyes to work together by following a target
- Ocular alignment: measures alignment of the reflection in corneas with pen light
- Confrontation field testing: assessment of peripheral visual field function
- Mars Letter Contrast Sensitivity Test: assessment of contrast sensitivity (Scheiman, Scheiman, & Whittaker, 2007)

Occupation-Based Assessments

- Canadian Occupational Performance Measure (COPM): self-report of performance and satisfaction with occupations
- Environmental assessment: assess supports and barriers in home environment, including lighting (using a light meter), contrast, and organization (Gilbert & Sikes Baker, 2011)
- Geriatric Depression Scale (GDS): self-report scale assessing risk for depression
Occational Therapy Interventions
OT in low-vision rehabilitation focuses on training the client to optimize use of his or her remaining vision for daily occupational engagement and safety. Interventions may include environmental adaptations, use of compensatory strategies, and client and family education. Specific OT interventions for low vision include the following:

- **Visual strategies**: eccentric viewing (moving the scotoma out of line of vision by turning head to side); scanning techniques for decreased visual field
- **Contrast enhancement**: increase visibility of objects by providing high contrast between foreground and background; useful for stairs, for eating (white plates on dark-colored placemats), and in the bathroom
- **Lighting**: increase general light to at least 300 lux; increase task lighting at least 750 to 1,000 lux for reading; minimize glare (Figueiro, 2001)
- **Magnification**: use of large print; teaching use of optical devices, such as magnifiers (e.g., stand, hand held) and telescopes
- **Sensory substitutions**: use of tactile markings on pill bottles, oven dials, faucets, and so forth; check writing or signature guides; use of auditory strategies (i.e., talking clocks, talking glucose meters); liquid level indicators
- **Falls prevention**: elimination of clutter; installation of handrails and grab bars; removal of environmental hazards
- **ADL/IADL retraining/adaptation**: teaching the use of strategies for problem areas, such as matching clothing, identifying spoiled foods, dialing emergency numbers, using knives to cut foods, and so forth
- **Caregiver training**: sighted guide training (technique of guiding someone with visual impairments safely); education and training on how to facilitate independence and participation (Bartmann, Bettenhausen, Sikes-Baker, Kern, & Storm-Weiss, 2008; Gilbert & Sikes Baker, 2011; Riddinger, 2008)

**Occupational Therapy and the Evidence**
Adults with visual impairments are at risk for social isolation and depression due to dissatisfaction with performance in valued occupations, restricted participation in daily activities, and decreased social interactions (Alma et al., 2011; Rovner, Casten, Hegel, Hauck, & Tassman, 2007). OTs can address isolation by identifying those at risk for depression, by enabling engagement in meaningful activities, and by encouraging positive adaptation to vision loss through teaching cognitive and adaptive strategies (Girdler, Packer, & Boldy, 2008; Rovner et al., 2007). Self-management programs that include cognitive behavioral techniques, problem solving, health education, and/or an emphasis on self-efficacy may be effective for reducing depression in older adults with AMD (Brody et al., 2006; Girdler, Boldy, Dhaliwal, Crowley, & Packer, 2010).

Eccentric viewing training was found to be useful in improving ADL performance with older adults with AMD (Vukicevic & Fitzmaurice, 2009). Improved overall and task lighting was cited as effective in increasing participation in kitchen tasks (e.g., pouring a drink), leisure, and social participation (Brunstrom, Sorensen, Alsterstad, & Sjostrand, 2004).

**Caregiver Concerns**
A person adjusting to low vision or vision loss often faces threat to his or her independence and loss of life roles and responsibilities (Girdler et al., 2008). Families often experience difficulty adjusting and adapting to their loved one's change in roles and abilities (Bambara et al., 2009). Additionally, the loss of vision has been shown to profoundly affect the individual's spouse, increasing his or her risk for depression, and minimizing physical and emotional well-being and marital quality (Strawbridge, Wallhagen, & Shema, 2007). Occupational therapists can provide education, training, and resources to caregivers and families of individuals with visual impairments to support them and to enable productive adjustment to the shift in family functioning and roles.

**Resources**

**Organizations**
- American Foundation for the Blind
  2 Penn Plaza, Suite 1102
  New York, NY 10121
  Telephone: 888-545-8331
- American Optometric Association
  243 N. Lindbergh Blvd.
  St. Louis, MO 63141
  Telephone: 800-365-2219

**Books**
- Alexander, a third-grade teacher and author, details her adjustment to blindness and what it is like to live in a sighted world.
  This collection of essays, letters, and vignettes provides inspiration on how to cope with vision loss and how to live creatively with it.

**Journals**
- Archives of Ophthalmology
- Journal of Visual Impairment and Blindness
- Journal of the American Optometric Association
- Ophthalmic and Physiological Optics

**Websites**
- American Foundation for the Blind (AFB)
  http://www.afb.org/
  AFB is a nonprofit organization that works to deliver services and access to technology to persons living with vision loss, as well as provides relevant eye health resources available to health professionals and families.
- National Eye Institute (NEI)
  http://www.nei.nih.gov/
  NEI, as part of the federally funded National Institutes of Health, seeks to disseminate eye health information, support research, and provide programs and training related to vision loss and blindness.
- Prevent Blindness America (PBA)
  http://www.preventblindness.org/
  PBA, the nation's leading eye health and safety organization, provides education, advocacy, vision screenings, training, and research with the goal of preventing blindness and preserving sight.

**References**
- Pepper Visual Skills for Reading Test: assessment of reading speed and performance (Scheiman et al., 2007)


