VETERANS HEALTH ADMINISTRATION

PROSTHETIC CLINICAL MANAGEMENT PROGRAM (PCMP)

CLINICAL PRACTICE RECOMMENDATIONS

ELECTRONIC COGNITIVE DEVICES

I. PURPOSE

The purpose of this Clinical Practice Recommendation (CPR) document is to provide Veterans Health Administration (VHA) clinicians, medical staff, and administrative personnel with criteria and guidance for issuing Electronic Cognitive Devices (ECDs) to Veteran beneficiaries.

II. BACKGROUND

VHA's Prosthetic and Sensory Aids Service (PSAS) Strategic Healthcare Group was directed by the Under Secretary for Health to establish a Prosthetic Clinical Management Program (PCMP). The objectives of the PCMP are to coordinate the development of guidelines for prosthetic prescription practices and to generate contracting opportunities that ensure technology uniformity and ease of access to prosthetic prescriptions and patient care.

A work group with input from clinicians with expertise in cognitive rehabilitation convened to make recommendations regarding the prescription and selection of ECDs for Veterans with cognitive impairments.

The effectiveness of ECDs for improving the daily function and independence of persons with cognitive impairments is well documented in the scientific literature (Cicerone et al., 2000 & 2005; Sohlberg et al., 2007). As technology evolves, ECDs hold even greater promise in their capacity to provide functional support for people with cognitive disabilities. This PSAS policy is written to allow flexibility in the selection of ECDs that meet the specific needs of Veterans who could benefit from them now and in the future.

III. DEFINITIONS

Terminology used in this document is defined below:

Attention/concentration/working memory refers to processes that allow for temporary storage and processing of information in the brain. Informational capacity is limited and information must be actively rehearsed to be maintained.

Attentional impairments are characterized by slow processing speed, limited ability to retain information, loss of train-of-thought, distractibility, reduced attention span, and difficulty maintaining focus while multi-tasking (i.e., alternating or dividing attention across two or more tasks).

Cognition refers to intellectual or mental processes through which information is acquired and processed to mediate behavior and achieve goals. It includes the ability to store and process information (attention), the ability to acquire new information (memory), and the ability to use information strategically in planning, problem-solving, and self-monitoring (executive functions).

Cognitive impairment denotes a change in cognitive function caused by injury or disease processes.

Cognitive-communication impairments refer to difficulties with language and communication that occur as a result of cognitive deficits underlying these processes. These difficulties may include problems with organizing and integrating language in order to comprehend and express complex concepts, difficulties with finding words in conversation, not understanding abstract language and figures of speech, and poor adherence to conventional rules of social communication.

ECD denotes a product or system, whether acquired as a retail item, a modified retail item, or a customized item that is used by an individual to compensate for cognitive impairments and support his or her ability to participate in activities of daily living (ADLs) and higher-level instrumental activities of daily living (IADLs) including work or school. Examples of such devices include but are not limited to: countdown timers, Personal Digital Assistants (PDAs), Smartphones, pocket personal computers (pocket PCs), Global Positioning Systems (GPS), reminder watches, pagers with reminder features, and digital voice recorders.

Convergence refers to the trend toward incorporating multiple functions into a single device. Devices are now available that accomplish multiple functions within one unit including PDA, GPS, cell phone, alarm clock, web access, and e-mail capabilities. As this trend continues, the number of single function devices declines and the number of multi-function devices, such as Smartphones, increases. Multi-function devices may have distinct advantages for supporting the abilities of people with cognitive impairments. A Smartphone that includes PDA functions and GPS capabilities may lessen the everyday cognitive demands associated with maintaining multiple devices and remembering to carry them during the day.

Executive functions refer to a complex set of processes that facilitate engagement in purposeful, goal-directed behavior. It requires organized and creative thinking to recognize problems and develop plans to solve those problems. It involves self-awareness and flexibility of thinking to monitor performance and revise plans as needed to achieve the desired goal. Behaviorally, executive functions are dependent on the ability to initiate and maintain goal-directed activity while inhibiting behavior that interferes with goal attainment.

Executive functions impairments are characterized by disorganized behavior resulting in ineffective attempts to solve everyday problems.

Navigation difficulties may occur as a result of cognitive impairments. They include difficulties with keeping track of where one is, finding one's way to a specified location, or knowing the best way to reach a designated location.

Memory refers to the ability to learn and recall information. It is dependent on a complex set of processes that facilitate the perception, organization, encoding, storage, and retrieval of information. Perceptual and encoding processes may be modality specific and result in isolated impairments of verbal memory or visual memory.

Memory impairments are characterized by reduced capacity to learn and recall new information and difficulties recalling information at appropriate times to complete important everyday activities (i.e., prospective memory).

Software refers to commercially available applications that are either installed or loaded as an update on an existing electronic cognitive device. The software will customize the capacity of the device to compensate for an individual's cognitive disabilities.

Specialized devices are designed specifically for people with disabilities. They incorporate design features and programming that directly address the specific problems encountered by individuals with cognitive impairments. For example, a device may provide the option of a special script that is triggered when a person indicates that he or she is lost. The script would then guide the person on how to problem-solve through that situation.

IV. GENERAL INDICATIONS AND CONTRAINDICATIONS

ECDs should be considered as an option for improving the everyday function of Veterans with cognitive impairments regardless of the duration of the problem, age, physical impairments and activity restrictions, service-connection status, or era of military service.

A. Indications

The following criteria must be met for Veterans to be issued and trained in the use of ECDs:

1. Veteran must demonstrate cognitive impairments that would benefit from intervention with ECDs, as determined by a qualified clinician. Cognitive impairments may include, but are not limited to:
    i. Problems with orientation, particularly to time and place
    ii. Decreased attention, concentration, and working memory
    iii. Decreased ability to initiate, sequence, and/or complete activities
    iv. Decreased ability in speed of information processing
    v. Memory impairment
    vi. Difficulties with organization, planning, and self-monitoring

2. Veteran's identified cognitive impairments are due to medical, psychiatric, and/or psychological disorders.
3. Veteran's demonstrate specific functional limitations and community re-integration difficulties that can be improved by using an ECD.
4. The use of an ECD can be shown to be reasonable and necessary for improving Veteran's participation in ADLs.
5. Veteran demonstrates significant interest and has significant incentives to increase participation in ADLs or IADLs associated with or addressed by ECD applications.
6. Veteran has the necessary cognitive and language skills to operate the ECD safely and effectively.
7. Veteran demonstrates adequate motor strength, coordination and endurance to operate the ECD effectively.
8. Veteran demonstrates adequate sensory- perceptual capacity (vision, hearing, tactile) to utilize the device effectively.
9. Veteran demonstrates initiation and persistence to use the ECD features as prescribed relative to a cognitive impairment and functional limitations.
10. Veteran is able and committed to properly maintain the prescribed device.

B. Contraindications

In general, ECDs should not be prescribed when:

1. Veteran does not demonstrate a cognitive impairment for which an ECD is indicated.
2. Veteran does not achieve measurable improvements in daily function, vocation, or community participation with the aid of an ECD.
3. Performance during evaluation or subsequent training suggests that the Veteran will not be able to achieve an adequate level of proficiency operating the device.
4. Veteran does not demonstrate responsibility for maintaining the device.
5. Veteran's functional needs can be met effectively with non-electronic cognitive aids or other behavioral interventions.

V. SPECIFIC INDICATIONS AND CONTRAINDICATIONS

A. Specific Indications

1. A multi-function device will be prescribed when the Veteran demonstrates cognitive impairments that are best addressed with a single device with multiple functions. The qualified clinician will determine which device best meets the Veteran's needs.
2. Problems with organization, planning, and initiation may affect a Veteran's ability to integrate a single function device such as a PDA with other everyday devices he or she is using, such as a cell phone. The Veteran may not be able to reliably charge, maintain, and carry two devices. In such cases, a multi-function device may be ordered to best serve the Veteran's needs.
3. Additional software for an ECD will be provided when a qualified clinician determines that the Veteran will benefit from the features available in that application.
4. Software updates will be provided for existing ECDs to preserve the device's effectiveness in meeting the Veteran's needs.

B. Specific Contraindications

1. A multi-function device is not indicated when the Veteran's identified cognitive impairment can be adequately addressed with a single function ECD.
2. Software updates that do not offer additional benefit for the daily functioning of the Veteran will not be provided.
3. Devices and/or software intended solely for electronic games will not be provided.

VI. ECD ACCESSORIES

A. Accessories for ECDs include, but are not limited to, protective cases, screen protectors, batteries, battery chargers, mounting systems, additional styli, secure digital or memory cards, and Universal Serial Bus (USB) cables.

1. Veterans who have difficulty using a standard input option (i.e., graffiti, onscreen keyboard, etc.) may be considered for other input options such as wireless portable keyboard. The qualified clinician will determine the most appropriate input option.
2. Accessories prescribed must be the most efficient and effective means to meet the Veteran's needs and accomplish stated therapeutic goals.

VII. PROCESSES FOR ECD PRESCRIPTION AND ISSUANCE

In order for the Department of Veterans Affairs (VA) to provide a Veteran with an ECD, the following criteria must be met:

A. Clinician Qualifications

1. The prescribing clinician must have training and expertise in the areas of cognitive rehabilitation, assistive technology for cognition, and/or augmentative and alternative communication (AAC) systems.
2. The clinician must be appropriately credentialed or licensed and typically has a professional background in speech-language pathology, occupational therapy, psychology or neuropsychology.
3. The clinician must acquire and maintain the knowledge and skills necessary to provide services consistent with evidence-based practice for ECDs.
4. The clinician must be familiar with the range of available ECDs and update his or her knowledge-base with ongoing advancements in technology.
5. Clinicians are expected to recognize situations in which mentoring, consultation, and/or referral to other professionals are necessary to make an ECD recommendation. In most cases, interdisciplinary collaboration is required to deliver quality services to individuals who may benefit from ECDs.

B. Individualized Needs Assessment Factors

The individualized needs assessment model recommended in this CPR includes personal, environmental, and technology factors (Sohlberg, 2007):

1. Personal factors:
   i. Physical needs (gross + fine motor, speech)
   ii. Sensory needs (vision, hearing)
   iii. Cognitive needs (insight, attention, memory, executive function)
   iv. Cultural values and expectations
   v. Perceptions of technology benefits
   vi. Pre-injury familiarity with technology
   vii. Motivation to improve daily tasks and to use assistive devices
2. Environmental factors:
   i. Types of supports already in place: who is available for (technical) support and how often support is needed.
   ii. Frequency of opportunities to use the device.

3. Device factors:
    i. Cognitive demands including memory load, number of steps, complexity of decision trees;
    ii. Physical demands including access (button, stylus, touch screen), size, complexity, sensitivity;
    iii. Sensory/language demands including symbols (text, picture, both), size and layout.

C. Individualized Needs Assessment Process

The individualized needs assessment should include standardized evaluation, chart review, self and caregiver/clinician report, observation, and questionnaires.

1. Standardized evaluation should include a measure of global cognitive functioning and domain-specific measures (attention, memory, executive function), as indicated.
2. Relevant aspects of the Veteran's history (including cognitive complaints or co-existing conditions), specific report of functional activity limitations, and the Veteran's motivation to improve are considered an integral part of the evaluation process. It should be noted that some patients may show relatively intact performance on standardized tests, but demonstrate functional disability based on self and caregiver report, observation, and questionnaires.
3. As a component of the individualized needs assessment, the clinician will inquire about the ECDs the Veteran already owns, whether acquired through self-purchase or prescribed by another clinician in order to determine familiarity with ECDs and to avoid duplication of devices.
4. Results of the evaluation should be discussed with the Veteran. The discussion should also include treatment recommendations and treatment goal setting.

D. Device Prescription

1. Results of the individualized needs assessment drive the ECD prescription process.
2. Veteran's prior experience with ECDs should be matched with available technologies to facilitate learning and appropriate use of the device.
3. One or more ECDs may be prescribed as indicated. Devices that offer multiple features (e.g. convergence devices) should be considered, when appropriate, to maximize functionality and ease of use by Veterans with multiple cognitive needs.

4. Special considerations, such as low vision, upper limb amputation or paresis/paralysis, hearing loss, and/or need for caregiver support must be considered to ensure that the selected device can be used as prescribed.
5. The Veteran should be an active participant in the selection of the device.
6. The Prosthetics Service is not responsible for initiating or maintaining the phone service and web access of multi-function devices that include these options. The Veteran should be notified of and agree to these restrictions prior to the device being prescribed and ordered.

E. Training the Use of ECD

1. Content of training:
   i. Veteran should receive training regarding the basic operations of the ECD, proper utilization practices, and basic care and maintenance.
   ii. Veteran must demonstrate knowledge about basic troubleshooting and internet resources if problems arise.
   iii. Veteran knows how to contact the provider if problems arise that he or she cannot solve independently.
   iv. Veteran is advised of the responsibility to apply security measures, such as passwords, in order to safeguard any personal information stored in the ECD.
   v. Veteran understands and expresses agreement with the intervention plan including his or her responsibility for utilization of the ECD.
   vi. Veteran agrees to participate in planned treatment and follow up.
2. Training procedures
   i. Treatment procedures must be goal-oriented, systematic and individualized to the situation and Veteran's needs.
   ii. Intervention using the ECD should be designed to achieve maximum increase in function in the greatest number of settings.
   iii. Measurable functional goals for ADLs and/or IADLs must be established that reduce the functional activity limitations identified in the Veteran's evaluation, and improve overall activity participation and life satisfaction.
   iv. Treatment planning must include a sufficient number of training and follow-up sessions to ensure adequate learning.
   v. Veteran-owned ECDs cannot be connected to computers interfaced with the VA information infrastructure. For device programming and Veteran education and training, a computer with internet access independent of the VA network must be available.

F. Follow-Up

Follow-up interventions should be scheduled at least once after completion of the training period. Additional follow up sessions may be scheduled to:

1. Evaluate use and ongoing benefits of the ECD to maximize continued benefit from the device.
2. Assess Veteran's (and significant other's) perception of the benefit from training and use of the ECD.
3. Identify new/additional needs or obstacles to achieving or maintaining functional gains.

G. Coding and documentation

1. Documentation of the evaluation and training interventions should be maintained in the Veteran's Computerized Patient Record System (CPRS) according to local facility policy.
2. Documentation of the process of ECD issuance must include results of evaluations and recommendations, evidence of training, and statement of functional outcomes.
3. The CPRS Prosthetics consult should include the specific device recommended and justification for the ECD intervention. Supporting documentation must be included in the CPRS.

VIII. ADDITIONAL INFORMATION

A. Repairs, Replacements and Spare Devices

1. Repairs and replacements of ECDs and related accessories are obtained through the local VA Prosthetic Service as outlined in the VHA Handbook 1173.1 *Eligibility for Prosthetic Services* policies and procedures.
2. Spare ECDs are not provided unless there is documentation and evidence of unusual circumstances which would adversely affect the Veteran's medical condition.
3. Replacement devices will be provided only when there is clearly documented clinical justification that the current ECD no longer supports the Veteran's cognitive impairment. Replacement devices will not be provided for the sole purpose of obtaining a newer model or because the technology has advanced. In the event that a prescribed ECD is no longer supported by the cellular service provider, the device will need to be replaced as it will no longer be operable.
4. In the event of repeated device repairs and/or replacements, the Veteran should be referred back to the prescribing clinician to determine if the current device is appropriate or if an alternative intervention is indicated.

5. If the Veteran was provided an ECD by another source (i.e. Department of Defense Computer/Electronic Accommodation Program, or private insurance company), the device can be added to the Veteran's electronic equipment record if a qualified VA clinician determines that the existing device is appropriate for addressing identified cognitive impairments. With the Veteran's concurrence, the VA clinician enters the request via a Prosthetics consult in the CPRS. The device can then be repaired or replaced as identified above.

B. Global Positioning Systems (GPS) Utilized While Driving a Vehicle

1. The provision of GPS devices to promote safe, independent travel for clients with cognitive impairment is addressed in VHA Office of Patient Care Services' Information Letter: IL 11-2005-002, "Use of Global Positioning System (GPS) Devices."
2. If a GPS will be used while operating a vehicle, the Veteran must hold a valid driver's license and own or have access to a vehicle. The prescribing clinician must determine that the Veteran demonstrates adequate cognitive function to utilize the GPS while safely managing the vehicle. Coordination with a Driver Rehabilitation Specialist for comprehensive evaluation and training for GPS use while driving is required.
3. If use of the GPS system for driving requires vehicle modification, the Veteran must have an approved VA Form 21-4502, "Application for Automobile or Other Conveyance and Adaptive Equipment."

C. Additional Documents

Several documents are included as attachments to provide additional clinical guidance and to identify related resources.

1. Attachment A: Examples of Electronic Cognitive Devices
2. Attachment B: Computer/Electronics Accommodation Program (CAP)
3. Attachment C: Vocational Rehabilitation & Employment Services

IX. REFERENCES

1. American Speech-Language S -Hearing Association. *Roles of Speech-Language Pathologists in the Identification, Diagnosis, and Treatment of Individuals with Cognitive-Communication Disorders: Position Statement* [Position Statement]. 2005.
2. Cicerone KD, Dahlberg C, Kalmar K, et al. Evidence-based cognitive rehabilitation: recommendations for clinical practice. *Arch Phys Med Rehabil.* 2000; 81:1596-1616.
3. Cicerone KD, Dahlberg C, Malec JF, et al. Evidence-based cognitive rehabilitation: updated review of the literature from 1998 through 2002. *Arch Phys Med Rehabil* 2005; 86:1681-1692.
4. Parente R, Herrmann DJ, Brady CM. *Retraining cognition: Techniques and applications,* 2nd. Ed., Austin, TX: Pro-ed, 2003.
5. Sohlberg MM, Mateer CA. *Cognitive rehabilitation: An integrative neuropsychological approach.* New York: The Guilford Press, 2001.
6. Sohlberg, M.M, Kennedy, M.R.T., Avery, J., et al. Evidence-based practice for the use of external aids as a memory rehabilitation technique. *Journal of Medical Speech Language Pathology,* 2007; 15, xv-li.

X. CPR RECERTIFICATION

This CPR will be reviewed for recertification in 3 years or as emerging technology and/or practice indicates need for review.

APPROVED/DISAPPROVED:

Robert A. Petzel, M.D.
Under Secretary for Health

Date: 7/20/10

ATTACHMENT A

Examples of Electronic Cognitive Devices

Cognitive domain	Device	Features
Multi-Function		
Attention, Memory and Executive Function	**Personal Digital Assistant (PDA)**	Calendar with reminder/alarm
		Contacts/Phone numbers and addresses
		Notes/To-do list
		Calculator
		Voice recorder (variable)
	Pocket PC	Calendar with reminder/alarm
		Contacts/Phone numbers and addresses
		Notes/To-do list
		Calculator
		Voice recorder (variable)
		Windows Mobile
		Software can customize device
	Smartphone	Calendar with reminder/alarm
		Contacts/Phone numbers and addresses
		Notes/To-do list
		Calculator
		Phone
Single Function		
Memory	**Digital voice recorder**	Records information for later use
	Pulse smart pen	Audio recording which assists transcription
	Alarm watch	Reminder alarms
	Pager	Reminder messages
Attention	**Timer**	Count down timer with alarm
	Metronome	Establish a steady tempo
Executive Function	**Job Coach Devices**	Help organize and sequence multistep activities
Navigation	**GPS**	Helps find locations

ATTACHMENT B

The Computer/Electronic Accommodations Program (CAP)

The Department of Defense's (DOD) CAP provides assistive technology and services to people with disabilities and wounded Servicemembers to ensure that they have equal access to the information environment and opportunities in the DOD and throughout the Federal government. By fulfilling this mission of providing real solutions for real needs, CAP is helping to make the Federal government the model employer for people with disabilities.

For cognitive disabilities, CAP provides various cueing aids to employees and Servicemembers who struggle with memory loss and other cognitive difficulties. Cueing aids can assist in remembering appointments, medication schedules, and personal contact information. Technology options can vary in complexity, from simple cueing aids to powerful computer-based applications.

Requesting a Needs Assessment

To request a Wounded Service Member (WSM) Needs Assessment, log onto CAP's WSM Web site at www.tricare.mil/cap/wsm. On the left-hand side of the page, select "Submit WSM Needs Assessment"; then at the bottom of the next page, select "Start WSM Needs Assessment." The submitter will be prompted to enter information regarding the Servicemember, the nature of the injury(s), and the impact of the injury upon the individual's ability to perform the essential functions of the job. When all information has been entered on the form, click "Submit" to transmit the request to CAP. The submitter will be contacted if additional information is needed to conduct a needs assessment, generally within the same business day. As soon as all information is received, the submitter or the Servicemember will be contacted within 48 hours to conduct the needs assessment. Any reasonable and appropriate assistive technologies identified in the needs assessment will be transferred by CAP into a WSM Request.

Requesting Assistive Technology

To request a specific assistive technology(s), log onto CAP's Wounded Service Members Web site at www.tricare.mil/cap/wsm. On the left-hand side of the page, select "Submit WSM Request." The submitter will be prompted to enter information regarding the Servicemember, the nature of the injury(ies), the impact of the injury upon the individual's ability to perform the essential function, and the specific technology(ies) being requested. When all information is complete and "submit" is selected, the information is transferred directly to CAP. If any additional information is required, the submitter will be contacted. CAP will review the request, and if the technology (ies) requested is reasonable and appropriate to accommodate the injuries, and is within CAP's scope, CAP will purchase the assistive technology.

ATTACHMENT C

Vocational Rehabilitation and Employment Service

The Vocational Rehabilitation and Employment (VR&E) Program assists Veterans who have service-connected disabilities with obtaining and maintaining suitable employment. Independent living services are also available for severely disabled Veterans who are not currently ready to seek employment. Additional information is available on VA's web site at http://www.vba.va.gov/bln/vre/.

Eligibility: A Veteran must have a VA service-connected disability rated at least 20 percent with an employment handicap, or rated 10 percent with a serious employment handicap, and be discharged or released from military service under other than dishonorable conditions. Servicemembers pending medical separation from active duty may also apply if their disabilities are reasonably expected to be rated at least 20 percent following their discharge.

Entitlement: A VA Counselor must decide if the individual has an employment handicap based upon the results of a comprehensive evaluation. After an entitlement decision is made, the individual and counselor will work together to develop a rehabilitation plan. The rehabilitation plan will specify the rehabilitation services to be provided. VA pays the cost of all approved training programs. Subsistence allowance may also be provided.

Respective to medical services and equipment, VR&E will first seek those services through the appropriate department within the VA medical center by providing a referral for the identified service(s) on behalf of the Veteran. In all cases, VR&E case managers will review the Veteran's medical diary before any requested service or equipment has been solicited. This will eliminate the possibility of VR&E requesting and or duplicating services already having been provided. If it is determined that the Veteran is ineligible to receive the requested service and or medical device from VHA, only then can VR&E authorize the provision of such equipment and or service per 38 CFR 21.216 (b). Conversely, should the VA medical center determine that the Veteran is a Chapter 31 participant, an inquiry would be prudent to determine what services/devices have been provided.