

Introduction

Practical (functional) problem-solving in rehabilitation is concerned with activities of daily living (ADLs). Developing successful practical and functional problem-solving skills that may be important to the patient's well being and safety is a priority to all rehabilitation specialists, medical staff, and hospital administrators, as well as family and friends. This priority is the same for the newly-admitted patient (regardless of the age), the long-term patient, and the patient who is being prepared for discharge to a lower level of care or discharge to home and community.

Patients with a variety of neurological and cognitive impairments often display poor practical problem-solving skills at all levels, such as awareness, understanding cause and effect, and recognizing appropriate courses of action. According to Emlet, Crabtree, Condon, and Trembl (1996); Pedretti, Smith, and Pendleton (2006); and Sohlberg and Mateer (2001), the problem may be the result of impulsiveness, decreased insight into the disability, impaired judgment, or a combination of these. Decreased insight, disorientation, and impaired memory can contribute to a patient's inability to recognize personal limitations for specific situations. A patient's ability to communicate and appropriately manage practical problems in his environment reflects his cognitive-linguistic status and his potential for discharge to home or a lower level of care.

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Cherney and Halper (1999); Halper, Cherney, and Burns (1996); Myers (1999); and Tompkins (1995) discuss the cognitive-communicative problems after right-hemisphere damage. In the cognitive areas, they stress impaired attention, perception, memory, organization, reasoning, and problem-solving. In the area of communicative impairment, pragmatic skills are notably disturbed.

Cognitive and communicative disorders may be the result of other than neurological impairments. Fogle (1996) and Ross-Swain and Fogle (1996) discuss respiratory, circulatory, and metabolic problems that may result in cognitive and communicative disorders in the elderly. These same problems also may affect cognition and communication in other age groups.

In a hospital, a patient needs functional problem-solving skills in order to manage himself appropriately and safely in his room and bathroom; to deal with assistive devices, such as wheelchairs, walkers, and canes; and to be aware of and manage possible swallowing difficulties.

At home, the patient may have many of the same practical problem-solving concerns as he had in the hospital, but with more expectations and requirements for independence. Other practical and safety issues may arise from managing his own medications, negotiating floors and stairs, working appliances, and handling home security issues. In the community, the person may need to deal with inclement weather and manage himself in crowded stores and busy restaurants.

Functional problem-solving is an essential part of independence. According to Chapey (2001), problem-solving requires five mental operations:

1. **Cognition**, the basis of all other operations, involves awareness, knowing, immediate discovery (or rediscovery), and recognizing information in various forms (comprehension or understanding).
2. **Memory** is the power, act, or process of fixing newly gained information in storage.
3. **Convergent thinking** involves generating logical conclusions from information, with an emphasis on achieving conventional best outcomes.
4. **Divergent thinking** involves generating logical alternatives from information, with an emphasis on the variety, quantity, and relevance of the output.

5. **Judgment** involves using knowledge to make appraisals or comparisons, or to formulate screenings based on known information.

Ylvisaker, Szekeres, and Feeney (in Chapey, 2001) stress functional-integrative performance of “real-life” tasks and activities that involve a complex interaction between the environment and the entire cognitive mechanism, personality, and motivational variables. Emler et al. (1996) emphasize the need to assess and, when possible, treat elderly individuals in their home environments.

Brookshire (2007) says treatment of reasoning and problem-solving impairments entails structured practice in a variety of tasks that require reasoning, foresight, and problem-solving, such as role-playing situations, proposing solutions to problems posed by the clinician, and planning activities for ADLs. Brookshire recommends a formal, prescriptive, highly-structured approach to problem-solving:

- Identify the problem.
- Think of several possible solutions.
- Evaluate the feasibility and potential consequences of each solution.
- Choose the best solution.
- Apply it.
- Evaluate the results.

Marshall, Karow, Morelli, Iden, and Dixon (2003) discuss the use of the *Rapid Assessment of Problem-solving (RAPS)*, a modification of Mosher and Hornsby's (1966) *Twenty Questions Test (20Q)*. Problem-solving is frequently considered a component of executive functions (Murray & Ramage, 2000; Purdy, 2002) and comes into play when habitual or automatic behavior is insufficient to attain a desired goal (Ylvisaker et al., 2001).

Several standardized instruments assess the problem-solving abilities of brain-injured individuals in clinical settings, such as the *Wisconsin Card Sorting Test* (Grant & Berg, 1948), the *Porteus Maze Test* (Porteus, 1965), and *Coloured Progressive Matrices* (Raven, Court, & Raven, 1984). Marshall et al. (2003) say that some writers have questioned the validity of formal problem-solving measures, and that patient motivation to perform on some tests of executive functioning may be low because there is no obvious relationship between the test and past experience (Burgess, Alderman, Evans, Emslie, & Wilson, 1998; Kafer & Hunter, 1997; Laine & Butters, 1982; Lezak, 1983; Mertz-Garcia & Stick, 1986; Shallice, 1982).

More recently, some instruments have been developed to assess functional problem-solving, such as the *Multiple Errands Test* (Aitken, Chase, McCue, & Radcliff, 1993), the *Six Element Test* (Shallice & Burgess, 1991), the *Everyday Problem-solving Inventory* (Cornelius & Caspi, 1987), and the *Behavioral Assessment of the Dysexecutive Syndrome* (Wilson, Alderman, Burgess, Emslie, & Evans, 1996). None of these instruments, however, focus on problem-solving for safety in the hospital and home environments.

Newer assessment instruments such as the *Ross Information Processing Assessment-Geriatric (RIPA-G)* (Ross-Swain & Fogle, 1996) and therapy materials such as *WALC 5: Neuro Rehab* (Arnold, 2003), the *Functional Skills Program for the Neurologically Impaired Client* (Wamboldt, 1996), the *RIPA-G Treatment Manual* (Ross-Swain & Yee, 1998), *Critical Thinking for Activities of Daily Living and Communication* (Daly & Fouche, 1998), *Functional Learning for the Home and Community* (Peterson & Villegas, 1998), and *Retraining Cognition-Second Edition* (Parente & Herrmann, 2003), increasingly incorporate questions and items dealing specifically with patient/client functional and safe problem-solving in the home and community environments.

The following questions may be important to clinicians when choosing a clinical measure (Marshall et al., 2003):

- Are the test instructions and requirements sufficiently simple to be understood by patients with a wide range of abilities?
- Will the instrument sustain the patient's interest and motivation such that he or she will perform it?
- Does the test have some relationship to the patient's past experience?
- How much examiner training is needed to administer the test?

- Can the test be administered and scored rapidly?
- Can the test be given to patients who demonstrate a range of abilities at various points in the post-onset course?

According to Schlageter and Zoltan (1996), cognitive deficits are related to eventual independence in self-care and discharge disposition. Mateer (2002) says that cognitive problems of mild traumatic brain injury may not become apparent until the person returns to work and begins dealing with challenging cognitive tasks. In order for a patient to be discharged to home or a lower level of care, the rehabilitation and nursing staff need to be confident of the patient's ability to function at reasonably independent levels.

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The World Health Organization (WHO) uses the new terminology listed below in its classification system to emphasize an individual's abilities rather than disabilities (World Health Organization, 2000).

Old Term	New Term	Definition
impairment	body functions	physiological or psychological functions of the body systems
impairment	body structures	anatomic parts of the body such as organs, limbs, and their components
disability	activity	the exertion of a task or involvement in a life situation in a uniform environment (i.e., an environment in which the full capabilities of the individual can be expressed; an environment that provides neither hindrances nor enhancements that may affect the individual's performance). <i>Activity</i> implies active involvement in life rather than a lack of ability (<i>dis-</i>) that diminishes involvement.
handicap	participation	the execution of a task or involvement in a life situation in an individual's current environment (i.e., the context in which the individual currently lives, which may contain hindrances or facilitators to performance). <i>Participation</i> emphasizes what an individual can do rather than what he is prevented from doing because of his body's structures and functions.

The Source for Safety: Cognitive Retraining for Independent Living is designed to help individuals increase their participation in life by improving their abilities to safely carry out activities in their pursuit of independence and enjoyment of life. This resource includes the evaluation and therapy for these common areas of concern in the hospital, home, and community environments:

- room/bedroom and bathroom
- wheelchairs and assistive devices
- swallowing and diet
- medications and health
- floors and stairs
- kitchen and appliances
- home safety
- community – outside
- community – inside
- general precautions

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