In times of rapid change in the health care delivery system, occupational therapists are challenged to be inventive, creative, and knowledgeable of future trends. Currently, the profession is being pressured to prove its cost-effectiveness and must meet the demands for accountability in order to remain viable (Bell, 1985). As inpatient hospital days are being reduced, patients are being released sooner and, in some cases, more acutely ill than in the past. One way that occupational therapists can face this change is to become more involved in community and home treatment. It has been noted that cognitive skills such as decision making, sequencing, identifying resources, and problem solving are more effectively taught through experiential learning in actual community settings than in simulated clinical situations (Frieden & Cole, 1985). With other professions vying for reimbursement dollars, occupational therapists need to show that because of their unique approach to treatment, based on their philosophy, knowledge, skills, and attitudes, they are suited to assist people in finding the best ways to achieve optimal functioning through goal-directed activities (Bell, 1985; White, 1986). This article describes an occupational therapist's treatment of a brain-injured adult in the community and home setting.

Patient's History

Aaron is a 41-year-old male mechanic who sustained a traumatic brain injury at his work site, an automobile repair shop. He had been working on a vehicle that was on a lift 4 feet off the ground. No one witnessed the incident; however, it is believed Aaron fell off the lift, striking his occiput against the concrete floor. His co-workers heard a noise and discovered him lying unconscious on the floor. They reported that he remained unconscious for 5 minutes. Aaron was responding to loud verbal cues and following simple verbal commands by the time the paramedics arrived. He was unable to answer questions or verbalize anything except moans. On admission to a local emergency room, he was disoriented.

The accident resulted in a left parietal-temporal fracture, left parietal and occipital epidural and subdural bleeding, a right occipital contrecoup contusion, and bilateral subfrontal intracerebral hematomas. Surgical evacuation of the left parietal epidural and subdural hematomas was necessary. Computerized tomography (CT) at the time of first evaluation also showed a 1-cm left-to-right midline shift of the cerebrum. Later CT scans indicated the bifrontal intracerebral hematomas were diminishing and required no further surgical treatment.

Aaron's orientation gradually improved over the first 2 weeks in intensive care. At the time of his...
transfer to the rehabilitation unit, he was able to converse in a basic, concrete manner and participate fully in the rehabilitation program. Throughout his 4-week hospitalization, Aaron experienced no seizure activity, and his only medications were for pain.

During inpatient rehabilitation, Aaron received a neuropsychological examination and was evaluated and treated by an occupational therapist, a physical therapist, and a speech pathologist. Both the physical and occupational therapists noted impairments in endurance, balance, and strength. The occupational therapist further noted deficits in visual-spatial skills, impulse control, and insight into disability. Specific visual-spatial deficits were in the areas of spatial relations, figure-ground perception, form constancy, mirror images, and constructional praxis. The speech therapist did not find any motor speech problems, yet did note a mild word-finding deficit. The neuropsychologist found marked deficits in short-term memory, sequencing, and rate of task completion.

On discharge from the hospital, Aaron was independent in all self-care activities and was walking with supervision and no assistive device. He was still suffering from venous hypotension and was unable to turn his head quickly from side to side without experiencing light-headedness and loss of balance.

Referral for Outpatient Treatment

A rehabilitation nurse was following Aaron’s case because he was receiving Worker’s Compensation benefits. One week after discharge, the nurse, recognizing the need for continued occupational therapy intervention with a vocational emphasis, referred Aaron to a private firm offering vocational counseling services with two occupational therapists on staff.

The private firm contacted the hospital, and a team meeting was arranged to discuss previous therapeutic intervention and progress. The rehabilitation nurse acted as the liaison between the insurance carrier, the client, and the professionals involved in the case and monitored coordination of services throughout treatment.

Initial Evaluation

The initial assessment took place during two 1½-hour sessions over a 2-week period. The assessment consisted of interview and observation to obtain an occupational history and evaluate Aaron in the areas of motor, sensory, cognitive, social, and psychological skills.

Aaron, a well-developed male Yugoslavian, immigrated to America in 1968. He lives in a quiet, upper middle-class neighborhood with his wife of 12 years, Marie, and their 2-year-old daughter. All three were present during the interview.

In Yugoslavia, Aaron’s high school education consisted of 4 years at a trade school, where he received mechanical training. At the time of his injury, he had been working at the auto dealership for 9 years as a journeyman mechanic. He had an excellent work history and was given the Star Mechanic Award of Northern California for his outstanding skills and customer service.

Aaron had previously enjoyed an active life; his hobbies included soccer, camping, swimming, bicycling, gardening, traveling, and going on walks with his daughter. Since his injury, however, walking was his only hobby. Before his injury, his identity was focused on the masculine role: He refused to do housework or cooking and enjoyed working on his cars and caring for the exterior of the house.

Skills Assessment

No standardized assessments were administered because of Aaron’s recent discharge from the hospital and the availability of thorough reports by previous therapists.

Motor skills. Aaron ambulated at a slow pace with a slightly widened base of support. His dizziness prevented quick movements, and he reported that when he attempted to jog a few days post hospital discharge, he almost fell. He was able to negotiate curbs and steps with supervision. His endurance was limited to approximately 30 minutes of continuous activity, and he required one or two naps daily.

He noted no difficulties with fine motor coordination during self-care activities. He did report an inability to change his daughter’s diapers because of her continuous movement, and he was unable to coordinate the steps involved.

Sensory skills. Visual orientation appeared intact; Aaron did not report double or blurred vision or difficulties in tactile discrimination. He did note a deficit in olfactory discrimination with no loss in gustatory sense. Mild visual deficits were noted when Aaron was asked to locate an item in the refrigerator or on the counter top. He had no difficulty using a mirror image while working on a familiar task on an automobile. Mild deficits in shape discrimination and part-to-whole orientation were noted in Aaron’s lack of ability to quickly match common objects.

Cognitive skills. Frontal lobe syndrome was indicated at hospital discharge by Aaron’s apparent lack of insight into his disability and poor impulse control. He felt he would have been able to return to work immediately if not for his dizziness.

The neuropsychologist noted marked deficits in numerical sequencing, difficulties in problem-solving skills, and short-term memory deficits (i.e., difficulty remembering appointments). Concentration and at-
tention seemed impaired, as Aaron would interrupt a
collection by introducing a new topic.

**Social skills.** Aaron appeared cordial and friendly, and he seemed to have a good social network through his family, co-workers and community soccer team. Marie was supportive and anxious to find ways of facilitating rehabilitation.

**Psychological Assessment**

Aaron demonstrated minor depressive symptoms by stating, “I guess I’ll sleep; I have nothing else to do.” He said he would like to swim or play soccer but knew that he was not physically able to do so at the time. He reported being happier at home than at the hospital and attributed his progress to staying at home. Aaron did not identify with the sick role and wanted to be active. He stated his main goals to be curing his headaches and dizziness and resuming employment.

**Summary**

Deficits were identified in the areas of visual-spatial skills (including part-to-whole orientation and figure-ground perception), sequencing, short-term memory, physical tolerance, and insight into breadth of disability. The goals of therapy included preparing for job readiness through simulated tasks.

**Plan of Treatment**

Targeting Aaron’s previous roles (familial, social, and occupational) was the essential first step in developing a meaningful treatment plan. Relating present functional skills and past abilities aided in giving baseline data. Based on the initial evaluation and Aaron’s personal goals, the following treatment plan was devised:

- It was agreed to meet once per week for a 2-hour session. Treatment goals included increasing endurance and independence in transportation; improving sequencing, concentration, visual-perceptual skills and reality orientation; and learning compensatory techniques for memory deficits.

Treatment activities included changing automobile oil, repairing bicycles, mowing the lawn, trimming bushes, using a mirror to pull out wiring in an old car, changing an electrical socket, programming a VCR to record a soccer game, changing a heating regulator in a car, and changing a master cylinder in an unfamiliar car. The tasks were carried out in various positions—lying on the ground, working overhead, bending forward, and squatting—and were performed outside, in the house, or in the garage. Activities also included trips to stores and other community settings.

These tasks were graded, and the activities Aaron attempted increased in difficulty as his skill and endurance improved. For example, initially, Aaron was asked to change the oil in the family car. In time, he worked on an unfamiliar car doing routine tasks. As Aaron’s concentration and problem-solving abilities improved, he was asked to follow written directions to assemble a child’s toy or program household items (e.g., telephone, VCR). Initially, he required maximal structure and moderate verbal cues to complete given tasks. At times several people were present to better simulate his work environment. Admittedly, these working conditions were relatively stress-free compared with his actual work situation, in that no demands of productivity were involved.

Additionally, Aaron had been relying on his wife and brother for transportation and was anxious to resume driving. A driving evaluation was scheduled for 4 months post injury with the consent of his neurologist.

Aaron complied with the program by always being ready for therapy. He was initially skeptical of occupational therapy intervention, but once he understood the goals of occupational therapy and could see its relevance and importance for preparing to return to his job, he became enthusiastic.

**Treatment Process**

From the beginning, Aaron had no difficulty completing familiar, concrete tasks. His figure-ground perception was intact functionally while he was searching for tools in a tool box and parts in a utility drawer. No visual-spatial deficits were noted while he was working on cars or on other mechanical tasks. He was able to manipulate tools in inverted positions and use a mirror when his vision was obstructed. Aaron demonstrated good task follow-through and concentration even in times of frustration.

He continued to have difficulty reading and following through with unfamiliar written directions and required verbal cues. This problem was of particular concern because new model cars had been, and would continue to be, introduced. (Note that language barriers might have contributed to this problem; Aaron’s primary language is Serbo-Croatian.) Short-term memory problems also surfaced, as Aaron would frequently forget the final steps of a task. His therapist suggested using compensatory techniques for memory loss, including writing dates and appointments down on note paper or on a calendar. This method later proved to be effective for keeping doctor appointments and social engagements.

At home, Aaron’s wife, Marie, worked with him on shape discrimination using their child’s toys. Marie noted initial difficulty with spatial orientation of objects, yet after several repetitions he was able to com-
plete the task correctly more quickly. At treatment sessions, she provided objective information regarding the previous week's progress and noted any behavior changes. Her report was very useful in establishing guidelines for successive sessions.

Aaron continued to maintain close contact with his co-workers during rehabilitation. He liked to walk to the shop and visit them. When he was asked to discontinue these daily visits because he was distracting the mechanics, he was hurt and stated he did not want to return to work. Also during this time, he neglected his hygiene (shaving, grooming, and bathing), saying “There’s no need to do it now.” To aid in increasing his self-esteem, therapy during this time focused on success experiences.

A positive event during this time was his driving evaluation results. Aaron scored above average with no deficits in his visual acuity, brake reaction time, and overall safety awareness on the road. He passed his road test and was approved as a safe driver.

**Employment**

Trial employment was begun 7 months after the accident at the neurologist's and occupational therapist's recommendations. The employer, who had been informed along the way of Aaron's progress, was more than willing to reinstate him. The plan was for Aaron to start by working four half days each week and progress from there. The employer requested that all of his cars go through a quality control inspection throughout the trial employment. The only limitations placed on Aaron by his physician were that he not climb, ride on hoists, or engage in potentially hazardous activity.

On the first day of trial employment, Aaron arrived on time and well groomed. He was greatly animated, and he was fondly greeted by his peers. His occupational therapist accompanied him to evaluate the work environment for safety accommodations and found the shop clean and barrier free. Aaron was fully aware of the potential hazards at work and demonstrated caution. He took the first task assigned to him seriously and completed it in proper sequential order. The quality control department determined the work had been done correctly.

The therapist decided that frequent visits to the work site were unnecessary because Aaron demonstrated such a high level of independence on his first day. However, the therapist contacted both Aaron and the employer weekly and made periodic site visits. Particularly evident throughout the trial employment was the increase in Aaron's affect and decrease in somatic complaints. His headaches became less severe and vertigo occurred with less frequency.

Aaron gradually increased both the number of hours per day and the number of days per week of work. At the end of his first month, he resumed full-time work. By that time, the quality of his performance was on a par with that of his co-workers. His productivity level was at 82.4%, which was in the lower range of the employer's expectations, but not the lowest in the shop. The employer reported positive feelings about Aaron's return to work and continued to monitor his performance closely. His productivity continued on the lower end of the scale, but was within normal range for the types of jobs he was given.

The shop foreman noted that Aaron was more dependent in decision making than before the accident and required additional supervision because he was afraid of making a wrong diagnosis. Supervision time gradually decreased over the course of the trial employment period. The foreman also noted that when Aaron first returned to work, he was more passive than prior to his accident, yet this gradually improved over the next month.

After a 3-month trial employment, Aaron became a permanent full-time employee and was expected to maintain a high level of productivity and quality of work. Aaron reported enjoying the challenge of work and stated he had no time to think of his ailments.

One year after his injury, Aaron's performance was within the acceptable boundaries for a full-time employee. Although his productivity remained on the low end of the scale, the quality of his work was above average.

**Other Progress**

The therapist kept Marie informed of Aaron's progress at work via telephone contact. Marie reported simultaneous improvement in Aaron's affect and decrease in his negativity toward his family and work. She also reported decreased frequency of word confusion. Thus, the major gains in his emotional level and functional skills all coincided with his return to work.

Marie was given a home program for Aaron to work on specific deficit areas in the evenings and on weekends. These activities could be integrated into play with their child or into household repairs.

Marie's main concern became Aaron's lack of emotional display. She refused participation in any support group, but was able to maintain open communication with the therapist.

At approximately 8 weeks after his injury, Aaron began to initiate some former hobbies, one of which was soccer. He reported being able to run slowly on the field and kick the ball. He felt positive about his level of recovery and the increase in his fitness. He lost some of the weight he had gained at home because of his semisedentary life-style.
Summary and Conclusions

In this case, occupational therapy was invaluable for continuity of care and facilitating the earliest possible successful return to work. The major goal of rehabilitation was for Aaron to prepare to go back to work by relearning or refining all the necessary physical, cognitive, emotional, and perceptual skills. This specialized occupational therapy plan meant that unnecessary services, and therefore unnecessary expenditures, were avoided.

Occupational therapy intervention allowed for open communication between the family, the employer, the insurance carrier, and the physician. Throughout treatment, the insurance carrier received regular monthly reports supplemented with periodic telephone updates. The carrier commented favorably on the initial evaluation, believing the information to be comprehensive and relevant.

The occupational therapist provided the family with medical information to decrease confusion over medical terminology, provided support as appropriate within the context of treatment, and demonstrated ways that the family could become more involved in Aaron's rehabilitation. Through the weekly treatment sessions and direct observation, Marie was able to more fully understand the scope of her husband's disability.

It is interesting to contrast the hospital findings and the findings of the private therapist. Aaron had been diagnosed as having severe visual-spatial deficits on the standardized, clinical tests; however, he showed only limited deficits when tested in functional situations in the familiar home environment 2 weeks later. This contrast demonstrates occupational therapy's unique role in the home setting, where the therapist is able to use relevant and meaningful activities directly related to the client's roles, hobbies, interests, and cultural experiences. The flexibility possible at home should enhance cooperation and success. In Aaron's case, not only did the treatment allow for practice of techniques related to his work, it also provided practical feedback as to the usefulness of tasks he accomplished (e.g., the telephone was working after installation). When Aaron was having difficulty following written directions, he used factory automobile manuals to practice following various diagnostic steps.

If Aaron's deficits had not been addressed with appropriate intervention, he might have required assistance and supervision for the rest of his life. With proper intervention, however, he was able to regain endurance and to relearn skills or compensate for lost abilities in order to safely resume gainful, full-time employment.

Not only did the client benefit from this approach, but the insurance carrier saved money. The insurance carrier, which had never before used occupational therapy to help a client return to work reported being pleased with the objective, measurable goals established and was particularly satisfied with the occupational therapy documentation style, which allowed for easy review of the client's progress.

By emphasizing safety and cognitive issues, areas not commonly addressed with such detail by some other professionals, the therapist minimized the risks of reinjury and rehospitalization. Occupational therapy thus enabled Aaron to resume gainful employment and other previous life roles safely, cost-effectively, and expediently.

Acknowledgments

I thank Anne MacRae, MS, OTR, for her guidance and support in preparing this manuscript.

This study was completed in partial fulfillment of the requirements for a master's degree in occupational therapy from San Jose State University, San Jose, California.

References

