The Most Common Behavioural and Psychological Disabilities Following Brain Injury –

Principles of Management

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Table 1 presents clinical impressions of the most common personal and social consequences of ABI for individuals, their families, and their physical and psycho-social management.

Table 1: Broad Categories of Behavioural/Psychological Disabilities Following Head Injury

1. Poor memory for recent events

2. Reduced attention and concentration spans

3. Error and self-awareness problems/reduced willingness to work on difficulties

4. Emotional instability

5. Personality changes

6. Slower thinking and acting

Before generalising about the behavioural changes with reference to Table 1, it is worth describing the head-injured person's progress through therapy to get a better view of these changes and their effects.

In the early stages I see the physical model predominating up to the third to sixth month post-injury stage with heavy involvement of medical staff, occupational therapists, physiotherapists and speech pathologists. At about the sixth month stage the social model parallels this physical one and then gradually begins to overtake it well and truly by the twelfth month stage.

As the client develops a fuller realization of what has happened and the family see the subtle changes not apparent in hospital (see Appendix II for a description of the family's changing perceptions), the extremely difficult psycho-social adjustment stage is entered.

The client's primary needs then become occupational counselling, work adjustment assistance, personal counselling, family counselling and support. What is obviously needed here is a good supply of bright, adaptable social workers and vocational counsellors. Social workers at this stage have to rely largely on a crisis intervention model to sort out the head injured's numerous crises that really start when they leave the hospital or rehabilitation centre, and various break-downs start to occur. Maybe half of the marriages break up six to eight months after the return to home. Of course adjustment problems do not stop there. The daily care and occupation of the unemployed head-injured person is probably the most serious gap in the State's service to the 3000 or so persons who suffer hospitalisable head injuries each year in Australia. The major demand on vocational counsellors is to make creative

recommendations, given the assessments of other professionals, as to how clients might compensate the losses in a work placement.
With regard to occupational concerns, in my experience, precipitous decisions about final vocational ability should not be made until approximately 18 months post-injury. This refers mainly to those people ajudged to be in the Glasgow Outcome Scale category of *moderate* disability. It is highly unlikely (a less than 10% chance) that anyone categorised at six months post-injury as *severely* disabled on the same scale, will become a vocational prospect by this stage.

I see the role of psychologists skilled in neuropsychology beginning early with baseline assessments and cognitive re-training and behaviour management advice given as soon as possible before the best chances of influencing recovery pass. Through the next few months continuing assessment checks the success of re-training intervention and highlights further needs. This ideal will be more achievable as computer programs are introduced. Their contributions include their speed in comprehensively assessing deficits, their ability to expose the injured brain to an unending, carefully graded, progressively harder array of new learning situations and problem-solving tasks (most of the improvements in brain injury come from trying to master new learning situations) and their ability to provide clear, untiring feedback so that the brain can quickly assess the accuracy of its attempts to compensate for, or reformulate a damaged functional system. Incidentally, these are the three main conditions I think are necessary to maximize recovery - clear and frequent feedback, progressively difficult repeated activity that aims at errorless learning to avoid establishment of incorrect patterns and rehabilitative activities structured on a thorough deficit analysis.

Another role of the psychologist is helping the client accommodate emotional changes. They can include denial, depression, aggression against staff and family, loss of initiative and the loss of self-esteem.

1. Poor memory for recent events

This is seen most commonly in the early part of recovery. It is still severe six months post-injury in about 75% of persons whose period of post-traumatic amnesia (PTA) exceeded four weeks; in about 3% whose PTA was between 3 - 4 weeks and usually absent in those with a PTA of less than 2 weeks. (Jennett, 1981).

When a physiotherapist is trying to teach a patterned form of movement such as walking, the client forgets what was said just 15 minutes ago. This frustrates the physiotherapist and client alike.

The social and personal effects of disordered memory can be devastating. If people with significant recent memory problem have household responsibilities they cannot tidy things up, the house gets in a mess and things get put away without any order. They may forget to change their clothes and become grubby and unattractive. They forget to put out their cigarette before going to sleep. They forget to pay bills. They forget to turn off the iron before going out. Friends find that they have to constantly repeat the things they spoke to them about the week before. Their friends get tired of this and eventually just keep social conversations at a very superficial level, if they maintain contact at all.

On the job, they forget instructions easily, do what they think the boss said and get into trouble when it is not right.

2. Concentration span

There are some obvious limitations for persons with concentration difficulties. Students will have difficulty in classes and lectures. For other people other complications might be that they cannot read a book for any useful length of time, they cannot look at TV for long, and they cannot hold onto the thread of a story. So, if they are well and active, as the young head-injured person usually is, they demand more attention, become more and more restless, until their tension builds up to an explosion point. They jump onto the bike, speed down to the Pub, only to find that they are three times more susceptible to the effects of alcohol.

3. Awareness/motivational problems.

A large part of the misery for the clients, family and therapists that is associated with head injury arises out of an inability to use abstract thinking, to be aware of and utilize their errors and to be self-critical of their changes. The inability to use concepts beyond the concrete level leads to difficulties in day to day problem-solving. This can involve anything from writing a computer program to putting clothes away in the right drawers.

Head-injured persons may be unaware of making mistakes, deny making them and naturally, since they cannot direct the blame inwards, they blame others for things going wrong. Before long they develop a reputation for being careless, untidy and selfish.

Their heavily reduced insight into their changes prevents any self-directed attempts to regain lost functions and to become as independent in ADL as possible. So they do not attend therapy sessions regularly, nor are they punctual or hard-working and do not practice outside therapy what has been learned.

Their difficulty handling abstract concepts means that they are not amenable to reason or to counselling given its insight base. They are however capable of learning from experience. Unfortunately, the experiences are often negative. Eventually they are tackled about their carelessness and lack of motivation and this can give rise to, or exaggerate, major personality changes. This brings us on to the next section.

4. Emotional instability

When they are tackled this instability comes to the fore with a heated explosion at home or in therapy. They emerge from the angry outburst confused and depressed, convinced they are being “picked on”. It is neuro-anatomically impossible for them to take responsibility for what has lead to the “blowout” and to take responsibility for emotional control during it. This emotional lability is very much a feature of the young head-injured. It, of course, makes them very free to tell you what they think of you.

5. Personality changes

The first and most significant personality change is the lack of insight referred to earlier. Rarely are they fully aware of their reduced intellectual skills and interpersonal insensitivity. They deny changes, particularly in the early stages. Only after months of repeated destructive failures will they admit they are not the person they once were.

The second personality change is ego-centricity. This is the result of their inability to have easy communication because of difficulty comprehending abstract statements together with memory deficits. They eventually become seen as headless, selfish and at times insensitive. They are more hyperactive and impulsive. Their sexual relationships become insensitive and sometimes brutal. Their marriages are in great danger. As said earlier maybe half break up within six to eight months after they return home from the rehabilitation centre or hospital. Of course the first to suffer are the physiotherapists, occupational therapists and nurses. Because they find repetition exceedingly difficult to manage they resist therapists in any of their attempts to structure a program of daily activity.

Self-control problems mean not only marriage break-ups but they often lead to "the big lie" about why the company that previously employed them had to drop them because their job has become redundant. Gradually their impulsiveness and ego-centricity breaks down under the strain of repeated conflict. Their self-esteem and self-assurance plummets. Their sense of bewilderment and self-doubt may be over-whelming.

After a year or so it is then that severe psychological complications can be seen. Depressive and paranoid reactions are not uncommon. Paranoid reactions are hardly surprising when it is remembered that their self-awareness/self-critical faculties may not be operational. It makes perfect sense to them to maintain that there must be an external explanation for all that is happening in their lives.

6. Slower thinking and acting.

An almost universal effect of any brain injury is reduced working and thinking speed. Disruption to any of the brain's routines at virtually any cortical site leads to a general lowering of cortical tone. The head-injured may work and think for some time at half the speed they used to. This makes job placement difficult though not always impossible. Psycho-motor retardation is probably the last intellectual ability to reach its maximum level. This needs to be kept in mind particularly when trying to place a person in a physical skill job. (This is a common vocational destination for the head-injured, because such exclusively physical work short-circuits cognitive losses to some extent.) Progressive assessment should indicate whether or not it is feasible to expect vocationally useful improvement before any lasting decision based on work speed is made.

Principles of management of the most common behavioural changes.

(a) Intellectual changes:

The most common intellectual change after head injury is poor memory. Table A presents principles of managing this. It is worth noting that research indicates that most people prefer common aide-memoires such as diaries, to any mnemonic strategies in their rehabilitation (Harris, 1980). It is not within the scope of this paper to discuss the principles of managing other intellectual changes. Three principles have already been mentioned - clear and frequent feedback, repeated presentation of increasingly harder activities with errorless practice and a program painstakingly tailor-made for the deficits of the brain-injured person. There are several other principles and the interested reader is referred to the technology of cognitive re-training. These principles tend to apply equally well to physical re-training. After intellectual changes, there remain emotional and motivational changes.

(b) Emotional/Motivational changes:

Clients may be motivated in a number of ways:

(i) by initial success in their rehabilitation program and by getting the feeling that they are being helped to maximise physical, communication, social/occupational, psychological coping and thinking skills.

(ii) by social rewards e.g. non-verbal and verbal encouragements.

(iii) by the development of a warm personal relationship between the therapist and the client.

(iv) by explaining what has happened to them in detail if they wish to know and can understand. If some injury and its effect are expected to be permanent they should be informed. Too high expectations can often cause emotional/motivational problems. Therapy needs to be a process of assisting clients to realistically accept their limitations and of motivating them to work to the edge of those limitations.

(v) by the methods of a branch of behaviour modification technology called Operant Conditioning. Emotional problems will be minimized if you can minimize the antecedents of these. These antecedents were discussed in the previous section and include problems in memory and concentration and your frustration with their apparent lack of motivation.

The client's frustration may best be handled within the personal relationship that you have with them. You may want to as well refer onto a psychologist or social worker for the common emotional problems of denial, depression, aggressive outbursts and loss of self-esteem. Emotional-motivational problems can be reduced by operant conditioning during therapy. Knowledge of its principles and their creative application to each client can be a powerful tool for enhancing the effects of your therapy. The remainder of this section will be a summary of these principles. The final section will show how they can be applied. Before proceeding I would caution that the type of therapy for emotional and motivational disorders needs to be chosen

sensitively. Behavioural approaches such as a token economy may be demeaning for a mature adult with a moderate disability.

However, adolescents seem to respond well to them. The use of social rewards and correction that deprives them of warmth and approval may be more appropriate for the mature adult.

Principles of Operant Conditioning.

The main behavioural techniques useful in rehabilitation settings are those of Operant Conditioning. Operant Conditioning refers to the techniques derived from the principles of reinforcement. Many behaviors can be increased or decreased (conditioned) by something operating in the environment to influence its occurrence. Chief influences are rewards and punishments. Behaviour followed by reward (i.e. some-thing liked) tends to recur. Behaviour followed by punishment (i.e. something not liked) tends not to be repeated.

Some examples of these two influences follow. If a physiotherapist wants to reinforce a client for raising a certain amount of weight to a specified height with pulleys she could arrange a small switch at the desired height level which would trigger a bell each time the weight was raised so that it struck the switch, thereby. reinforcing that behaviour. If she wants to increase the distance that a client walks, the physiotherapist can systematically lengthen the distance and reinforce each advance with a small token such as a poker chip and by previous agreement, a certain number of tokens can then be used by the client to buy things such as more time in therapy or some activity which he enjoys. In both examples, with correct application of reinforcement you should see an increase in the desired behaviour.

Next, some examples of how punishment might influence behaviour.

When a client refuses to do prescribed exercises or is using foul language in physiotherapy sessions he can be punished by the removal of certain privileges such as not allowing him to play his favourite tape during physiotherapy.

One of the most effective ways of controlling behaviour using this principle is simply to withdraw warmth and attention until a specified behaviour improves or increases. One example relates to the common behavioural disorder found in the early stages of head injury and that is breast and thigh grabbing of female staff. Of course, this needs some disciplining. Rather than yelling “Don’t do that!” over time what works best is a calm statement like “If you want me to work closely with you, that’s not going to help at all.” So corrections need to be ones that deprive the person of approval and warmth and they need to be repeated consistently.

Punishment tends to produce an immediate suppression of an undesired response. Using punishment alone is only doing half the job. Better results can be obtained if you combine punishment and reward. Once you see desired behaviour developing you needs to give it attention, or some other form of reinforcement. By an appropriate balancing of reward and punishment, behaviour can be what is called “shaped” or made to move in desirable directions. This process, known as shaping, means the reinforcement of closer and closer approximations to a desired behaviour. The process of shaping is useful to know about when you are interested in developing behaviours that are practically non-existent or occur very infrequently. It

works like this. First, reward is given for any response which is similar to the desired response. After a few rewards behaviour tends to be repeated at this albeit low level. The next step is to withhold reinforcements for behaviour at this level until a behaviour that is fractionally closer to the desired behaviour it emitted.

It then is reinforced and so on, each time withdrawing reinforcement from the previous response and then making reward conditional upon the next response closest to the desired behaviour. In the end only the desired behaviour itself is rewarded.

A few words about the rate or timing with which you use - reinforcement are in order. The best way to establish a new behaviour is to reinforce it each time it occurs, but once it is established people will perform it more often if you switch to an intermittent rate of reward.

There are recommended rates at which you should reward emerging behaviours. A psychologist can give you some advice on this.

Applications of Operant Conditioning Principles.

The remainder of this paper demonstrates how Operant Conditioning principles can be applied to head-injured persons. This will be done in three ways:

(i) by a summary review of relevant studies
(ii) by two case studies
(iii) by examination and discussion of a token economy system

Operant Conditioning principles. The main techniques used are feedback, reinforcement, and shaping. Time-out, contingency contracting and aversive conditioning procedures are used as well though less frequently. Two case studies demonstrate the practical application of Operant Conditioning.

Client A (a problem of motivation)

This 55 year old man was involved in a motor vehicle accident which resulted in a compound fracture and a left frontal lesion. He had a verbal IQ of 85 and a performance IQ of 57. His memory, comprehension, visuo-spatial and constructive abilities were very poor. His verbal fluency was also severely restricted, in keeping with a severe left frontal lobe deficit.

Where previously the client had been reticent, he became excessively voluble. He would not raise his arm about a particular point at physiotherapy. He would not dress each day and it took the staff several hours each day to dress him. This had been the practice for three weeks.

A token system was instituted for dressing; one point for each item of clothing put on correctly. When asked what he would like to have he said he wanted to go home. It was arranged that he could have one day at home at the weekend provided that he gained 25 points by the Saturday. The number of points was chosen to be 75 per cent of the possible points attainable by the weekend. He achieved the goal in two and a half days and had his day at home. There was no further problem with dressing. The reinforcement procedure was also introduced for arm movement, but had limited effect, probably because of the pain or because an inappropriate reinforcer was used. This man also developed complaining behaviour to the staff about his wife, which was repetitious, untrue and damaging to their relationship.

The staff agreed to walk away from him when this behaviour occurred, explaining calmly the reason. However, they attended to him when his conversation was rational and not derogatory. The patient's verbal behaviour showed the anticipated change, as it should. Listening is a very effective reinforcer for verbal behaviour.

Client B (sexual disinhibition and violence)

A further example of the eradication of unwanted behaviour is the case of client B. This 22 year old man had a closed head injury which had resulted in an intracerebral haematoma. His verbal IQ was 91, performance IQ 65. He was disorientated, had a severe memory impairment and showed clear evidence of perseveration of motor responses. He was also grossly disinhibited in his behaviour. His problem behaviours related to his disinhibition, and included making unsolicited propositions to the young nursing staff. He became very abusive to other patients and staff and also committed acts of violence on other clients, a sibling and nursing staff. For the purposes of recording his behaviour, the day was divided into three observation periods. As he went home for weekends, the co-operation of his parents was sought and both emerged as diligent aides. One token was given for each period of the day which was clear of abusive or violent behaviour. Three points in any day could be ex-changed for sweets or a pudding of his choice. Eventually, the client chose to exchange the tokens for campaign and other military medals from his father's extensive collection.

The graph below demonstrates the initial baseline high rate of abusive acts (Fig 1). The introduction of reinforcement for appropriate behaviour reduced this over the period of time down to as close to zero as is reasonable. This improvement in behaviour has been maintained even after the removal of the token system because the alternate acceptable behaviour is reinforced by attention and social approval.

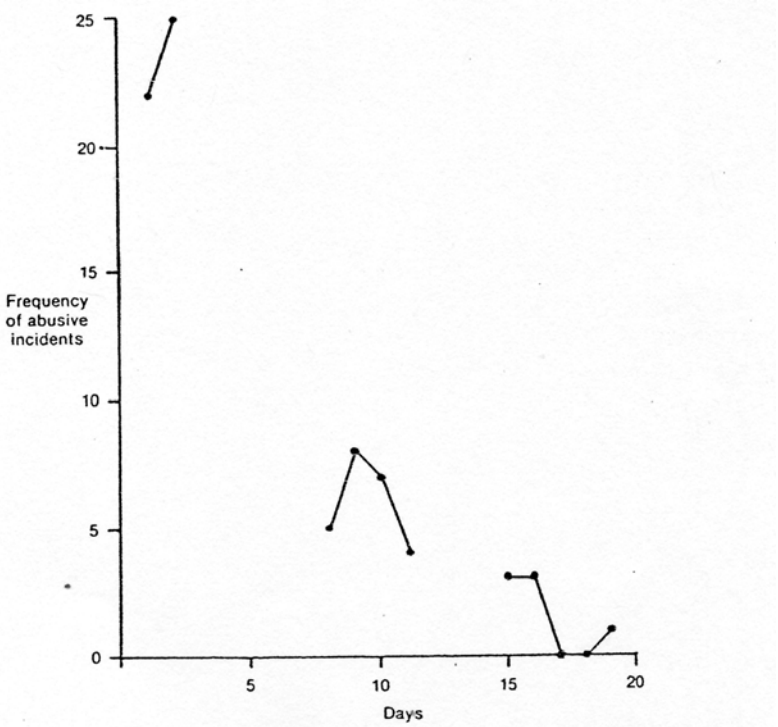

FIG. 1 B: frequency of abusive and violent incidents

Finally the table following presents a sample from a token economy that was run in a physiotherapy setting.

Token economies work by the earning of tokens that are given contingent upon desired behaviours. Tokens are then exchanged for rewards. The value of desired behaviours and rewards are negotiated before the system is implemented. The sample token economy shown is of one designed for children and adolescents (Alvord, 1973) but with minor modifications it could be applied to older persons if they are agreeable.

A few things about it are worth noting. An initial baseline was taken before Week 1. No tokens or rewards were administered. Instead the usual behaviour and engagement in rewarding behaviour was observed and recorded for a week. This was done for comparison purposes. In Week 1 for example, the number of desirable events more than doubled. Without the baseline it would have been hard to know if the token economy system was having any effect. By using tokens in conjunction with social rewards from the start one can taper off the use of tokens and build up to exclusive use of social rewards. A second baseline is recommended some weeks later to see what effects removal of tokens might have. Often they have to be reinstituted and removal trialled later.

After stopping the use of tokens social rewards such as praise and privileges need to be frequent at first but should be gradually faded to intermittent levels. Ultimately, rewarding with internal, rather than external, reinforcement becomes established. This self-reward should where possible be the ultimate goal of any operant conditioning program you administer. The socialized, mature adult largely relies on internal rather than external reward for most behaviours.

Finally, note that a more equal relationship is made possible in the opportunity given to the client to manage the therapist. One of the great dangers in using behavioural procedures where one person (spouse, therapist, instructor) acts as a modifier and the other as a recipient is the enhancement of what may already be an unequal relationship.

Working with the head-injured can be very depressing. The best we can often do is help them to walk better, talk better, think better, cope emotionally with their situation and to maximise their independence within their compromised life situation. By six months post-injury we have seen that their final outcome is largely pre-ordained and categorized. Our job then becomes one of maximising their functional capacities within the limitations of those categories. However if the cognitive, emotional and motivational issues are not adequately addressed early in rehabilitation they will fester into lifelong social adjustment problems, the proportions of which may have otherwise been curtailled. To treat these issues we need two things common to any successful helping situation: the warmth, respect and honesty of a good working relationship with our clients and technical expertise - in this case the knowledge and technology to recognise behavioural changes and the application of operant techniques that has as its goal the improvement of our client's chances to think, judge and act with minimal or no assistance from others.

Home Token Economy

Contract sheet

For Joe. B Age 18 For weeks ending - & -

Desirable behaviors

	Payoff
1 Homework exercises	15
2 Arrive within 5' for therapy time.	5
3 Get to bed by 10:30	10
4 Bath each a.m.	3
5	
6	
7	
8	
9	
10 bonus	

	S	M	T	W	T	F	S	Events
		15						1
			5			5		2
		10		10				2
		3	3			3		3
Tokens								8

	S	M	T	W	T	F	S	Events
	15	15	15	15	15			6
			5	5				2
		10	10	10	10			4
	3	3	3	3	3	3	3	7
	18	20	45	33	20	3	3	19 117

Undesirable behaviors

	Fine
1 Swearing	10
2 Losing temper	5
3 Refusing reasonable request	5
4	
5	

	S	M	T	W	T	F	S
	20	10	10	20			
		5					
		10		10			

	S	M	T	W	T	F	S
		10		10			
		10					
			5				
	20	5	1				

Privileges°

	Cost
1 Go home for w/end	100
2 ½ hr. use of gym	25
3 Own tape in physio	20
4 Up ½ hr late	30
5	
6	
7	
8	
9	
10	

	S	M	T	W	T	F	S
						100	
		25		25			
		20		20			
	30	30		30	30	30	

	S	M	T	W	T	F	S
				25			
	20			20			
					60		
	20	45	60				4 120

Client manages therapist

	Fine or Payoff
1 Failure to enforce economy	10
2 Not conversing more than one minute/session	10
3	
4	

	S	M	T	W	T	F	S
				10			

	S	M	T	W	T	F	S

Token balance (bring forward)

18	6	45	33	1	4	7

Note: No Bankruptcy No Advances No Credit No Millionaires
Please read instruction booklet

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Stages in the Evolution of Family Reactions to a Brain-Injured Member

Stage	Time Since Hospitalisation	Perception of Patient by Family	Expectation	Family reaction
I	0-1 to 3 Months	A little difficult because of fatigue, inactivity, weakness, etc.	Full recovery by one year	Happy he's alive
II	1-3 Months to 6-9 Months	Not co-operating, not motivated, self-centred	Full recovery if he'll try harder	Bewildered, Anxious, Angry
III	6-9 to 9-24 Months; Can continue indefinitely	Irresponsible, self-centred, irritable, lazy	Independence if know how to help him	Discouraged, Guilty, Depressed, "Going crazy"
IV	9 Months or later; Can continue indefinitely	A different, child-like person	Little or no change	Depressed, Despairing, "Trapped"
V	15 Months or later; Usually time-limited	A difficult, child-like dependent	Little or no change	Mourning
VI	18-24 Months or later	A difficult, child-like dependent	Little or no change	Reorganisation. Emotionally, if not physically, disengaged

(Muriel Lezak, 1980)

Coping Strategies for Different Levels of Memory Impairment

Severe	People with severe memory deficits (i) fail to retain any information about recent experiences after their attention has been diverted (ii) on memory testing are unable to profit from succeeding learning trials (iii) are typically unable to work or live independently. Without assistance create fire hazards, have great difficulty keeping track of finances, scheduled activities and social relationships (iv) require near-constant supervision and assistance
Mild to moderate	People with mild to moderate deficits (i) can compensate to a limited degree with written notes, schedules and checklists (ii) need to make their lives as routine as possible. They should stick to familiar schedules, activities, procedures and geographical areas as much as possible (iii) should avoid situations and commitments in which effectiveness requires accurate retention of a lot of new information (iv) do best in tasks that can be completed without interruption and in tasks in which it is visually apparent what steps have been taken and what steps remain to be done (v) they should not try to mentally keep track of what has been done or remains to be done on tasks since the chances of error are much higher
Very Mild	People with very mild memory deficits should have little interference with everyday functioning provided they (i) make some effort to compensate and (ii) do not over commit themselves in this area

(Adapted from Heaton and Pendleton, 1981)

Addendum

From **Head Injury: The Facts** (1st edition 1990)
Dorothy Gronwall et al.

HOW MUCH RECOVERY CAN BE EXPECTED?

Almost without exception you can be sure that your relative or friend will be better, sometime in the future, than he is today. How much better he will be is another matter.

We do not expect people who have lost a limb in an accident to grow another one. We know that the disability is permanent, even though a very good artificial limb might be fitted to help compensate for the missing limb. With this sort of aid, a person is able to do most of the things that he could before the injury. Brains are different. Although we know that a person who has damaged parts of his brain will never regenerate them, we do not have any replacement for these areas. Yet in spite of this, we know that the patient can quite often get to do some of the things that a particular bit of the brain controlled. How can this happen?

Sometimes it is because the bit of the brain which is needed to allow the patient to do the activity v/as not damaged, but could not work properly for a while because of swelling and bruising. Or it may have been that another bit of the brain which was needed to work with the control part was out of action for a while, for the same sort of reasons. This kind of 'recovery of function', or getting back an ability which was affected by the head injury, generally takes place in the earlier period after the accident, and it generally happens whether or not you are trying to practise that skill.

Sometimes recovery happens because parts of the brain which are not damaged get used to taking over some of the job of the damaged bit. How this happens we do not know exactly, but it is clear that if the brain is to find a new way to do the particular activity which has been damaged, that activity has to be practised many times.

There are two important points about recovery after brain damage. The first is that how soon and how much improvement takes place is affected by the frequency and type of rehabilitation. The other important point is that there is always a limit to how much recovery can take place. This limit is set by the kind of injury, the amount of damage, and the age and lifestyle of the head-injured person.

THE TWO-YEAR MYTH

Many older textbooks make a very clear but quite incorrect statement about recovery after a head injury. They say that all the recovery that can be expected will take place in the first two years after the accident. This is simply not true. Not only is it not true, but it has caused much needless stress and unhappiness in families and patients who were given this incorrect information. You do not need to retire to bed on the eve of the second anniversary of the accident, believing that if your relative or friend is not walking yet, for example, then he is doomed to spend the rest of his life in a wheelchair. This may indeed be .so, but two years is much too soon after the injury to give up hope, and to give up trying.

People have continued to improve five, ten, or more years after a head injury.

It is correct that the time when the most recovery takes place is in the first six months after the injury. This is partly because of the mechanism we described earlier where parts of the brain cannot work properly in the early stages because of bruising and swelling around them. But because improvement takes place at a slower rate in the next six months does not mean that it will eventually slow to zero.

If you are given the two-year myth, ask your doctor to confirm what we have told you. You might also like to ask around at the next Head-Injury Support Group which you attend. You will find no shortage of people to tell you about the progress which their relatives made well beyond the two-year period.