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The comprehensive care of the moderately to severely head injured patient

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2015-05-18
http://hdl.handle.net/10539/17794

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Fluid homeostasis in the head injured patient is imperative. The age, sex, height, body mass, intake, output, vital signs, hyperthermia and other metabolic conditions will influence the fluid and electrolyte needs of the patient. After head injury there is retention of sodium and water and a mild hyponatraemia may occur (Sodium 130 - 135 mEq/L). Drug therapy such as steroids and osmotic diuretic agents may lead to an electrolyte imbalance (Nikas, (ed.) 1982). 40 percent of head injured patients have damage in the region of the hypothalamus; diabetes insipidus being the most common clinical manifestation (Jennett & Teasdale, 1981: 230). Fluid and electrolyte requirements must be assessed on a daily basis and given in physiological proportions (Brunner & Suddarth, 1974: 723). In the acute phase haematological investigations (APPENDIX T), central venous pressure recordings and radial artery cannulation may be required.

Fluids used for intravenous administration include dextrose/saline. Blood, plasma and blood products are used when indicated (Nikas, (ed.) 1982). Rimel (1981), Sherry (1982) and Bowers (Webster, 1984) do not advocate the use of 5 percent dextrose water as it may aggravate cerebral oedema. In the acute phase of the head injury fluid intake is limited to 1 500 - 2 000 ml/24 hours to prevent overhydration and cerebral oedema (Brunner & Suddarth, 1974: Jennett & Teasdale, 1981)/ 60-80ml per hour (Webster, 1984). Thereafter fluid intake may be increased to 2 500 - 3 000 ml/24 hours (Conway-Ratkowksi, 1982: 208).

Accurate assessment and documentation of all intake and output is essential. The frequency of measurement will be determined by the patient's condition and the presence or absence of fluid and electrolyte disturbances. In the acute head injury intake and output should be monitored one to two hourly. A urine output of 30 - 50 mls. per hour should be maintained (Sherry, 1982). It may be necessary to insert a urinary catheter or use a penile device system. Routine urinanalysis must be undertaken on all specimens. Specific gravity is of importance if diabetes insipidus is suspected or dehydrating agents are used.

Other output that requires noting includes:

a. Vomitus.
   Vomiting is more common in those with less severe trauma and occurs in 20 percent of head injured patients (Nikas & Tolley, Nikas, (ed.) 1982: 90).
b. Nasogastric drainage.
   The insertion of a nasogastric tube assists with gastric decompression.
c. Intraventricular drainage.

d. Other wound drainage.

e. The elimination of faeces.

As straining increases intracranial pressure constipation must be avoided (Purchese, 1977). It is important to check daily for bowel movements and to initiate a bowel programme. Head injured patients are often constipated as a result of inactivity and a decreased intake of roughage. Mild cathartics or an enema may be ordered. To avoid fluid and electrolyte disturbances and skin excoriation diarrhoea must be controlled. Codeine Phosphate 30 mg six hourly may be utilized (Anderson, 1984). In the opinion of the researcher, rectal intubation is hazardous in the restless head injured patient and should not be undertaken.

4.5 CONTROL OF BODY TEMPERATURE

Normothermia (37^{o}C) has been recommended as part of the protocol of management of the head injured patient (Nikas, (ed.) 1982; Sherry, 1982).

According to Lewin (1976), the cerebral oxygen consumption falls by 25 percent at therapeutic levels of hypothermia (32^{o}C). Although hypothermia does decrease cerebral metabolic needs it is used infrequently as a means of therapeutic intervention. If used to control intracranial hypertension it is used in combination with other forms of therapy (Nikas & Tolley, Nikas, (ed.) 1982).

Hyperthermia increases the metabolic needs of the brain and must be vigorously combated in the head injured patient. For each 1^{o}C increase in temperature the body oxygen requirements increase by 7 percent. The body temperature may increase to 38^{o}C for 24-36 hours after head injury (Tyson, et al., 1978; Connolly & Zewe, 1981). Occasionally pyrexia occurs because of damage to the hypothalamus, but more commonly it occurs as a result of infection. An examination of the head injured patient to locate the cause of the pyrexia is essential. Corrective intervention must be instituted as soon as possible (Jennett & Teasdale, 1981; Vlok & Lochner, 1983).

4.6 THE USE OF ANALGESICS

According to Tyson, et al. (1978), narcotic analgesics and sedatives should not be used as they obscure the post-traumatic clinical course by depressing the level of consciousness, altering pupillary size and reactivity and they may suppress respiration (Budassi & Barber, 1984: 348). Connolly and Zewe (1981) and Budassi and Barber (1984: 348) advocate the use of aspirin and/or acetaminophen for analgesia.

Prior to performing painful procedures on the unconscious head injured patient adequate analgesia must be provided, in order to avoid the hypertension that may result in periods of high intracranial pressure because of noxious stimulation (McDowall, Symposium on head injuries, 1977).

4.7 THE USE OF ANTI-CONVULSANTS

Anti-convulsants are not used routinely in the treatment of the head injured patient. The indications for the use of anti-convulsants are stated by Tyson, et al. (1978) and Connolly and Zewe (1981) as:

4.7.1 Penetrating head injury.

4.7.2 Depressed fracture of the skull located near the motor cortex.

4.7.3 A patient who has had a seizure and shows signs of deterioration.

4.7.4 Multiple seizures.

4.7.5 G.C.S. ≤ 8/15.

Various regimens of anti-convulsant therapy exist. Anti-convulsants may be prescribed for those at risk. The assumption, once a late fit has occurred, is that a continued risk exists, even though 20 percent of patients enjoy long periods between seizures or appear to go into periods of remission. Patients at risk from epilepsy are advised not to drive in the first year after injury (Jennett, 1983; 1421).

4.8 THE USE OF ANTIMICROBIAL AGENTS

The use of antibiotics for open and penetrating injuries of the cranial vault is advocated by Purchase (1977), Vanhegan (1979) and Connolly and Zewe (1981). The use of prophylactic antibiotics for patients with a fractured base of skull and/or cerebrospinal fluid leak is common practice (Jennett, 1983; Budassi & Barber, 1984; 359), although their proven value is uncertain. Meningitis following a fractured base of skull is usually due to pneumococcus and thus prophylactic regimens are employed (Tyson, et al; 1978).

4.9 MANAGEMENT OF CEREBROSPINAL FLUID LEAK

Clinical examination of the patient to detect a possible cerebrospinal fluid leak is essential, especially if a fractured base of skull, fracture of the air sinuses or open head injury is suspected.

4.9.1 Cerebrospinal fluid leaks can be identified by one of the following:

a. The specimen does not clot.

b. It spreads when dropped onto filter paper (Vanhegan, 1979).

c. The 'ring' sign (Budassi & Barber, 1984: 359).

d. Positive dextrostix result (Gazzaniga, et al., (ed.) 1982: 284).
Hull and Murrow (Nikas, (ed.) 1982: 93) refute the use of glucose test strips for differentiating cerebrospinal fluid from mucous.

4.9.2 If a cerebrospinal fluid leak is present:

a. It must be permitted to flow freely and must not be packed or plugged (Vanhegan, 1979; Nikas & Tolley, Nikas, (ed.) 1982: 92).

b. It must be covered with a sterile pad that is changed when necessary and handled aseptically (Gazzaniga, et al., (ed.) 1982; Budassi & Barber, 1984).
The researcher advocates that in order to avoid unnecessary complications the above two principles be adhered to strictly.

c. The use of prophylactic antibiotics for cerebrospinal fluid leak is advocated by Jennett and Teasdale (1981: 236) and Nikas and Tolley (Nikas, (ed.) 1982: 92) amongst other authors (vide p37).

4.10 TREATMENT OF OPEN INJURIES

Scalp lacerations are present in 40 percent of patients attending accident and emergency departments soon after injury and may require suturing or debridement (Jennett & Teasdale, 1981: 213). Uncontaminated bony fragments can be replaced if the operation is less than 24 hours after injury, otherwise at a later stage it may be necessary to perform a cranioplasty.

4.11 ASSOCIATED INJURIES

It is important to exclude, recognise and treat extracranial injuries. While the patient is in the accident and emergency department a comprehensive assessment, including base line and subsequent observations to locate other injuries and avoid misdiagnosis, is essential (Ledingham, Symposium on head injuries, 1977; Green, 1984). Hypoxia, hypotension, respiratory embarrassment and haemorrhage aggravate head injury problems. Hypotension is usually not due to the head injury per se, but may be caused by scalp lacerations, prolonged resuscitation, sepsis, gastro-intestinal haemorrhage and/or abdominal injuries (Ledingham, Symposium on head injuries, 1977). The performance of an abdominal lavage or gastroscopy may be necessary (Green, 1984).

According to Jennett (1978: 104) and Tyson, et al. (1978), one third of all patients who are admitted with a head injury have another injury. Rimel (1981) in a study on central nervous system trauma states that 82 percent of the cases included in the study had one or more extracranial injuries. 9 percent of the head injured patients had an associated spinal injury. In studies undertaken by Jennett, et al. (1977) and Rimel, et al. (1981a) extracranial injuries occurred in 34 percent and 15 percent of the patients respectively. According to Hide (Symposium on head injuries, 1977), Rimel and Langfitt (1980), Nikas ((ed.) 1982), Rimel (1982), Jennett (1983) and Trunkey (1983), common associated injuries include injuries of the face, chest, abdomen, pelvis, spine, limbs and lacerations.

Jennett (1983) emphasises that associated injuries are particularly common in road traffic accidents and are often overlooked. Sub-optimal management of extracranial incidents is regarded by Rose, et al. (1977) as avoidable factors that contribute to the death of head injured victims.

5. NURSING

Nursing is defined in terms of the depth, scope and quality of nursing practice that embraces the management of the head injured patient through all phases of health care and recovery (vide p40/79).

"Nursing practice is a direct service, goal directed and adaptable to the needs of the individual, family and community during health and illness. Professional practitioners of nursing bear primary responsibility and accountability for the nursing care clients/patients receive." (American Nurses' Association, 1973: n.s.)

"Nursing is a humanistic science dedicated to compassionate concern for maintaining and promoting health, preventing illness, and caring for and rehabilitating the sick and disabled." (Rogers, 1971: vii)

Nursing: a South African approach

"...is an area of study in which an objective, systematic approach to problem identification and problem solving should be applied in all health care situations with record keeping as the instrument with which and through which the nurse accounts for her actions as being systematic, scientific and within the framework of the law." (Directive for the course leading to registration as a nurse (general, psychiatric and community) and midwife: 2)

Nursing is based on a scientific theoretical framework and practical expertise. Nursing embraces the holistic approach to a human being, from primary prevention, throughout rehabilitation until ultimate recovery.

Basic to the delivery of a quality nursing service is the concept of the nursing process (Yura & Walsh, 1973). In South Africa the nursing process is referred to as the "scientific approach in nursing" and includes the reporting and recording of activities in the light of the nurse's personal accountability (Directive for the course leading to registration as a nurse (general, psychiatric and community) and midwife: 2). Many authors (Davis & Mason, 1979; Johanson, et al., 1981; Snyder & Jackie, 1981; Conway-Rutkowski, 1982; Purchese & Allan, 1984) refer to the value of the nursing process, but few use the methodology to present the comprehensive management of the head injured patient. In the opinion of the researcher, the implementation of the scientific approach in nursing lends itself to more effective correlation of theory and practice and improved understanding, thus maintaining the quality of care of head injured patients. The use of the scientific approach in nursing establishes the basis for independent nursing practice, greater responsibility and accountability.

According to Purchese (1977: 194),

"The brain damage attributable to the head injury occurs at the time of the accident and provided there are no complications the course is one of recovery. This is true regardless of the severity of neurological impairment or the duration of unconsciousness. Therefore the management and nursing care is to keep the patient alive during the period of coma and to maintain a careful watch for deterioration in what should be an improving situation."

Nursing management is directed at achieving a good outcome (Rimel, 1981). Caring for the comatosed head injured patient and significant others is one of the greatest challenges in nursing (Conway-Rutkowski, 1982).

"The immediate goal in the care of the unconscious client is to sustain the highest level of well-being possible, to maintain life, and to avoid permanent damage." (Conway-Rutkowski, 1982: 205)

Nurses, doctors and the health team working in emergency departments often have a more significant impact on the outcome of the head injured patient than is realised (Tyson, et al., 1978). According to Johanson, et al. (1981: 204), many head injured patients who receive

"...proper nursing and medical management/interventions, can recover fully or achieve the highest possible degree of recovery within the limitations of their residual deficit."

The researcher would like to emphasize the fact that although nursing the head injured patient involves some sophisticated apparatus, the importance of the fundamental components of basic nursing care as suggested by Henderson (1964) and Roper (1980) must not be overlooked. The head injured patient's very existence and satisfaction of his/her needs is dependent on the nurse's knowledge and expertise. The care the head injured patient receives from the time of injury

(Trunkey, 1983) directly affects the recovery and future quality of the individual's life (Purchese, 1977; Snyder & Jackie, 1981; Conway-Rutkowski, 1982). This is supported by the findings of Rose, et al. (1977) on avoidable factors in head injury deaths.

Vlok and Lochner (1983: 820) add that the unconscious patient requires "conscientious nursing". Burger (1983: 4) states that "bekwame verpleegsorg is benodig vir oorlewing" (adequate care is necessary for survival). In terms of the scientific approach in nursing "conscientious" and "adequate" nursing' require further definition (vide p40/49).

To avoid repetition, aspects of comprehensive care that have been considered previously will not be discussed further (vide p23).

5.1 STANDARDS OF PRACTICE

In order to provide the most favourable nursing climate for moderate and severely head injured patients throughout all phases of recovery, the nurse must include the following standards as described by the A.N.A. (1975 a/b, 1976, 1977 a/b, 1985), Johanson, et al. (1981), Snyder and Jackie (1981), Conway-Rutkowski (1982) and Purchese and Allan (1984) in the therapeutic programme:

5.1.1 Provide a safe environment for the patient.

5.1.2 Utilize the nursing process to determine:

a. The patient's needs.

b. Immediate, intermediate and long term goals.

c. The specific measures to be implemented.

d. Patient outcome.

5.1.3 Respect the patient as an individual and provide privacy.

5.1.4 Protect the patient from injury.

5.1.5 Allow rest through a co-ordinated comprehensive plan.

5.1.6 Ensure adequate preventive and ongoing rehabilitation.

5.1.7 Ensure astute observation of patient status.

5.1.8 Ensure adequate alveolar ventilation and perfusion.
Maintain the acid-base balance within normal limits.

5.1.9 Maintain an adequate cardiac output.
Ensure that the haemoglobin and haematocrit are stable and within normal limits (vide p445).

5.1.10 Maintain cerebral perfusion and intracranial pressure within normal limits (vide p443).

5.1.11 Promote maximum neurological functioning.

5.1.12 Promote maximum function of other body systems such as the integumentary system, musculo-skeletal system and gastro-intestinal system.

5.1.13 Maintain fluid and electrolyte balance within normal limits.

5.1.14 Maintain nutrition and body mass within normal limits.

5.1.15 Ensure adequate elimination.

5.1.16 Provide routine care of the unconscious patient (vide p432).

5.1.17 Maintain adequate hygiene.

Lack of personal hygiene makes re-socialisation difficult (Evans, 1981). Ensure that the patient is infection free.

5.1.18 Introduce and promote the concept of self-care (Orem, 1980).

5.1.19 Promote maximum independence:

In activities of daily living.

Prevent disuse and misuse phenomena.

5.1.20 Maximise mobility.

5.1.21 Administer medications as ordered.

5.1.22 Ensure adequate communication to decrease patient and family anxiety. Speak around and to the client as if every word is comprehended.

5.1.23 Provide psychological support.

5.1.24 Cope with behaviour problems.

5.1.25 Provide sufficient effective motivation and stimulation of the patient.

5.1.26 Involve significant others as participants in patient care.

5.1.27 Ensure adequate discharge planning.

5.1.28 Ensure adequate patient and family teaching.

5.1.29 Document base line status of all biopsychosocial capacities of the patient at regular intervals.

5.1.30 Evaluate and analyse changes, be they positive or negative.

The fundamental principles of importance relating to the nursing of the head injured patient are generally accepted. The diversity is not in the actual intervention required but in the frequency, adequacy, competence and effectiveness of the care provided (Vlok & Loetmer, 1983; Tucker, et al., 1984).

5.2 PATIENT ASSESSMENT

To avoid repetition the researcher has chosen to present PATIENT ASSESSMENT here.

Although the stress is on neurological assessment it is as well to remember that the

neurological examination is a component of a thorough systemic examination of the head injured patient (Gazzaniga, et al., (ed.) 1982; Nikas, (ed.) 1982). The standard history taking and examination of a head injured patient is available (Bannister, (ed.) 1978; Jennett & Teasdale, 1981; MacLeod, 1981) and will not be discussed further.

"The nurse has a primary responsibility for the accurate, knowledgeable assessment of all parameters that are significant in determining changes in the patient's clinical status." (Ricci, Nikas, (ed.) 1982: 26)

Thorough assessment to prevent the development or progression of cerebral damage, complications and irreversibility of pathology is essential (Johanson, et al., 1981).

"There must be anticipation, prevention, recognition, reporting, and recording of all deviations in function." (Ricci, Nikas, (ed.) 1982:26)

Accurate observation will lead to improved morbidity and final patient outcome (Burger, 1983). As patient observation is one of the chief responsibilities of the neurosurgical nurse and is imperative to the well-being of the patient (Abelson, 1982), literature pertaining to the observation of the head injured patient is reviewed.

The nurse is the practitioner who is with the head injured patient around the clock and assesses the patient most frequently. As the neurosurgical nurse accepts responsibility and accountability for independent professional practice, improved assessment ability is mandatory to the delivery of optimal patient care (Tyson, et al., 1978). The researcher believes the essence of quality nursing to be competent assessment ability. Therefore the nurse needs to undergo skills training in the assessment of head injured patients, so that the findings may be incorporated as part of the nursing process (Davis & Mason, 1979: 101). Intelligence, insight and an in-depth knowledge of the scientific and humanistic sciences are pre-requisites to the nurse's understanding of the significance of accurate assessment, to facilitate sound judgements regarding the need to summons medical assistance and/or the institution of therapeutic intervention. According to Ricci (Nikas,(ed.) 1982), the quality of patient care and the type of management will be greatly influenced by the nursing personnels' ability to evaluate subtle changes in the patient's clinical status. This view is supported by Jennett (1978) who states that the decision to operate or to employ non-surgical methods of controlling intracranial pressure depends on the detection of a deterioration in the level of consciousness or an increase in intracranial pressure.

An accurate initial assessment must be conducted and recorded to determine any deterioration in the patient's status (Jennett & Teasdale, 1981). Perhaps to avoid unnecessary repetition and disturbance of the patient, it would be possible for the physician and nurse to assess the patient simultaneously, to establish a baseline status that is essential for future decisions of a medical or nursing nature.

In order to appreciate how to perform neurological observations the nurse must proceed through the observations under the supervision of a registered nurse until such time as he/she is able to conduct the assessment adequately on his/her own (Purchese, 1977). To ensure uniformity of assessment Davis and Mason (1979) and Hravnak (Webster, 1984) suggest that at the beginning and end of each shift the nurses should assess the patient together. Purchese (1977: 89) also suggests that while testing the patient the nurse must read the previous observations and report variations.

According to Jennett and Teasdale (1981), Abelson (1982), Lewis and Collier (1983) and Tucker, et al, (1984), all or some of the following parameters need to be assessed initially and/or at regular intervals according to the patient's condition.

TABLE 3:6

Monitoring patient status

Neurological observations	Vital signs	Miscellaneous
Behaviour changes Cerebral perfusion Cerebrospinal fluid leak Cranial nerve function Headache Intrecranial pressure Level of consciousness Meningeal irritation Motor function Nausea and vomiting Pupils Seizure activity Sensory function Visual disturbance	Blood pressure Perfusion Pulse Respiration Temperature	Drug reaction Elimination Hydration Perfusion Psyohological status Skin

The monitoring of a head injured patient's status must be continuous (Purchese, 1977). According to Brunner and Suddarth (1974), it is necessary to conduct repeated clinical examinations in order to determine changes in the patient's status. The frequency of assessment of the patient's neurological status and vital signs will depend on the patient's condition, the doctor's orders and the discretion of the registered nurse and may be performed at 5 - 60 minute intervals (Abelson, 1982). Many authors state that observation of the patient must be carried out at 'frequent intervals' or 'constantly' but they do not state the standard frequency of performing the observations (Brunner & Suddarth, 1974; Young, 1981; Vlok & Lochner, 1983).

TABLE 3:7

Standards for the frequency of assessment of the neurosurgical patient

Observation	Head injury		After neurosurgery		After craniotomy	Chronic uncomplicated cases
	Acute phase	Ongoing phase	First six hours	Eigth day		
Neurological observation (Using the G.C.S.)	15-30 minute intervals	2-4 hourly	Every 15 min. for 1st six hrs then half hrly.	BD	1st day every 15 minutes then half hourly; 2nd day; hourly; After 2nd day; 2 hourly; 4th day; 4 hourly; After 8 days; discontinued	
Pupils	15-30 minute intervals	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		
Blood pressure	15-30 minute intervals	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		BD
Pulse	15-30 minute intervals	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		BD
Respiration	15-30 minute intervals	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		BD
Chest auscultation	2-4 hourly	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		
Temperature	2-4 hourly	2-4 hourly	Every 15 min. for 1st 6 hrs then half hrly.	BD		BD
	(Tucker, et al., 1984)		(Copelstone, 1980)			(Purchase, 1977)

There is no universally accepted method of assessing, recording or reporting alterations in neurological status.

5.2.1 Level of consciousness

TABLE 3:8

Glasgow Coma Scale (G.C.S.)

Eye opening		Best motor response		Best verbal response	
Spontaneous	4	Obeys commands	6	Orientated	5
To speech	3	Localizes to pain	5	Confused conversation	4
To pain	2	Withdraws to pain	4	Inappropriate words	3
Nil	1	Abnormal flexion	3	Incomprehensible sounds	2
		Extensor response	2	Nil	1
	4	Nil	1		5
TOTAL (15)			6		

(Teasdale & Jennett, 1974; Jennett & Teasdale, 1981:82).

The G.C.S. (Teasdale & Jennett, 1974) is a simple means of assessing and recording level of consciousness and is recommended for use by the researcher.

"Each aspect of behaviour is described in terms of a defined series of responses which indicate degrees of increasing dysfunction." (Jennett, et al., 1977: 295)

The G.C.S. is advantageous as it is a uniform, comprehensive and objective means of recording level of consciousness, permits continuous evaluation and is sensitive to slight changes in level of consciousness (Connolly & Zewe, 1981; Jennett, 1983). Rimel, et al. (1981a: 222) state

"This scale has become a standardised method of grading the severity of neurological deficit with reproducibility between observers."

The G.C.S. is used nationally and internationally to assess level of consciousness (Abelson, 1982; Jennett, 1983; Purchese & Allan, 1984; Tucker, et al., 1984) and has improved the understanding of outcome in the early days after the head injury (Evans, Symposium on head injuries, 1977). It is important to remember that the G.C.S. records the best response and does not consider the poorest response, therefore the fact that the patient has a hemiplegia may be ignored (vide p47).

Connolly and Zewe (1981) state that in institutions that use the G.C.S. it is the nurse's responsibility to understand its grading and scoring. According to Jennett (1983), the nursing staff must be clearly instructed not only in what to look for, but in what circumstances further action is required.

The use of the G.C.S. permits the observer to recognise degrees of altered consciousness while avoiding ill-defined terms such as semi-conscious or stupor (Jennett, 1983; Vernberg, et al., 1983; Purchese & Allan, 1984). Other classifications of level of consciousness include the Ransohoff and Fleischer's classification (Fischer, et al., 1981: 921) and Schreiber and Vlok (1982: 536) who describe level of consciousness in terms of alert, drowsy, stuporous, comatosed, purposeful and non-purposeful movements. Fischer, et al. (1981) suggest Ransohoff and Fleischer's classification is comprehensive and easily understood.

The researcher believes these terms to be ill-defined and confusing and therefore they should be avoided. Brunner and Suddarth (1974) and Davis and Mason (1979) agree that there is no unanimity in the meaning of the terms alert, lethargic, stuporous and

comatosed. They suggest that it is preferable to describe the patient's behaviour and wakefulness in descriptive terms rather than numbers or words.

The most important factor in assessing the level of consciousness is that whichever method is adopted for assessment and recording it must be simple, easily understandable, uniform, accurate, reliable and the trend of the patient's clinical status must be easily recognisable (Abelson, 1982). It is imperative that staff in a particular unit employ the same means of noxious stimulation to elicit responses to painful stimulation; remember that the patient must not be assaulted during testing. Although there are other means of testing painful response the researcher believes finger nailbed pressure to be the most satisfactory method (Jennett & Teasdale, 1974, 1981; Davis & Mason, 1979; Vanhegan, 1979; Gazzaniga, et al., (ed.) 1982: 289; Vernberg, et al., 1983: 34; Purchese & Allan, 1984).

5.2.2 Pupils

Pupil size, direct and consensual light reflex must be assessed. When assessing the pupils it is necessary to use a torch of 22 lumens (Lipschitz). The recording of pupil size may be done in terms of:

a. Mm^2 measured against the actual size of the patient's pupil (Snyder & Jackle, 1981: 144).
b. A pre-measured set of pupil sizes (Jennett & Teasdale, 1981: 82).
c. Coded numbers (Abelson, 1982).

It is important to note and report:

(i) The equality and the reaction of the pupils.
(ii) The dilating pupil.
(iii) Any swelling or discolouration of the eyes and eyelids (Vlok & Lochner, 1983: 821).

It is likewise important to remember that the interpretation of findings regarding pupil size and reaction can be difficult because pupil size and response are sensitive to a range of different influences (Jennett & Teasdale, 1981: 81).

5.2.3 Motor function

When using the G.C.S., motor function in terms of the best motor response has been assessed, further observation of the patient's motor response is required. According to Jennett and Teasdale (1981: 81), when assessing motor function it is essential to assess all four limbs individually and comparatively for asymmetry, power, tone, position and

reflex response. To simplify the recording of motor function the various aspects of function can be coded (Abelson, 1982) or specific terms used to describe the response (Jennett & Teasdale, 1981: 92).

5.2.4 Vital signs

The vital signs of blood pressure, pulse, respiration and temperature provide a great deal of information regarding the patient's general status and may profoundly affect his/her outcome (Nikas & Tolley, Nikas, (ed.) 1982) (vide p83). According to Brunner and Suddarth (1974) and Purchese (1977), changes in neurological status may be reflected by changes in the vital signs of blood pressure, pulse, respiration and temperature. Jennett, et al. (1977) state that although certain changes in vital signs are traditionally associated with severe dysfunction of the brain they are not considered as reliable indicators of brain stem function. Respiration is the most reliable as the pulse is too insensitive and the temperature too sensitive being altered by other variables (Lipschitz). If any abnormalities are present the rate, rhythm and depth of respiration must be recorded for one minute (Purchese, 1977: 91). The temperature of an unconscious patient must be taken per axilla or per rectum (Vlok & Lochner, 1983). The most accurate method of assessing temperature is by means of an electronic rectal probe (Abelson, 1982). The method of assessing the patient's temperature must be recorded.

5.2.5 Recording observations

Abelson (1982) stresses that if findings are to be of diagnostic and prognostic value they must be assessed and recorded honestly, uniformly and accurately. Early diagnosis and prompt intervention based on observations recorded may profoundly affect the patient's recovery and rehabilitation.

According to Purchese (1977: 93), many hospitals have 'poor' (inadequate) neurological observation charts that do not allow for adequate written comment. Where accurate charts are maintained the physician is able to see the patient's condition at a glance (Vlok & Lochner, 1983). As nurses utilize the observation chart it is their responsibility to develop such charts. Vanhegan (1979) states that it is usually the task of the nurse to maintain the observation chart.

Written reports of the patient's status, at appropriate intervals, are vital if gradual variations in the patient's condition are to be observed. According to

Conway-Rutkowski (1982: 207), the G.C.S. is only intended to supplement the complete neurological assessment process and should be incorporated into a neurological observation chart as presented by Jennett and Teasdale (1981: 82), Abelson (1982) and Sherry (1982). Recordings of blood pressure, pulse, temperature and respiration may also be incorporated. Purchese (1977) stresses the need for graphic, symbolic rather than verbal representation of vital signs so that gradual changes can be appreciated and comparisons made.

The nurse must be aware of the importance of accurate and prompt reporting of any variations that occur (Purchese, 1977). Uniformity in assessing, recording and reporting observations to maintain the continuity and the quality of care is essential. Accurate assessment of the head injured patient enables the medical practitioner and nurse to formulate respective diagnoses.

5.3 THE NURSING PROCESS

The first step of the nursing process is to establish nursing diagnosis/es applicable to the particular patient.

Regular assessment of the patient, by the primary nurse must occur. After the nurse has completed a comprehensive assessment of the head injured patient and recorded findings, nursing diagnoses relating to the real and potential needs of the individual patient must be formulated.

Insight into the needs of the head injured patient, knowledge and understanding of the patient's diagnosis/es will increase the nurse's ability to organise and set priorities of care (Connolly & Zewe: 1981). Establishing nursing diagnoses is fundamental to the planning of prescribed nursing intervention.

Detailed presentation of the nursing diagnoses related to head injury are to be found on page 432.

TABLE 3:9
Nursing diagnoses pertaining to head injury

Nursing diagnoses in relation to the patient		
Physical condition	**Psychological/Emotional condition**	**Home environment, social condition and spirituality**
Altered level of consciousness, Alteration in intracranial pressure,* Alteration in cerebral perfusion,* Respiratory dysfunction, Potential for suffocation, Alteration in cardiac output, Maintenance of body fluids, Fluid volume deficit, Nutritional alteration, Impairment of digestion, Impairment of urinary elimination, Alteration in bowel elimination, Alteration in self-care activities, Impairment of mobility, Alteration in comfort, Impairment of skin integrity, Potential for injury or trauma, Dysrhythm in sleep and rest activity, Alteration in patterns of sexuality, Motivation and stimulation of patient,*	Anxiety, Fear, Grieving, Impaired thought processes, Lack of knowledge, Sensory - perceptual alteration, Maladaptive coping patterns, Alteration in self concept, Manipulation, Non-compliance, Alteration in parenting,	Impaired verbal communication, Social isolation, Impaired home maintenance management, Matters of spirituality,
Nursing diagnoses in relation to the family		
Anxiety, Fear, Grieving, Role disturbance, Alteration in parenting, Level of knowledge, Adequacy of family process, Adequacy of family coping,		

* The researcher has added these nursing diagnoses to the list presented by DuGas (1983: 125)

The next steps of the nursing process are those of planning and the implementation of the therapeutic nursing care plan.

Neurosurgical primary nurses (Engstrand, 1977), clinical nurse specialists (Backsheider, 1971) and practitioner teachers (Christman, 1979a), as a result of their specialised knowledge and clinical expertise, have a direct effect on the implementation of the nursing care plan. The planning for and implementation of nursing intervention, according to the needs of the patient involves direct (maintenance of hygiene, technical skills, monitoring of patient status, basic nursing practice and patient counselling) and indirect patient care (patient and family education, planning and participating in patient care rounds and conferences and time spent evaluating patient care plans and the quality of care).

The quality of the care received by the patient will depend on the implementation of a comprehensive co-ordinated plan of nursing care that is realistic and individualistic in approach, taking into account the physical, psychological, social, emotional, spiritual,

educational and economic needs of the patient and significant others as well as the physician's prescription and the medical regimen (vide p23). Co-ordinated nursing intervention will prevent repetition and reduplication of time and effort (Rimel, 1981).

The actual implementation of the nursing care plan will depend on the method of nursing assignment practiced in the particular institution:

- Primary nursing.
- Total patient care.
- Team nursing.
- Functional assignment.
- Mixed assignment.

The fourth step of the nursing process is that of evaluation.
Evaluation is two-fold and takes place in terms of nursing care and patient outcome. Care delivered must be evaluated in terms of structure, process and patient outcome and must be measured against an accepted set of standardised objective criteria (vide p66).

The scientific approach in nursing adds a fifth facet to the nursing process, that of documentation (vide p48/70/75/105).

5.4 THE NURSE AND REHABILITATION

Rotkovitch ((ed.) 1976) and Giese and Davis (1981) state that nurses must have an overall concept of the rehabilitation process (vide p93). In the opinion of the researcher, in the rehabilitation setting, in order to fulfill the various roles of care-giver, social counsellor and mother (Hirschberg, et al., 1976) that the nurse assumes during the different phases of rehabilitation (Rimon, 1979) sound, scientifically based knowledge to maintain nursing excellence is necessary.

5.4.1 The goals of rehabilitation nursing include:

a. The nurse's philosophy in rehabilitation is one of self-care (Hirschberg, et al., 1976: 94; Orem, 1980) and wellness (Giese & Davis, 1981):

(i) To promote maximum independence (Kelly-Hayes, 1980).

(ii) To preserve physical function (Kelly-Hayes, 1980).

(iii) To minimise residual dysfunction and deformity through expert nursing and preventive measures (Rotkovitch,(ed.) 1976).

Fundamental to the concept of self-care is that the individual is the self-care agent (Clinton, et al., 1977), the key participant in the attainment of health/wellness and responsible for his/her own care (Giese & Davis, 1981). Orem (1980: 35) defines self-care as

"...the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being."

Universal self-care and health deviation self-care are of concern and are applicable to the head injured patient. Rehabilitation nursing places the stress on the patient's independence, or if this is not possible, teaching the patient to direct others to provide the necessary care (Edmonds-Hill, 1977).

b. To maximise physical, psychological, social and economic well-being of the patient and the family.

The nurse in the rehabilitation setting is unable to deliver total patient care unless he/she understands the physical, psychological, emotional, social and spiritual being of the patient (Rimon, 1979).

5.4.2 The responsibilities of the nurse in rehabilitation

For the purpose of reviewing the literature the researcher has separated the role of the rehabilitation nurse (i.e. one who works in the rehabilitation setting) and the role of the rehabilitation clinical nurse specialist (i.e. one who has specialised and has expert knowledge regarding rehabilitation nursing). In the event that there is no clinical nurse specialist a merging of roles will occur.

a. The rehabilitation nurse

(i) To develop a plan of nursing service, based on the nursing process.

According to Rotkovitch ((ed.) 1976), competent observation, evaluation and team input go into the institution of a nursing care plan. Quigley (1981) suggests that the nursing process be used to document the rehabilitation process:

- To evaluate the patient's self-care ability on admission.
- To identify problems of self-care.
- To utilize the nursing team to meet the needs of the patient.
- To re-teach and educate the patient.
- To evaluate the patient's response.

(ii) To ensure a safe and comfortable environment for the patient.

Ensure that the environment is conducive to physical and mental well-being. In order to assess actual ability even if there is a risk involved, the amount of assistance by nursing staff must be minimal.

(iii) To provide direct nursing services to maintain optimal physical and mental functioning.

According to Evans (1981), aspects of direct nursing service include those activities that the patient is unable to perform. Fölscher (1974) and Rimel (1982) stress that rehabilitation involves the prevention of disabilities. During the acute phase the nurse is responsible for preventing secondary disabilities and for simple rehabilitative measures such as activities of daily living, self-care, communication, transferring and mobility (Hirschberg, et al., 1976).

(iv) To establish a supportive relationship with the patient and/or family.

There must be an informal respectful relationship between the patient and staff (Evans, 1981). The nurse must adopt a holistic approach to the patient and be aware of the interdependence of mind and body in the health and/or disease process (Rimon, 1979). The psychological needs of the patient and the role of the nurse in this regard expand as the patient is institutionalised for a prolonged period. To the patient, the nurse represents the one who ministers most in times of physical, psychological and emotional stress (Rimon, 1979).

According to Rimon (1979), in order for the nurse to be therapeutic she requires psychological knowledge and skills and must:

- Anticipate and/or perceive the patient's needs.
- Communicate with the patient and encourage the patient to express himself/herself;
  - Listen to the patient.
  - Be sensitive to the patient's anxiety and fears.
  - Discuss the patient's thoughts and feelings.
- Be non-judgemental and accepting of the patient.
- Counsel and/or offer encouragement and emotional support.
- Motivate the patient to the goal of independence.
- Strengthen the patient's self-respect and bring the patient to his/her full potential.
- Explain treatment and procedures.
- Help the patient to adjust to hospital.
- Perform reality orientation.
- Assist with the improvement of cognitive skills.
- Deal with mood disturbances.
- Institute behaviour modification.
- Assist with the social integration of the patient (Fölscher, 1974).

- Make referrals when necessary.

(v) Participate in retraining activities in self-care.

The nurse must help the patient to overcome and/or compensate for the limitations imposed by the present health situation on self-care (Gallant & McLane, 1979; Orem, 1980). The nurse must assess the patient's ability for self-care and mobility. Kelly-Hayes (1980) utilizes the Barthel Index for assessing self-care activities and for planning therapeutic intervention in multiple sclerosis victims. In the opinion of the researcher, nurses should use this or a similar index to assess self-care ability and mobility of the head injured patient on admission and at regular intervals thereafter.

The nurse must teach the patient to become as independent as possible (Orem, 1980). According to Evans (1981), the patient must be allowed sufficient time to complete activities, thus programme flexibility is required. Self-care charts may be maintained at the bedside.

(vi) Provide health teaching to meet the needs of the individual and the family (Evans, 1981).

(vii) Record and report patient status, the plan of care and findings.

According to Trethowan (1970), in early rehabilitation the health team must not allow the patient to deceive them into believing he is much better. The physician and therapists are only with the patient for a short period a day, therefore they rely on the nurse to record observations for planning rehabilitation strategies (Anwar, 1979). The nurse must document progress, actions, reactions, recovery plateaus (Fölscher, 1974) as well as changes to the rehabilitation programme.

(viii) Assist with discharge planning.

Discharge planning works towards the termination of treatment and independence and includes support, acceptance, redefining goals and role responsibility. According to Jacus (1981), discharge planning starts on the day of admission. Jones (1979) suggests that the assigning of head injured patients to outcome groups allows for advanced discharge planning.

(ix) Evaluate care in terms of patient outcome.

Criteria must be developed to measure care in the rehabilitation setting. Edmonds-Hill (1977) suggests that quality of care be assessed in terms of what the patient can do for himself, the quality of life, activities of daily living and function. The programme must also be evaluated in order to assess whether goals are being met (Stevenson, 1979).

(x) Support therapy initiated by all members of the health team (Brunner & Suddarth, 1974).

Co-operation allows for consistent approaches to care and less professional interpersonal friction. It is often the rehabilitation team that provides the stimulus for motivating the patient's rehabilitation, therefore close co-operation is essential (Evans, 1981). According to Evans (1981), resentment in nursing occurs because the nurse cares for the patient 18 hours out of 24 and the nurse's opinion is not sought.

(xi) To be team colleague (vide p22).

The nurse makes an essential contribution to the multidisciplinary health team. According to Minor and Macauley (1981), the nurse should assess the patient for admission to the rehabilitation unit in terms of:

The ability of the patient to benefit from rehabilitation.

The patient's medical status.

The patient's present and potential level of function.

The extent to which the patient can follow directions.

The ability of the nursing staff to provide the care needed.

b. Clinical nurse specialist in rehabilitation

The primary responsibility of the clinical nurse specialist in rehabilitation

"is to aid... clients in the reconstruction of their lives by providing highly individualised, personalised nursing care to mesh with their medical regimens." (Fanslow, Rotkovitch,(ed.) 1976: 143)

The advantages of utilizing a clinical nurse specialist in the rehabilitation setting are that there is a better nurse-patient ratio, better nurse-patient-family relationship, greater understanding and continuity of care (Rotkovitch, (ed.) 1976). According to Edmonds-Hill (1977), Riley and Moses (1977), Ozga (1978), Williamson-Kirkland and Berni (1980) and Giese and Davis (1981), the scope of practice of the clinical nurse specialist in the rehabilitation setting includes all or some of the following responsibilities:

(i) The clinical nurse specialist is autonomous and works across the field.

(ii) Provides continuity of care during hospitalisation and after discharge.

(iii) Utilizes the nursing process to plan and initiate the nursing programme:

- Identifies patient's rehabilitation needs.
- Sets goals.
- Draws up master nursing care plans.

(iv) The main responsibility of the clinical nurse specialist is to the patient and family (Riley & Moses, 1977):

- Patient advocacy.
- Counselling and support.
- Organises/Teaches patient and family.
- Consolidates patient's education programme.
- Discharge planning.
- Referral to outside services.
- Community nurse follow-up after discharge.

(v) Responsibility regarding nursing staff (Rotkovitch, (ed.) 1976):

- Counselling and support group for staff.
- Resource person.
- Staff growth and development.
- Staff education.

(vi) Team responsibility:

- Co-ordinates health team activity.

  The clinical nurse specialist brings in specialist therapies and modalities (Rotkovitch, (ed.) 1976). In out-patients according to the needs of the patient, the clinical nurse specialist co-ordinates the health team services (Giese & Davis, 1981).
- Collaborates with team members (Rotkovitch, (ed.) 1976).
- Liaises between the patient and team members.

(vii) Community responsibility:

- Community contact.
- Utilizes community resources.
- Public education.

(viii) Co-ordination.

(ix) Communication.

(x) Consultation.

The responsibility of the rehabilitation nurse lies mainly in the execution of direct patient care; whereas that of the clinical nurse specialist lies in the planning, consultation and co-ordination of care with responsibility primarily to the patient and the family. For further discussion of the role of the clinical nurse specialist vide APPENDIX U.

6. ASSURING NURSING QUALITY

Walton (n.d.: 32) states

"Society grants to professionals the authority over functions vital to them and permits... autonomy in the control of their own affairs. In return, the professionals are expected to act responsibly, always mindful of the public trust. Self-regulation to ensure quality of performance is at the heart of that relationship. If the concept of providing safe, therapeutic, and cost effective care is valid, then nurses must assume full responsibility for appraisal and control of the care they provide."

In the opinion of the researcher, the quality of care given to an unconscious patient may literally mean the difference between life and death. Thus, ensuring excellence in the management of the moderate and severely head injured patient is imperative. This entails maintaining a high quality nursing service from the day of admission until ultimate recovery or peaceful death of the patient.

The Director of Nursing must be in top management to act as an advocate for quality care and to ensure standards of excellence are set and maintained by those in the service (Lewis, (ed.) 1981).

6.1 THE RESPONSIBILITIES OF THE NURSING SERVICE INCLUDE:

6.1.1 The provision of a quality nursing service (Lambertsen, 1965).

6.1.2 The promotion of safe, therapeutic effective nursing care through:

a. The development and implementation of established standards of nursing practice.

b. The planning of each patient's care and the effective implementation of the plan (J.C.A.H., Ramey, 1973: 28/29).

6.1.3 The provision of staff, facilities, services, educational programmes and an atmosphere conducive and sufficiently motivating to achieve excellence in care.

The nursing department/service should be organised in such a way as to meet the nursing care needs of patients (Jernigan & Young, 1983).

"The unique contribution of nursing lies in the composite set of activities performed by nurses over time with patients and families." (Hegyvary, 1979: 113)

Nursing is therefore responsible for the quality of care provided by its professional practitioners (Phaneuf, 1964).

"We, as nurses, are committed to the patient's right to receive quality nursing care and stand accountable for the caliber and appropriateness of the care we render... we have an obligation to protect it (the consumer) from substandard care." (Porter, Rotkovitch,(ed.) 1976: 167/168)

The responsibility for setting and maintaining standards of practice, for ensuring the implementation, continuous upgrading and evaluation of standards in relation to newly acquired knowledge and skills is within the scope of practice of the professional nurse. Registered nurses must meet the standards of excellence as formulated by the profession. Although a nurse may delegate procedures and duties to lesser trained nursing personnel he/she holds final accountability. According to Woody (n.d.: 33), nurses are genuinely interested in assuring quality care.

6.2 FACTORS THAT AFFECT NURSING EXCELLENCE

It is important for the Director of the Nursing Service, nurse educators and administrators as well as those in clinical practice to be aware of factors that affect nursing excellence. Lindeman (1976a), Rotkovitch ((ed.) 1976), Rush-Presbyterian-St. Luke's Medical Center (1976) and Rowland and Rowland (1980) suggest that the following influence the quality of nursing practice:

6.2.1 The size of the unit and/or institution (Stevens, Lewis, (ed.) 1981).

6.2.2 The type of unit and/or institution.

Although most patients are admitted because of their nursing needs, most hospitals are designed to cater to the medical model rather than to the nursing work (Stevens, Lewis, (ed.) 1981).

6.2.3 The number of patients.

6.2.4 The support of the administration in implementing quality care (Phaneuf, 1964, 1976).

6.2.5 The effectiveness of the organisational structure, nursing administration and management.

The professional treatment of nursing is the key to the provision of quality nursing care at the bedside. The staff must be 'of' not only 'in' the organisation to maintain quality care (Andrews, 1981).

6.2.6 The School of Nursing and Department of Nursing must work together to improve practice (Christman, 1979b).

6.2.7 Leadership patterns.

Wiseman (1976a : 171) adds that the charge nurse is the 'backbone' of the nursing service.

6.2.8 The presence of extensive co-ordinated services.

Quality care involves cost containment. It is important to realise the partial dependence of nursing on the availability of support services, in the provision of quality care (Selvaggi, et al., 1976). Nurses need time to do the job that they are prepared for, paid to do, are correctly qualified to complete and are committed to doing (Lewis, (ed.) 1981). Nurses must be relieved of non-nursing functions. Edmonds-Hill (1977) adds that ward clerks and voluntary workers should be utilized in the rehabilitation setting so as to allow nurses to carry out their nursing duties. The substitution approach, allowing families to help with non-technical basic care may be introduced (Lewis, (ed.) 1981; Nikas, (ed.) 1982).

6.2.9 An environment conducive to quality care.

"When the environment is more conducive to delivering optimum care, increased patient care, is a natural result." (Johnson, Lewis, (ed.) 1981: 42)

According to Bracken and Christman (1978), in order to yield high quality output there must be a structure of professional compensation and an environment conducive to and intended for clinical development.

6.2.10 The number of staff employed in the unit.

According to The Committee on Grading of Nursing Schools (1934),

"...when the nursing load is heavy, the pressure for getting the work done is so great that nurses regularly practice not good quality nursing.... The tendency to think about the needs of the patients becomes stifled; and the graduates from such places go out into the profession ... with little regard either for the quality of their work or the comfort of the patient ...". (Lewis, (ed.) 1981: 4)

Williams (Lewis, (ed.) 1981) adds that staff shortages limit care to 'essential' rather than 'comprehensive' care.

6.2.11. The quality of staff.

Chionl (Lewis, (ed.) 1981: 2) warns

"It is shocking to me that the LPN, ADN and BSN are expected to carry out the same functions in many instances... an inappropriate utilization of scarce nursing resources."

An environment dedicated to quality output includes the concept of primary care and nursing staff differentiation according to the level of clinical competence. Woody (n.d.) adds that skilled nursing lowers mortality and morbidity and untrained, unskilled care cannot be substituted without serious consequences to the patients. Lewis ((ed.) 1981) states that in 95 percent of the cases professional nursing is all that is required by the patient.

6.2.12 The availability and use of the clinical nurse specialist (vide p55/468/APPENDIX U).

6.2.13 Job satisfaction and motivation.

When nurses believe they are being rewarded for their worth the best characteristics of their training will be demonstrated, the outcome is improved quality of care (Bracken & Christman, 1978).

6.2.14 The orientation of staff.

Clinical orientation of staff in relation to their respective roles must be undertaken (Rowland & Rowland, 1980; Abruzzese, Lewis, (ed.) 1981). Stanford Hospital's orientation period for new staff is 320 hours, in order to add to the nurse's basic knowledge and allow the nurse to adapt to the new clinical setting (Lewis, (ed.) 1981: 104).

6.2.15 The available education opportunities.

High educational preparation of the professional nurses in clinical practice (Lewis, (ed.) 1981).

- Improving the knowledge and skills of the staff.
- Increasing conscientiousness and attention.
- Offering educational incentives and opportunities.
- In-service education of staff.
- Staff supervison.

6.2.16. The shift.

According to a study conducted by Weinstein (1976), the hour of the day and the day of the week has no systematic effect on the quality of care.

6.2.17 The utilization of the nursing process to ensure completeness of care.

The nursing process involves the provision of direct, indirect and support components of nursing and is the framework for nursing practice. Ramey (1973), Caruso and Thompson (n.d.), Rush-Presbyterian-St. Luke's Medical Center (1980) and Tucker, et al. (1984) advocate the use of the nursing process for the provision, maintenance and evaluation of nursing excellence. Yet, it is to be noted that according to Kron (1976), Hegyvary (1979) and Jernigan and Young (1983), the planning of care does not of necessity ensure the quality of delivery of the care.

6.2.18 The availability of set standards for optimal nursing care and valid reliable measures of nursing quality.

The nursing service must have an explicit statement regarding its philosophy on patient care as well as regulations and standing orders for the purpose of accountability (Lindeman, 1976a; Phaneuf, 1976; Lewis, (ed.) 1981). Kron (1976: 192) adds

"Policies and procedures, record forms, organizational structure, job descriptions, and staffing patterns... directly affect the patient care that a worker gives."

Standards of practice, job description and performance evaluation, based on the nursing process must be integrated in order to maintain nursing excellence (Jernigan & Young, 1983). According to Ramey (1973), to ensure nursing excellence nurses must develop standards of patient care and appropriate evaluation tools. The standardisation of procedures is the best hedge against deviance and risk (Lewis, (ed.) 1981).

6.2.19 The type of care assignment.

Primary nursing provides for continuity of care (Rush-Presbyterian-St. Luke's Medical Center, 1976; Porter, Williams, Lewis, (ed.) 1981).

6.2.20 The means of documenting care (Rowland & Rowland, 1980).

The means of documenting care must be simple, easily understandable, comprehensive and complete. Elaborate and time consuming charts will be poorly kept and prove to be of doubtful value. Medico-legally nurses are accountable for the delivery of care, yet not all care is recorded (vide p75).

6.3 QUALITY ASSURANCE

"The process of establishing and maintaining quality of health care is referred to as quality assurance." (Campbell, 1982: 1)

Literature relating to quality assurance in the management of the head injured patient in particular is scarce. According to the literature, there is no documented quality assurance programme pertaining directly to the head injured patient, available in South Africa. Du Rand(1984: n.s.) states

"In South African hospitals not much has yet been done with regard to the evaluation of the nursing care given."

Quality assurance and quality control are the responsibility of the Nursing Service. Quality control is utilized to maintain high standards for the hospital and to ensure that optimal health care services are provided (Jernigan & Young, 1983).

"Quality assurance is an ongoing program in the nursing profession, constructed and executed to secure and implement the excellence of health care." (The Association, Schmadl, 1979: 464)

"Quality assurance, when used in reference to health care, refers to the accountability of health personnel for the quality of care they provide." (Brown, Schmadl, 1979: 464)

"Quality assurance is estimation of the degree of excellence in patient health outcomes and in activity and other resource cost outcomes." (Zimmer, Schmadl, 1979: 464)

The central core of the definitions of quality assurance surrounds the setting and maintenance of criteria of nursing practice, the estimation of excellence in nursing practice and the evaluation of nursing practice in terms of outcome (A.N.A., 1976a, Schmadl, 1979).

Although the Director of Nursing holds final accountability for excellence in the nursing service, each nurse practitioner is accountable for individual practice (Diddle, 1976) and is responsible for the evaluation of the quality of nursing care (DiVincenti, 1977). The

"Proper application of professional control offers the greatest opportunity for employment of professional skills in creating and enforcing standards." (Michigan Hospital Association, Phaneuf, 1964: 42)

Professionally and ethically the quality of care must be evaluated (Phaneuf, 1976). Quality assurance is a means to an end to improve the quality of care, therefore the results must be true, valid, reliable and appraisal must be continuous (Schmadl, 1979).

"Quality Assurance involves assuring the consumer of a specified degree of excellence through continuous measurement and evaluation of structural components, goal-directed nursing process, and/or consumer outcome, using pre-established criteria and standards and available norms and followed by appropriate alteration with the purpose of improvement." (Schmadl, 1979: 465)

The quality assurance programme must be compiled by nurses (DiVincenti, 1977). As 'assurance' implies a commitment to take corrective action if care does not meet the criteria (Woody, n.d.), all staff must be made aware of the objectives and benefits of the quality assurance programme, its implementation and means of evaluation (Solvaggi, et al., 1976). The involvement of all staff members will increase their motivation and improve the climate for change (Woody, n.d.).

Quality assurance involves the implementation of a total quality assurance programme not merely a tool (Smeltzer, et al., 1983) and includes the measurement and evaluation of the quality of nursing care (vide p(vi)).

6.3.1 The objectives of quality assurance

Drawing on the work of Rotkovitch ((ed.) 1976), DiVincenti (1977), Wiseman (1977b), Rush-Presbyterian-St. Luke's Medical Center (1980) and Smeltzer, et al. (1983) the objectives of an organised quality assurance programme include:

a. To assist with administrative decision making.
b. To ensure that the consumer receives optimal service and satisfaction.
c. To enlighten nurses regarding accountability.
d. To estimate the degree of excellence of care.
e. To provide quantitative measures to indicate the level of care.
f. To show individual and collective strengths and weaknesses.
g. To provide staff with information regarding further development.
h. To upgrade the quality of nursing care and the skills of the nursing personnel.
i. To increase commitment to practice.
j. To monitor work effectiveness of the nursing personnel.
k. As a means of self-evaluation and promotion.
l. To increase motivation and generate self-satisfaction of all those delivering care.
m. To improve standardisation of policies, procedures and standards of care.
n. To re-evaluate the care criteria.
o. To stimulate the desire for further education and clinical research.
p. To stimulate intellectual curiosity.
q. To establish educational programmes per individual or group.
r. To influence in-service education.
s. To provide interdisciplinary opportunities to achieve broad health care goals of quality assurance.
t. To increase staff communication.
u. To produce evidence of the nurses' contribution to care and rehabilitation.

6.3.2 Approaches to the appraisal of quality care

According to Donebedian (1966), there are three approaches to the appraisal of the quality of care; that of structure, process and outcome. This concept has gained international recognition and is discussed by inter alia Phaneuf (1976), Lindeman (1976a), Schmadl (1979), Rush-Presbyterian-St. Luke's Medical Center (1980) and Wietorson and Öjermark (1981).

a. Structure is the appraisal of resources (Woody, n.d.; A.N.A., 1976b; Rotkovitch,(ed.) 1976; Rowland & Rowland, 1980).
b. Process examines the nature and sequence of prescribed therapeutic practice (Woody, n.d.; Schmadl, 1979).

'Process' does not recognise variation in practice based on the clinical judgement of the person delivering the care. It is task orientated and identifies the level of nursing

practice (Rowland & Rowland, 1980: 366). Phaneuf (1976) adds that although nursing is not task orientated, the nurse needs to examine 'outcome' based on 'process' in order to maintain nursing excellence.

c. 'Outcome' is defined by Lang (Gallant & McLane, 1979: 15) as "the end result of nursing care; a measurable change in the state of a client's health." According to Donebedian (Phaneuf, 1966: 51),

> "Outcomes might indicate good or bad care in the aggregate; they do not give an insight into the nature and location of the deficiencies or strengths to which outcomes might be attributed."

'Outcome' focuses on the status of the patient as a result of care provided and measures bio-physical change, knowledge and behavioural alteration. Woody (n.d.) suggests that outcome criteria point out the responsibility and accountability of the nurse in the clinical situation. Clinton, et al. (1977: 41) state "Nursing can be logically assumed to have significant impact on the outcomes." Yet Schmadl (1979: 463) warns that

> "...one can never assume that measured change is the direct result of goal-directed nursing care."

The client may display a specific outcome despite the care, or as a result of contact with other professionals or the family. According to Rowland and Rowland (1980), some outcomes are beyond the control of the nurse and are influenced by other factors, therefore for the purpose of assessing nursing outcomes, criteria must be developed for those outcomes that relate to the nurse's control. The evaluation of outcome may be done in terms of nursing and even more so using a multidisciplinary approach (Rowland & Rowland, 1980). Clinton, et al. (1977) use Orem's conceptual framework of self-care to evaluate patient outcome.

According to Aydelotte, et al. (Rush-Presbyterian-St. Luke's Medical Center, 1980), comprehensive evaluation of the quality of patient care includes structure, process and outcome criteria. According to Stevens (Jernigan & Young, 1983), all three are interrelated and can be used to evaluate various aspects of nursing care. Schmadl (1979) states that it is not always possible to demarcate between structure, process and outcome and queries whether the use of one alone is a valid indicator of quality. Lang (Gallant & McLane, 1979: 15) states that until outcome criteria are developed, it will not be possible to measure the effectiveness and efficiency of structure and process. But according to Lindeman (1976a: 8), it can be as right to measure quality in terms of outcome or process. The researcher believes that there is value in measuring all three

or one component depending on the beliefs, values and purpose of the evaluation as established by the particular institution, or the demands of the particular situation.

6.3.3 Establishing a quality assurance programme

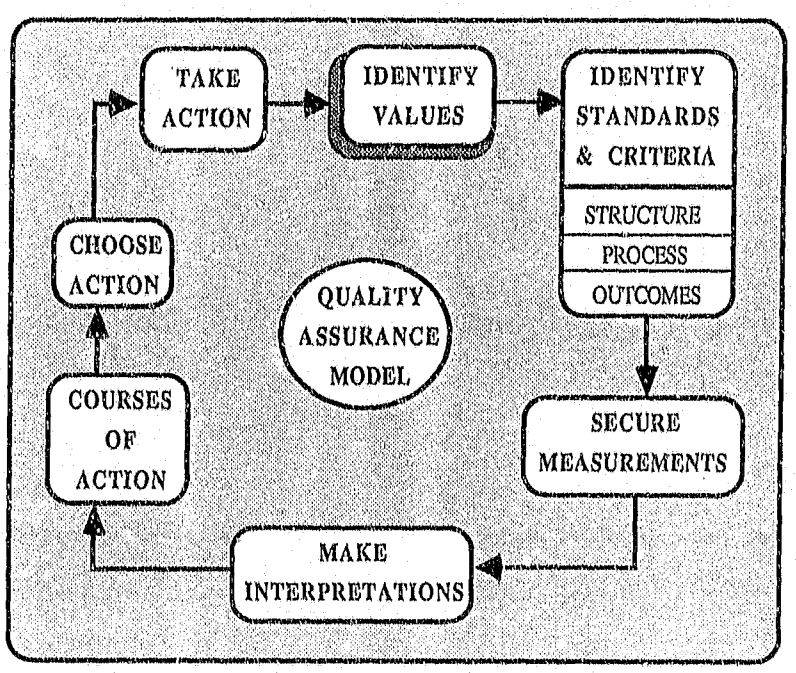


Fig. 3:2 Quality assurance model
(Lang, with participation, A.N.A, 1976b: 18).

The J.C.A.H. and The A.N.A. (Diddle, 1976: 12; Rowland & Rowland, 1980, Allison & Kinloch, 1981; Laing & Nish, 1981) identify the steps to be taken when establishing a quality assurance programme:

a. **Select study topic.**
b. **Identify values.**
c. **Identify, develop, ratify and document, structure, process and outcome criteria and standards.**

DEFINITION OF TERMS GERMAINE TO QUALITY ASSURANCE

As the concepts of criteria, standards and norms are relevant to the research and quality assurance they are discussed further.

(i) CRITERION

"variables selected as relevant indicators of the quality of nursing care; measures by which nursing care is judged as good." (Lang, Gallant & McLane, 1979: 15)

"A quality, attribute, or characteristic of a variable that may be measured to provide scores by which subjects of the same class can be compared in relation to the variable." (A.N.A., 1975; Bloch, 1977: 30)

"...pre-determined elements against which aspects of the quality of a health service may be compared.... In a general sense, criteria may be thought of as specific statements of health care that reflect nursing values...". (A.N.A., 1976; Bloch, 1977: 30)

"A variable selected as a relevant indicator of the quality of nursing care. A satisfactory criterion for quality of nursing care must not only be relevant, but must also be capable of yielding a range of scores or values. It must be sensitive to changes in or variations in the effectiveness of nursing care." (Hagen, Bloch 1977: 30)

"A standard or model that can be used in judging." (Zimmer, Bloch, 1977: 30)

Criteria identify critical elements of care (Diddie, 1976) and

"... refers only to... the "name" of a variable... not to presence or absence, quantity, or value judgement." (Bloch, 1977: 22)

Criteria are affected by the philosophy and objectives of the institution (Kron, 1976) and may be drawn up according to:

- The area/unit/institution.
- The disease entity.
- The patient dependency.
- The medical diagnosis.
- The nursing diagnosis.

Sultan (1980) stresses that criteria should be developed using the nursing diagnosis.

In an endeavour to make a distinction according to the source of care, Searle (1981:126) states that health care criteria measure the quality of nursing care; whereas health outcome criteria measure the result of team care. However, it is important not to get bogged down with what is a nursing and/or medical criterion, rather what is of importance to the welfare and care of the patient (Woody, n.d.: 36).

Watson and Mayers (1976), Bloch (1977: 22), Schmadl (1979) and Searle (1981) believe that criteria must be developed by those persons who are directly involved in patient care, an expert peer group who have proven clinical ability. Diddie (1976: 8) suggests that panel members including clinical nurse experts be selected as "...a recipe is only as good as the ingredients used to make it."

According to Lindeman (1976a), Rowland and Rowland (1980) and Smeltzer, et al. (1983), criteria must be appropriate, relevant (whether mandatory or optional), valid, bias free, reliable, practical and convenient. There should be a 90 percent agreement in the selection of criteria. If no agreement is reached, professional literature may be consulted and the criteria re-evaluated for inclusion by the committee (Searle, 1981). Criteria must be specific and identified in measureable terms. A means of measurement for each criterion must be available (Bloch, 1977: 28). The expected percentage compliance for criteria must be established (Watson & Mayers, 1976; Mayers, et al., 1977: 28). According to Bloch (1977), criteria of care must be established prior to the setting of standards for nursing care. Criteria are independent of time, whereas standards require a time-frame specification.

(ii) STANDARDS

It is the responsibility of the practitioner to develop standards in his/her clinical area (Dirschel, 1986). Wandelt (Wandelt & Stewart, 1975: 97) defines a 'standard' as

"Something used by general agreement to determine whether a thing is as it should be an agreed-upon level of excellence; An established norm."

Bloch (1977: 22) defines a standard as

"...the desired and achievable level... of performance corresponding with a criterion..., against which actual performance is compared,"

"The desired achievable (rather than the observed) performance or value with regard to a given parameter," (C.P.H.A., Bloch, 1977: 30)

"The desired level of compliance with criteria or norms...". (Decker & Bonner, Bloch, 1977: 30)

"The word "standards" carries the connotation that there is one score or one value on a variable that must be obtained if the quality of nursing care is to be judged to be satisfactory." (Hagen, Bloch, 1977: 30)

"The degree of adherence to the defined criteria." (National Academy of Sciences, Bloch, 1977: 30)

"Professionally developed expressions of the range of acceptable variation from a norm or criterion." (US Dept. of Health, Education & Welfare, Bloch, 1977: 30)

Nursing standards are set by clinical nurse specialists, clinical care co-ordinators, clinical tutors and nurses who are experts in the field (Diddie, 1976; Weinstein, 1976; Rowland & Rowland, 1980). No set of standards is universal (Schmadl, 1979). Standards may differ from hospital to hospital and are set at varying levels according to

the population to which they are addressed (Bloch, 1977: 22). Stated standards may be changed or raised each time new knowledge, skills, insight and resources become available (Phaneuf, 1964; Bloch, 1977; Schmadl, 1979). When setting standards, nursing expectations must be realistic (Lewis, (ed.) 1981). Standards must be clearly defined (Lambertsen, 1965) and based on scientific principles, including the biological and humanitarian sciences. Standards must be documented and readily available for reference purposes (Aydelotte, et al., Rush-Presbyterian-St. Luke's Medical Center, 1980). A means of measuring a standard against a criterion must be available (Bloch, 1977: 22). Institutions may use already established standards of care such as those of the A.N.A. or they may develop their own means of establishing standards (A.N.A., 1973, 1974, 1975a/b, 1976, 1977a/b).

(iii) NORM

Bloch (1977: 26) defines a norm as representing the current state

" A norm is the current level or range of performance corresponding with a criterion... and is determined by descriptive study of "the here and now" in a given population, region, institution, group,....".

Bloch (1977) and Schmadl (1979) state that it is essential to use the correct terminology when defining or compiling criteria, standards and norms.

d. Once criteria, standards and norms have been established the next step is that of data retrieval.

(i) Develop a tool, rating scale and evaluation form. According to Lindeman (1976a: 7), there are eight steps in the development of a tool for measuring the quality of nursing care:

- Select a framework.
- Determine the goal.
- Identify the patient group.
- Select items or indicators.

The instrument must be compiled according to what the nurse wishes to measure (Wandelt & Phaneuf, 1972) and may measure one or all aspects of quality nursing care in a particular speciality. According to Wandelt and Phaneuf (1972), although the total instrument identifies the essential components of adequate care each item must be defined.

- Quantify factors comprising the tool.
- Test for reliability .

  Any tool compiled to measure the quality of care must be reliable, valid, accurate, objective, quick and easy to use (Weinstein, 1976: 1).
- Test for validity (Treece & Treece, 1982).
- Scoring.

  According to Lindeman (1976b: 18), the simpler the scoring system the better. The score must relate directly to the items tested and not to other factors, therefore precise wording is imperative. Every patient tested should be able to attain a high score (Lindeman, 1976b). Wandelt and Phaneuf (1972) state that scores for individual functions must be identifiable in order to improve care. Lindeman (1976b: 18) adds that weighting of particular items depending on their relevance to the tool, may be necessary.

(ii) Decide on a means of documentation.

(iii) Review charts/observe behaviour.

e. Interpret, analyse data and identify variations.

f. Make recommendations for improvement by identifying a course of action and developing a solution.

g. Implement the solution.

h. Follow-up action taken by re-auditing.

i. Report of auditing activity.

According to Lanham (1981), there is no universally accepted method of measuring the quality of care nor is there consensus of opinion as to the design, content or tools of the quality assurance programme. The quality assurance programme must be implemented according to the requirements of the particular institutions, population and geographic area. Peter (Lanham, 1981: 16) emphasises

"...just as educational curricula are not interchangeable among schools... neither are quality assurance programs between service institutions which must meet the needs of specific patients within unique environments."

According to Aydelotte, et al. (Rush-Presbyterian-St. Luke's Medical Center, 1980), in order to suit the needs of the institution the synthesis and incorporation of previous research may be possible.

6.4 THE AUDITING OF CARE

Audit is the means of evaluation for quality assurance (Lang & Nish, 1981). Sykes (1982: 56) defines the term audit as "official examination of accounts." An audit is defined as

"Formal or official examination and verification of an account book. A methodical examination and review. The final report of an examination of books of account by auditors." (A.N.A., 1975: 28)

Nursing audit is defined as a systematic examination of the quality of nursing care (Hanna, 1976) and determines whether the needs of the patient are being met by the individual and the organisation (Wiseman, 1977b). A nursing audit is

"...the end-point review of the (patient care record) to secure measurements of the quality of a comprehensive set of components of nursing care." (A.N.A., 1976b: 29)

The nursing audit must be flexible and adaptable to meet the needs of the institution (Huczynski, 1977) and has a valuable contribution to make to the future of nursing (Wiseman, 1977b). Organisational structure for the auditing of nursing must be established. Effective auditing requires a link between nursing education and service (Wiseman, 1977b). According to Rubin, et al. (1972) and Sultan (1980), there must be a Central Audit Committee that ensures smooth running of the programme, sets criteria and checks outcome changes. Rubin, et al. (1972) also suggest that there should be a Departmental Nursing Audit Committee.

According to Huczynski (1977), auditing is not a waste of time as the professional nurse is doing what she is supposed to be doing; that is accepting responsibility for the implementation and evaluation of care. Huczynski (1977) adds that it is a lack of understanding that discourages people from setting up or participating in nursing audits. Nursing audit is a method of getting the registered nurses involved in their care, a chance for them to rethink their own standards of practice and to make them aware of their role as teachers of nursing (Sultan, 1980). Huczynski (1977) and Sultan (1980) believe that it is important to explain the 'nursing audit' to the staff to gain their support. According to Rubin, et al. (1972), 'Audit' should be introduced as part of orientation and daily ward administration. Nursing audit is an important means of communication (Wiseman, 1977b). According to Moore (1979), patients benefit from a quality assurance programme and nurses learn from it.

There is much debate as to who should audit nursing care. Eddy and Westbrook (1975) and Huczynski (1977) agree that peer evaluation is imperative and that only a nurse is capable of auditing nursing. Nurses are the raters in Qualpacs (Wandelt & Ager, 1974), The Slater Nursing Competencies Rating Scale (Wandelt & Stewart, 1975) and the Dur-Scale (Du Rand, 1984). Eddy and Westbrook (1975), Ethridge and Packard (1976), Watson and Mayers (1976) and Rubin, et al. (1972) mention the use of medical data analysts, medical records personnel and unit secretaries for retrospective auditing. In the opinion of the researcher, nurses should evaluate nursing care as they have the required professional knowledge and insight. The aim of the multidisciplinary approach to auditing is not who provided the care but that the care was provided. As the nurse remains accountable for nursing practice if a lack exists in the provision of nursing care then suitably trained nursing staff must assess the care to determine and eradicate the problem (Eddy & Westbrook, 1975).

According to Huczynski (1977), the success of the audit programme is related to the frequency of feedback. Feedback must be used constructively. Rubin, et al. (1972) suggest the use of the 'Nursing Services Newsletter' and Wiseman (1977b) suggests the use of an 'Audit Newsletter' to highlight specific problems. McGuire (1968) believes that audit scores should be posted on the board as a means of motivation and Purgatorio-Howard (1986) recommends the 'Nursing Quality Surveillance Problem Status Report' sheet.

Depending on the method used the nursing audit may take anything from 20 - 30 minutes (Rubin, et al., 1972; Sultan, 1980), two hours (Wandelt & Ager, 1974; Wandelt & Stewart, 1975; Du Rand, 1984) or three and a half hours (Wiseman, 1977b). Some institutions audit care on particular days (Sultan, 1980). Some audit care only during the day and evening shifts; others audit care on all three shifts. Moore (1979) and Sultan (1980) suggest that to provide continuity nursing care plans and nurse auditing should be a continuous process, from time of admission and include discharge planning. Wiseman (1977a) suggests that unit care be audited annually or bi-annually and individual care six monthly.

Nursing care may be audited retrospectively or concurrently:

a. Retrospective evaluation encompasses all assessment mechanisms that are utilized to review care after the patient has been discharged (Schmadl, 1979; Gallant & McLane, 1979; Sultan, 1980; Mayers, 1983). Diddle (1976) states that with retrospective review one is auditing the documentation of care rather than the care itself.

b. Concurrent care review refers to the appraisal of care that is still in progress (Mayers, et al., 1977; Schmadl, 1979). Aydelotte, et al. (Rush-Presbyterian-St. Luke's Medical Center, 1980: 1) add

"...the efficiency of actual care delivery is best evaluated through an analysis of the on-going stream of activities involved in the care delivery process."

The purpose of a concurrent review is to identify weaknesses and strengths for immediate feedback as well as to improve or alter care while the patient is still receiving care. There are various mechanisms for concurrent review (Wandelt & Ager, 1974; Jellnek, 1975; Wandelt & Stewart, 1975; Watson & Mayers, 1976; Mayers, 1983; Du Rand, 1984). The assessment scales measure the quality of patient care regardless of patient diagnosis. They are carefully constructed multi-item scales designed to facilitate the observation, measurement and scoring of care process (Mayers, et al., 1977). Mayers, et al. (1977) believes that a comprehensive well rounded quality assurance programme should combine several mechanisms of assessment.

A brief presentation of the two assessment scales that are most relevant to the research is included.

TABLE 3:10
A comparison of The Quality Patient Care Scale and The Slater Nursing Competencies Rating Scale (vide p73/74)

Qualpacs provides quantitative measurement of the overall quality of nursing care that the patient receives on individual nursing units or in an entire nursing service programme (Wandelt & Ager, 1974: 11). Qualpacs is a reliable, relevant, descriptive measure of the gamut of nursing process in patient care and may be used to initiate a quality assurance programme as the results are more immediate and thus it is possible to establish a data baseline early (Phaneuf, 1976). Qualpacs has been used or modified by many institutions to suit their needs (Wainwright & Burnip, 1983; Du Rand, 1984). Modifications occur because Qualpacs is open to misinterpretation as certain items may not be relevant or because there is a lack of criteria related to direct patient care (Du Rand, 1984). Du Rand (1984) has simplified Qualpacs to a 20-item scale to make it possible to complete in a shorter time (two hour period, up to three patients at a time) and has also used headings accepted as fundamentals of nursing care.

TABLE 3:10

A COMPARISON OF THE QUALITY PATIENT CARE SCALE AND THE SLATER NURSING COMPETENCIES RATING SCALE

THE QUALITY PATIENT CARE SCALE (Wandelt & Agar, 1974)	THE SLATER NURSING COMPETENCIES RATING SCALE (Wandelt & Stewart, 1975)
SIMILARITIES (Phaneuf, 1976) The same sub-sections exist, but the number of items per section differ. "Subsection I Psychosocial: Individual - Actions directed toward meeting psychosocial needs of individual patients. II Psychosocial: Group - Actions directed toward meeting psychosocial needs of patients as members of a group. III Physical - Actions directed toward meeting the physical needs of patients. IV General - Actions that may be directed toward meeting either psychosocial or physical needs of the patient or both at the same time. V Communication - Communication on behalf of the patient. VI Professional Implications - Care given to patients reflects initiative and responsibility indicative of professional expectations."	
Measure 'process' of care.	
Have quantitative and descriptive measurement.	
The scores are applied on completion.	
DIFFERENCES No. of items per subsection. Subsection I 15 II 8 III 15 IV 15 V 8 VI 7 68 items Focus is on nursing care received. Used concurrently. Two hour period only.	I 18 II 13 III 13 IV 16 V 7 VI 17 84 items. Focus is on nursing care as performed. May be used concurrently or retrospectively. May occur over period of time or once off.
STANDARD OF MEASUREMENT "Care expected of a first - level staff nurse," (Wandelt & Agar, 1974: XI) "A first-level staff nurse is one who holds state licensure as a registered nurse and is employed to provide nursing care that meets the nursing needs of patients in the employing institution ..." (Wandelt & Agar, 1974: 33) The standard of measurement is not further defined.	"... the quality of performance expected of a first-level staff nurse." (Wandelt & Stewart, 1975: 48) "A first-level staff nurse is a nurse who, traditionally, is charged with responsibility for providing nursing care that is safe, adequate, therapeutic, and supportive in meeting the needs of patients." (Wandelt & Stewart, 1975: 30) The standard of measurement is not further defined.

THE QUALITY PATIENT CARE SCALE (WANDELT & AGER, 1974)	THE SLATER NURSING COMPETENCIES RATING SCALE (WANDELT & STEWART, 1975)
RATINGS Qualpacs suggests the use of two raters for any observation project to ensure objectivity of measurement. The raters may or may not rate the same patient (: 42). The rater observes the care received by the patient irrespective of who delivers the care, notes the quality of the interaction and makes an appropriate judgement according to the scale. Number of patients to be rated: one or more.	The rater observes the nurse-patient interaction and notes the care component of the interaction and makes an appropriate judgement according to the scale.
THE SCALE Has a five-point yardstick: Best nurse. Between. Average nurse. Between. Poorest nurse. Between. Not observed.	Has a five-point yardstick: Best care. Between. Average care. Between. Poorest care. Not applicable. Not observed.
PURPOSE FOR WHICH MEASUREMENTS MAY BE USED (1) To evaluate individual nurse competence for the purpose of retention, promotion and merit salary increases. (2) To examine the relationship between the quality of nurse performance and the quality of care received by patients. (3) Provides means for accounting for the quality of a nurse's performance, for identifying strengths and weaknesses. (4) To identify areas of needed instruction of learning needs of individual or selected groups of staff members. (5) To follow student's progress in a particular course or total programme. (6) To guide in self-evaluation. (7) To determine through research the effects of different instructional approaches.	(1) To provide information about the level of quality of care being received by patients. (2) To account for the execution of a service responsibility. (3) To identify strengths and weaknesses which may be used as a basis for providing educational programmes, supervising, assistance, modification of programmes and improvements in equipment, facilities and staff utilization. (4) To determine the effectiveness of resource changes. (5) To determine the effectiveness of a teaching programme. (6) To alert personnel to often neglected elements of care. (7) As a teaching aid to improve alertness in observations.

Numerous methodologies for measuring and evaluating the quality of nursing care are discussed in the literature. For further literature concerning the methodologies mentioned consult the references cited or quoted in the text (Selvaggi, et al., 1976; Weinstein, 1976; Mayers, et al., 1977; Hegyvary, 1979).

Other means of evaluating the quality of care include the analysis of data from incidents/accident reports, work load indices, patient classification tools and performance appraisal (Campbell, 1982).

6.5 DOCUMENTATION OF CARE

Nurses need to take care of the total patient and they must record observations and impressions so that they can be used by all (Phaneuf, 1966). Nurses do not realise that they have valuable information about patients. Sultan (1980) states that accurate documentation is important. Relevant information must be recorded as documentation is a legal liability; a medico-legal issue. According to Moore (1979: 257),

"One reason for non-documentation is that nurses occasionally lose sight of the importance of the routine care they provide for their patients."

Process auditing helps the nurse document care more accurately, descriptively and completely (Edwards & Mills, Laurie-Shaw & Stove, 1982). Dorsey and Hussa (1979) state that there is a lack of documentation of nursing care that is provided. According to the J.C. A.H. (Woody, n.d.: 37), "if you didn't record it, you didn't do it."

Rosenfeld (Phaneuf, 1976) and Sultan (1980) found a direct correlation between adequate documentation and the quality of care. Documentation of care provides continuity of care (Laurie-Shaw & Stove, 1982). The problem-orientated record is an effective method of documenting and interpreting raw data (Walton, n.d., Woody, n.d.). The use of a standard problem-orientated medical and /or nursing record based on a problem list as suggested by Lynch and Mauss(1981) will aid care and research. As nursing care plans remain a contract between the nurse and the patient a legal implication exists. Ethridge and Packard (1976) state that nursing care plans can be used to increase the quality of care and to improve the basis for auditing. The accurate, comprehensive documentation of care has a vital role in retrospective chart review. Carnso and Thompson (n.d.) suggest the use of standardised care plans as a means of improving practice and the recording of care.

7. SEQUALAE OF BRAIN TRAUMA

The primary brain damage as a result of the head injury is irreversible. It is the responsibility of the health team, as early as possible after the injury, to institute a comprehensive care programme in order to detect, lessen or treat secondary brain damage and the sequalae of the initial brain injury. Knowledge of head injury sequalae, the real and potential consequences, enables the multidisciplinary team, to assess the patient's needs.

The sequalae of the head injury may present soon after injury or at a later stage and may be permanent or temporary (Jennett & Teasdale, 1981: 271). The actual sequalae of the head injury will:

1. Be particular to the individual patient.
2. Depend on the nature, site and extent of the head injury.
3. Depend on the length of unconsciousness.
4. Depend on the period of post-traumatic amnesia (PTA).
5. Depend on available hospitalisation and resources.
6. Be affected by the level of care received by the patient (Dinning & Connolley, 1981: 2).

The sequalae of head trauma that may affect the patient's management, rehabilitation, prognosis and recovery may be physical, psychological, emotional, behavioural, social, educational or economic as suggested by Storey (1976), Humphrey and Oddy (1978), Howard (1981), Jennett and Teasdale (1981), Long, et al. (1984) and Prigatano, et al. (1984). According to Bond (Symposium on head injuries, 1977), each element of physical and psychosocial disability follows a pattern of recovery that has its own characteristics.

TABLE 3:11

Sequelae of head trauma

Physical	Psychological			Social
	General	Cognitive skills	Emotional	
Cerebral oedema Difficulty swallowing Dysarthria Epilepsy Haematoma formation Hydrocephalus Incontinence Infection Impaired motor function: - Constructional apraxia - Extremity weakness - Impaired fine motor co-ordination - Impaired gross motor co-ordination - Impaired physical conditioning - Impaired flexibility - Impaired ambulation Impaired sensory functioning: - Visual: Field cuts Suppression/inattention Low acuity - Impaired hearing - Anosmia Impaired body awareness: - Exteroceptive loss - Proprioceptive loss Meningitis Post traumatic syndrome Prolonged coma Skull defects	Personality changes	Memory difficulty: - Auditory - Visual - Spatial - Temporal disorientation Impaired receptive language in: - Auditory comprehension - Reading comprehension - Word recognition Impaired expressive language in: - Fluency - Spelling - Word finding - Writing Maths difficulty Confusion Disorientation Deficits of: - Attention - Concentration - Information processing - Intelligence - Insight - Perception - Reaction time - Sensory integration	Anxiety Aggressive behaviour Depression Disinhibition Emotional lability Irritability Low self-esteem Mood changes Non assertion/ faulty assertion Sexual dysfunction Withdrawal	Altered social behaviour pattern Impaired independent living - Clothing - Finances - Food - Housing Impaired interpersonal skills Impaired self-care - Dressing - Eating - Grooming - Toilet Impaired use of transportation Job impairment Marital and family discord Progressive social isolation

(Jones, 1991; Lynch & Mause, 1991; Weiss, et al., 1988)

The disability after head injury is the result of a combined physical and mental handicap that makes the sum total of the disability greater than its two parts (Anwar, 1979). Jennett, et al. (1981) believe the mental disability to be more severely disabling than the physical handicap, particularly on the family. The physical residues generally subside satisfactorily; it is the mental symptoms, that are often overlooked, that constitute the major cause of persistent disability (Jennett, 1983). Jennett, et al. (1981) state that after brain damage the ability to cope and adapt is affected. A negative relationship of distress levels to independence in self-care, mobility, living arrangements and communication was found by Jolinek, et al. (1982: 160). Ozga (1978) states that personality change occurs frequently after head injury and that the family has difficulty in dealing with this change. Cognitive and personality disturbances after closed head injury in young adults are associated with a poor rehabilitation outcome (Prigatano, et al., 1984). Head injured patients suffer physical and psychological consequences of the head injury long after the injury has occurred (Steadman & Graham, 1970).

The social sequalae of head injury are considerable (Habermann, 1982). Social re-adjustment on the part of the patient and significant others is a daunting problem. The head injury may result in the patient functioning at a lower level in society or requiring specialised care. Family discord (Blyth, 1981) and a high divorce rate are reported after severe head injury (Hirschberg, et al., 1976). Progressive social isolation occurs because of avoidance by others or actual withdrawal on the part of the patient from social life. Families who have a head injured patient home face a long tedious ordeal (Blyth, 1981). Although, because of the familiar environment and stimulating family interest the return to home usually results in further progress of the patient. According to Evans (1981: 18), if a patient is taken home, the chance of successful recovery depends not only on the injury but also on which relative has to care for the victim.

In a study conducted on 54 patients by Humphrey and Oddy (1978) six months after the head injury 1: 4 patients stated that they were symptom free. Two thirds stated that they suffered from fatigue, poor memory and loss of temper and that these factors played havoc with their social relationships.

The physical, emotional, psychological and intellectual problems and the difficulties of severe head injured patients are well documented. However, there is evidence that patients who have suffered insignificant head injuries may have organic brain damage and may have neuropsychological impairment (Rimel, et al., 1981a) (vide p14).

In general the literature stresses the need for constant vigilance, an acute awareness of the sequalae of brain trauma, the risk of complications and the need for the early diagnosis of specific complications of head trauma (such as increased intracranial pressure and intracranial haematoma) as well as complications of bed rest, muscle spasm and infection that can be crucial to recovery. The use of the problem-orientated record and problem list will identify problems of a physical, psychosocial, vocational and cognitive nature, facilitate goal setting and the measurement of outcome (Lynch & Mauss, 1981).

According to Brunner and Suddarth (1974), the nurse must take cognisance of the after-effects of the head injury. In the opinion of the researcher, in an attempt to reduce the morbidity and mortality of the head injured patient, as well as to best assist the patient and family to come to terms with the after-effects of head injury as soon after injury as possible, a multidisciplinary programme of preventive rehabilitation involving physical, psychological, emotional and social aspects of head injury must be instituted.

8. RECOVERY

The nurse is concerned with the welfare of the patient from the time of injury until ultimate recovery. In order to improve patient care, for patient and community education and counselling the nurse requires a better knowledge of the incidence, causes, management, sequalae and recovery of head injured patients (Rimel, 1981). The most important goal of head injury management is to maximise recovery (Rimel, 1981). Unfortunately the problems of the head injured patient are not seen as a whole, but by dispersed few (Jennett & Teasdale, 1981: 341). As there is no systematic care for head injured patients

"It is likely that the duration and degree of disability is often greater than need be because of this." (Jennett, Symposium on head injuries, 1977: n.s.)

Evans (Symposium on head injuries, 1977) states that decisions made regarding the management of the head injured patient at the road side, in the emergency department and during the early clinical phase affect survival and the quality of life. According to Jones (1981), one of the most difficult aspects in the care of head injured patients involves dealing with the uncertainty of their recovery and/or quality of life. Unfortunately, those concerned with the care of the acutely ill seldom know the ultimate outcome and therefore are unable to assess the effectiveness of their care (Jennett, 1979). In the opinion of the researcher, insight into the potential of the head injured patient for recovery may motivate the staff to provide a quality nursing service to ensure that maximum recovery and independence of the head injured patient is achieved.

As a result of an improvement in the management of head injured patients, there has been a reduction in the mortality figures (Minteer-Convery, 1985). The use of intensive therapy means that more permanently disabled persons (± 1 200 per annum) leave hospital (Jennett, et al., 1976; Lewin, 1976: 1237). Most survivors become independent and make a good recovery. A survey in Japan (Editorial, 1978) discloses that there are 25 vegetative patients per million of the population, a third are due to head injury. Jennett, amongst others (Editorial, 1978: 589) states that this vegetative state "represents an outcome worse than death."

Recovery is a continuous dynamic process. The belief that maximum physical and psychological recovery occurs within a year of injury and mostly within the first three to six months is supported by Bond (1977), Brooks, Mandelburg (Symposium on head injuries, 1977), Jennett, et al. (1977) and Jennett (1978). The thought is that the improvement that occurs hereafter occurs as a result of increasing adjustment and adaptation by the patient and family to persistent disability and a changed lifestyle (Bond, 1977). Yet, Doman (1964), Lewin (1976) and Eames and Wood (1985) suggest that brain re-training and re-organisation is possible long after injury. Jennett, et al. (1977) state that improvement may continue for longer, but that it is seldom sufficient to change a patient's category on the Glasgow Outcome Scale. Lewin (1976) suggests that the rate of recovery not merely that some recovery has taken place, is the predicting factor in ultimate disability.

8.1 PREDICTIVE CRITERIA FOR RECOVERY

The nurse must be aware of factors that are regarded as being predictors of recovery of the head injured patient. Although the nurse may not be able to alter factors such as age and psychological status, perhaps the introduction of primary prevention and preventive rehabilitation programmes could alter the predisposition to and the extent of the head injury. Other factors such as the early detection of raised intracranial pressure and the management of the patient may alter the depth and duration of coma thus affecting the patient's potential for recovery. With reference to factors that influence recovery Jennett (Vinken & Bruyn, 1976) has divided predictive criteria into three categories: pre-coma factors; brain damage and recovery pattern.

8.1.1 Age

Age is reported as being a significant variable in the outcome of patients with head injury. Morbidity and mortality increase with age (Jennett, et al., 1977; Nikas, (ed.) 1982). According to Jones (1981: 180), after the age of 20 as age increases the quality

of outcome declines. Patients over 60 years of age who sustain a blow to the head resulting in a coma have a 10-15 percent chance of recovery. Children under the age of five have a higher mortality than those in the category 5-20 years.

8.1.2 Psychological status

The patients premorbid personality and motivation are important factors in patient recovery and rehabilitation. Coping depends on personality, motivation, intellectual ability, emotional stability and family support (Evans, Symposium on head injuries, 1977).

8.1.3 The brain injury

According to Adams and Galbraith (Symposium on head injuries, 1977), one of the major determinants of outcome is the extent of brain damage, either sustained initially or as a result of secondary compression. In general terms the greater the loss of brain tissue, the more severe the final level of handicap. In diffuse injury many parts of the brain are involved. Therefore, other than in focal injuries, the localisation of the injury is of loss value in predicting the nature of the handicap (Bond, 1977; Purchese 1977). Galbraith (Symposium on head injuries, 1977) states that although this is not always so, severe intracranial hypertension (M.I.C.P. ≥40 mm.Hg) is associated with a poor outcome while normal intracranial pressure (M.I.C.P. ≤10 mm.Hg) is associated with a good outcome. Levels of intracranial pressure between 10 - 40 mm.Hg are not associated with any particular outcome. The presence of persistently high intracranial pressure (≥15 mm.Hg) correlates with a poorer outcome but recent advances in therapy may be improving the outlook (Jones, 1981).

8.1.4 The depth of the coma

The G.C.S. at six hours after admission (Jennett, et al., 1976), third day after admission (Jones, 1981) and on discharge (Rimel, et al., n.s.) has been used as a predictor for recovery.

According to Jones (1981), any patient admitted with a.
G.C.S. = 8/15 has a 3 percent chance of dying;
G.C.S. < 8/15 has a 27-50 percent chance of dying;
G.C.S. = 3/15 has a 90 percent chance of dying.

The opportunity to improve the rehabilitation outcome is better in the 9-13 than the 3-5 range.

"Little can be done for patients in the GCS 3-5 category. The only hope here appears to be prevention." (Rimel, et al., n.d.: 16)

8.1.5 The duration of the coma

The length of the coma would seem to be an important variable (Jennett, et al., 1977). The longer the coma duration the poorer the outcome. Provided the patient makes a recovery within the first month, the tendency to reach a practical recovery is high, although it may take a number of years. A study published in 1971 showed that only 6 percent of patients with a coma duration of more than two months made any significant recovery, but there are exceptions to the trend (Lewin, 1976). Depending on the quality of nursing care these patients may achieve a surprisingly good outcome (Jones, 1981).

8.1.6 The patient's neurological status

Jennett, et al. (1976a/b, 1977), Galbraith (Symposium on head injuries, 1977) and Jones (1981) showed that there is a correlation between neurological status (pupil reaction, eye movements, occulo-vestibular response, motor response) and outcome.

8.1.7 Skull fractures

Skull fractures are not in themselves predictors of poor outcome but 80 percent of patients requiring surgery for removal of a haematoma have a skull fracture. The presence of a skull fracture increases the possibility of intracranial infection (Jones, 1981).

8.1.8 Intracranial haematoma

The existence of an intracranial haematoma affects prognosis. The sooner operative intervention is required for an intradural haematoma the worse the prognosis as this means the head injury is severe (Teasdale & Galbraith, 1981). Mendelow, et al. (1979) warn that a delay time of more than two hours for the removal of an existing haematoma affects recovery; whereas Green (1984) believes a delay of four hours to be safe.

8.1.9 Post-traumatic amnesia (PTA)

The duration of PTA is a useful measure of the severity of diffuse brain damage (Brooks, Evans, Symposium on head injuries, 1977; Habermann, 1982). The duration of the PTA is related to the depth and duration of coma, the degree of disability (Jennett, et al., 1976) and return to work (Lewin, 1970).

8.1.10 The patient's vital signs

Teasdale and Galbraith (1981) report that according to the vital signs the outcome of almost half the cases of severe head injury can be predicted confidently within 24 hours of coma developing. This proportion increases to two thirds at three days and three quarters at one week (Jennett, et al., 1977; 298). North and Jennett (Tyson, et al., 1978) state that a spontaneous persistent respiratory rate of more than 25 breaths a minute and a $PaCO_2 \leq 30$ mm.Hg has a poor prognosis.

The researcher supports the belief of Jennett, et al. (1976) and Jennett, et al. (1977) that it is imperative for the nurse to realise that instability of vital signs and poor responsiveness within the first 24 hours and first week of injury does not of necessity indicate a poor prognosis.

8.1.11 The computerised scan (CT scan)

The results of the CT scan may be related to outcome after head injury. A normal CT scan or small ventricles having the best outcome and intracranial lesions or large ventricles the poorest outcome with reference to self-care, independence and psychological deficits (Timming, et al., 1982).

Predictions of outcome are of importance as they can be used:

1. To assess alternative management methods.
2. To prevent or anticipate complications.
3. To allocate resources regarding admission, intensive care and rehabilitation.
4. To decide on policies.
5. To advise the patient and family.

(Jennett, et al., 1976; Marshall, et al., 1983).

Jennett (1979: 200) states that if a severe head injured patient is predicted to have potential for recovering independence, it is important to institute intensive therapy. After the acute phase, if the prognosis indicates little chance of recovery, the predictions may need to be updated, intensive therapy can be scaled down or active rehabilitation may be withdrawn.

According to Evans (Symposium on head injuries, 1977), the occurence of concomitant extracranial injuries affects the duration rather than the ultimate level of recovery. De Villiers (1981) states that associated injuries, in particular severe limb injuries, may be a major impediment to rehabilitation.

According to Knill-Jones (Symposium on head injuries, 1977: n.s.),

"..., the accurate assessment of prognosis affects patient management and, ultimately, the use of scarce resources, so that statistical predictions about prognosis, if accurate and economical, could be of great value."

8.2 RECOVERY AFTER HEAD INJURY HAS BEEN DESCRIBED IN TERMS OF:

8.2.1 Return to work

(Lewin, 1970; Steadman & Graham, 1970; Jennett, 1976a; Rimel, et al., 1981a)

According to Prigatano, et al. (1984), present estimates suggest that one third of severely head injured patients return to work after utilizing traditional rehabilitation methods. Therefore the researcher believes that these methods should be available.

8.2.2 Social ability

The Glasgow Outcome Scale (G.O.S.) (Jennett & Bond, 1975) is used widely to assess patient recovery (Jennett, et al., 1977, 1979; Jennett, 1979; Lindsay, et al., 1980; Jennett & Teasdale, 1981; Rimel, 1981) as it measures patient outcome in terms of social ability, rather than physical and mental disability.

The Glasgow Outcome Scale has five categories:

Dead (D);

Persistent vegetative state (PVS);

Severe disability (SD);

Moderate disability (MD);

Good recovery (GR).

TABLE 3:12

The extent of recovery of head injured patients in three countries according to the Glasgow Outcome Scale (expressed as percentages)

G.O.S. category	Glasgow (N=428)	Netherlands (N=172)	Los Angeles (N=100)
D	52	52	49
PVS	2	1	5
SD	8	5	18
MD	17	15	14
GR	22	27	14

(Jennett, et al., 1977: 297)

TABLE 3:13

The extent of recovery of severe head injuries at three centres according to the Glasgow Outcome Scale (expressed as percentages)

G.O.S. category	Glasgow (N=1000)	Richmond (N=160)	San Diego (N=100)
D	49	30	28
PVS	2	2	8
SD	10	8	4
MD	17	24	15
GR	22	36	45

(Jones, 1981)

According to Jones (1979), the early assignation of the patients to outcome groups will allow the nurse the opportunity for advanced discharge planning.

Another method of assessing head injury patient outcome is by the Rappaport Disability Rating Scale (Rappaport, et al., 1982). According to Rappaport, et al. (1982), this is more sensitive than the Glasgow Outcome Scale and assesses changes in arousal/awareness, cognitive ability, degree of physical dependence and psychological adaptability.

9. REHABILITATION

In the opinion of the researcher, in South Africa, although rehabilitation is included in the domain of nursing it is an area in which little development has taken place.

"...the objectives of medicine are not only the prevention and cure of disease but also the restoration of the individual as far as possible to normal social function." (WHO, 1976: 324)

"If rehabilitation is understood to encompass prevention of disuse and misuse... as well as maintenance of maximal physical function and emotional balance during the course of definitive treatment, it is obvious that rehabilitation must begin in parallel with rather than in series with definitive medical care." (Hirschberg, et al., 1976: 154)

In 1969 the WHO Expert Committee on Medical Rehabilitation (WHO, 1976: 326) defined rehabilitation as

"the combined and co-ordinated use of medical, social, educational, and vocational measures for training or retraining the individual to the highest possible level of functional ability."

Rehabilitation is

"...the clinical process by means of which the disabled person is restored to a state of optimal effectiveness and given an opportunity to enjoy a meaningful life." (Hirschberg, et al., 1976:6)

Rehabilitation "... begins in the intensive care unit..." (Minteer-Convery, 1985: 220)

Other definitions of rehabilitation encompass the multidisciplinary approach to restore the patient to the fullest physical, mental, social, economic, emotional, cognitive and educational functioning (Brunner & Suddarth, 1974; Mair, Nichols, 1975; Nichols, 1980). De Villiers (1981: 845) warns that in as far as rehabilitation is concerned although the ideal may not be attained "... a compromise has to be accepted."

9.1 THE OBJECTIVES OF THE REHABILITATION OF THE HEAD INJURED PATIENT INCLUDE:

9.1.1 To assist the head injured patient, by a holistic individualised approach, to function at maximum physical, psychological, social, emotional, educational and economical capacity (Brunner & Suddarth, 1974; Stevenson, 1979; Headway, 1983).

9.1.2 To maximise the patient's physical, psychological, economic and social independence with regard to:
Self-care;
Activities of daily living;
Mobility.
(Hirschberg, et al., 1976; Humphrey & Oddy, 1978; Mahoney, 1980).

9.1.3 To prevent disability and accelerate recovery (Jennett & Teasdale, 1981). Rehabilitation is concerned with primary and secondary disability as well as

preservation and restoration of function of any part of the individual or the individual as a whole. Such preventive practice must begin immediately in the case of all disabled patients (Hirschberg, et al., 1976). According to Brunner and Suddarth (1974), rehabilitation by means of first, second and third level prevention is required for the prevention of all these disabilities (WHO, 1976). According to Hirschberg, et al. (1976), two hours per 24, ensuring that the patient is not inactive for more than one hour at a time, is all that is needed to prevent disuse phenomena.

9.1.4 To ensure adequate behavioural, psychological and social functioning to enable the patient to return to the family, community, previous social and leisure activities and to gainful employment where possible. Rehabilitation means full social integration including leisure, work, home and mobility (Clarke, 1977).

9.1.5 To provide disabled persons a chance to live a life that is acceptable, meaningful and in some measure contributory to the common good (Hirschberg, et al., 1976).

9.1.6 To provide quality approaches to assist patients to achieve their goals as soon as possible (Quigley, 1981).

9.2 IMPORTANT CONCEPTS RELATED TO REHABILITATION

9.2.1 The road to rehabilitation is not simple.

9.2.2 Rehabilitation is a whole not a part-time occupation.

9.2.3 The responsibility for rehabilitation.

The provision of adequate rehabilitation services is of paramount importance in a comprehensive health service (Levin, et al., 1982: 208).

With regard to the provision of comprehensive care and rehabilitation facilities for head injured patients, The Health Act (No. 63 of 1977: 661 as amended by Health Amendment Act No. 18 of 1979; Health Amendment Act No. 33 of 1981; Health Amendment Act No. 37 of 1982; Health Amendment Act No. 21 of 1983; Health Amendment Act No. 70 of 1985) states the following concerning the health services of South Africa:

"To provide measures for the promotion of the health of the inhabitants of the Republic; to that end to provide for the rendering of health services; ...".

The National Health Policy Council shall ensure that

"... several authorities which render health services... shall take all such measures as they may take ..., to promote the health of the inhabitants of the Republic so that every person shall be enabled to attain and maintain a state of complete physical, mental and social wellbeing, ...". (Health Act No. 63 of 1977 :671).

The functions of the Council shall be to consider any recommendations made by the Committee to the Minister (Health Act No. 63 of 1977:673 as amended):

"a. the formulation of a national policy in regard to the rendering of health services by the Department of National Health and Population Development, provincial administrations and local authorities;
b. the coordination by, and the allocation to, the Department of National Health and Population Development and provincial administrations of duties in regard to the following health services namely -
1. the promotion of the health of persons, individually and generally;
2. the provision of facilities for the detection, prevention, diagnosis and treatment of medical conditions;...
3. the application of measures of a medical nature to habilitate or to rehabilitate any person incapacitated by a medical condition;...
c. the efficient coordination of health services rendered by the Department of National Health and Population Development, provincial administrations and local authorities."

The functions of the Department of National Health and Population Development shall be:

"a. with due regard to health services rendered by provincial administrations and local authorities, to coordinate health services rendered by the said Department and to provide such additional services as may be necessary to establish a comprehensive health service for the population of the Republic of South Africa; ...
c. to take steps for the promotion of a safe and healthy environment;...". (Health Act No. 63 of 1977:673)

The Minister may delegate any of the functions of the Department of National Health and Population Development to a provincial administration. The functions of the provincial administration with regard to health services shall be:

"a. to provide hospital facilities and services;
b. ...to coordinate such health services ...". (Health Act No. 63 of 1977: 675)

Local authority is responsible for

"the promotion of the health of persons; and the rehabilitation in the community of persons cured of any medical condition." (Health Act No. 63 of 1977: 681)

The Minister may, in consultation with the Minister of Finance

"contribute towards the cost incurred by any provincial administration, local authority, ... public society or association..., or any other matter relating to health." (Health Act No. 63 of 1977: 721)

The guide to the Health Act No. 63 of 1977 (1978: 46) states the following about rehabilitation services :

"For the first time specific mention is made in health legislation of rehabilitation on a national level..."

"The objective of any rehabilitation process should be the functional restoration of the individual within the framework of a given society. Medical rehabilitation refers to the process of medical care aiming at developing the functional and psychological abilities of the individual so as to enable him to attain self-dependence and to lead an active life. Techniques such as physiotherapy, occupational therapy and speech therapy, as well as psychiatric rehabilitation, are included. ... With the advancement of medical technology, more handicapped people will be able to have a large measure of independence if the community and the local authorities pay special attention to these matters. ..., it will be possible for a handicapped person to live as full a life as possible in his environment. Subsidies shall not be paid by the Department of Health to provide such facilities, ...".

"Participation by the community in the planning and rendering of health services can make an important contribution towards the development of the community and the quality and effectiveness of the health services."

"The importance to create adequate facilities for the treatment of the chronic sick and the care for the socially disabled within the community can, therefore, not be over-emphasised..."

The WHO (1976) states that disability prevention and rehabilitation is the responsibility of the national government. Although in South Africa this function has been delegated to the provincial administration and local authority.

Organised rehabilitation would be economically advantageous to the community. Disability affects 10 percent of the total world population and is a major medical, social and economic problem. There are 300-400 million disabled people in the world of which disability as a result of trauma accounts for 78 million (WHO, 1976: 324). The prevalence of disabled survivors of head injury is 150 per 100 000 population per annum (Report, 1982: 1036). Nichols (1975) adds that 1:3 disabled patients would benefit from rehabilitation to speed recovery, function and return to work. Trunkey (1983: 27) adds

"One of the most pronounced deficiencies in trauma care in the U.S. is the lack of an integrated rehabilitation system."

"The hospital is only one among a number of agencies concerned in rehabilitation..., close personal co-operation... is essential in the patient's interest." (Ministry of Health, 1958: 2)

Patients with severe head injuries place considerable burden on acute hospitals in the early stage of illness and on many aspects of the health service for a long time if they survive (Jennett, et al., 1977). According to Evans (1981), whenever treatment becomes available for the prolonging of life a rehabilitation centre should be developed nearby. Jennett (Lovin, et al. 1982: 208) has pointed out

"the tremendous efforts expended on intensive treatment in the early weeks after injury are often largely wasted by the failure to provide the means whereby the full potential for recovery can be achieved during the later stages,...".

Evans (1981) emphasises that the setting up of a rehabilitation centre is a costly exercise and Hirschberg, et al. (1976: 186) add

"One of the major obstacles to rehabilitation has been the lack of private or public funds to support the treatment of the disabled."

Glanville (n.d.) states that rehabilitation demands outstrip resources and Lowin (1970) adds that head injured patients can make practical recoveries provided proper provision is made for them.

"...the lack of provision for their after-care leads to unnecessary invalidism, economic loss to the country and a management problem for the hospital services." (Lowin, 1970: 8)

According to Clarke (1977), rehabilitation is a community responsibility and a task within the capabilities of the community. The quality of life of the handicapped is greatly affected by society's willingness and ability to provide the care and services needed (Bond, 1977).

9.2.4 Levels of rehabilitation.

According to Williams and Lambourne (Glanville, n.d.), there should be 16 rehabilitation beds per 100 000 population. Applicable rehabilitation services may vary in nature and intensity, according to the degree of disability and the general condition of the patient (Hirschberg, et al., 1976).

There are six levels of rehabilitation:

a. Preventive rehabilitation.
b. Short term activities of daily living training.
c. Rehabilitation of patients with limited disabilities.
d. Intensive in-patient rehabilitation.
e. Maintenance care.
f. Vocational rehabilitation.

Lewin (1970: 11) states that there must be facilities available to send patients to at the appropriate times and more so for the disabled to be aware of the available facilities (Bond, 1977). Nichols (1980) adds that with good facilities for physical, emotional and industrial rehabilitation the head injured patient is usually able to return to work.

9.2.5 Rehabilitation must be dynamic.

A single continuous process that begins with the onset of the injury and continues throughout treatment until final resettlement in the most suitable work and living conditions is achieved (Ministry of Health, 1958). According to Rose (n.d.: 182), "Rehabilitation begins as soon as the trauma has occurred."

The early pre-hospital and emergency room rehabilitation is aimed at limiting the development of complications (Rimel, 1982). Levin, et al. (1982) suggest that there is a critical phase when rehabilitation produces gains in excess of the natural course of recovery. Levin, et al. (1982) add that therapeutic treatment is most effective if it is initiated at the earliest opportunity during the first six months of convalescence. Nichols (1980) states that with adequate rehabilitation, provided the programme is started soon after injury, the morbidity and duration of disability after head injury decreases.

9.2.6 The patient must be subjected to the co-ordinated effects of the rehabilitation team from the time of admission (Ranseen, 1985).

The key to the full development of rehabilitation in hospital services is the attitude of the hospital staff (Ministry of Health, 1958: 1). Jennett and Teasdale (1981) state that warm, personalised therapist/patient relationships aid recovery. The WHO (1976) recommends that rehabilitation should be integrated into primary health care and rehabilitation methods into the training of all relevant manpower. Nichols (1980) states that rehabilitation is the concern of all physicians and that there is a relative lack of interest amongst the medical profession in the problem of convalescence. The WHO (1976) states that the prevention of disability is the responsiblity of all health personnel. Rotkovitch ((ed.) 1976) states that rehabilitation is a continuous collaborative effort of a multidisciplinary team as continuity of care is important.

9.2.7 Rehabilitation is centred on the individual and not on the environment (WHO, 1976).

a. A supportive, calm environment and participation of the patient's family in care will achieve a sense of security and orientation (Levin, et al., 1982).

b. The patient's attitude must be accepting of rehabilitation.

Factors of relevance to patient rehabilitation include sex, age, race, past experience, psyche, anxiety level (Nichols, 1975) as well as

"The patient's personality and emotional disposition, his socio-economic situation and environmental factors at home and at work all have an important bearing on his eventual rehabilitation."(De Villiers, 1981: 845)

Levin, et al. (1982) add that the outcome of rehabilitation is also affected by the patient's intellectual level, self-insight, motivational level, community and family reactions and pre-injury occupation (Rose, n.d.). Disturbances of intellect, motivation and emotion need time for rehabilitation. Bond (1977) and De Villiers (1981) add that if the injury causes intellectual impairment rehabilitation may become impossible.

c. The patient must be consulted about the primary treatment and implications there-of.

d. Realistic goals must be set.

e. Honesty is imperative as the encouragement of false hope is an obstacle to recovery.

f. The patient must be subjected to the effects of group therapy.

9.2.8 Rehabilitation is not to be regarded as an isolated modality.

Rehabilitation is not to be regarded as the application of special techniques, but above all as a constituent part of the thoughts and actions of all those who are concerned with the treatment and restoration of disabled persons to their utmost capacity. The prime concept in rehabilitation medicine is that rehabilitation embraces the prevention and cure of disability through various techniques or approaches that must be assembled and co-ordinated. The concepts and techniques of rehabilitation are applicable in every phase of care of the acute and chronically ill. The role of rehabilitation technology is preventive and restorative in nature (Giese & Davis, 1981; Jennett & Teasdale, 1981). Treatment needs to be conceived and planned from the outset, bearing in mind the probable terminal result and its effect on the patient's working capacity and home life. It should be intensive, planned for the individual patient and have a background of discipline. Nichols (1975) states that the advantage of an organised rehabilitation service is the ability to combine integrated medical and functional assessment with the co-ordination of the activities of many agencies.

9.2.9 Maximise self-care and independence.

a. Preserve as many personal and social abilities and as much dignity as possible.

b. Promote independence in activities of daily living and self-care.

c. Clarke (1977) states that as soon as the patient is able to get out of bed, he must be dressed in civilian clothing and outdoor shoes.

9.2.10 Maximise mobility.

a. According to Najenson, et al. (Levin, et al., 1982: 210), active management of the patient by means of passive movements of joints, mobilisation, stimulation of postural reflexes and re-orientation may begin while the patient is still unconscious.

b. No patient should remain in bed when treatment does not require bedrest.

c. Prevent deformity by footboards, splinting or other supports (Fanslow, Rotkovitch, (ed.) 1976: 143).

d. Take advantage of the beds and devices that provide an opportunity for position change.

e. For patients in a wheel chair position should be changed every 20 minutes and for those in bed at least every two hours.

f. Whenever possible, the patient must participate in a sitting (Keener & Sweigart, 1984), stand up, walking, or stair climbing programme.

g. Every effort should be made to limit the amount of lifting by staff.

9.3 THE REHABILITATION PROCESS

According to Hirschberg, et al. (1976), irrespective of where the programme is carried out the basic rehabilitation process remains the same.

9.3.1 THERE ARE FOUR STEPS IN THE REHABILITATION PROCESS

a. Evaluation of the patient's needs.

b. The formulation of an appropriate rehabilitation goal and programme.

c. Discharge planning.

d. Follow-up care.

a. Evaluation of the patient's needs

According to Trethowan (1970), the first step in rehabilitation is to assess the patient's needs accurately. According to Mykyta (1978) and Jennett and Teasdale (1981), a thorough assessment of the patient that allows for comprehensive diagnoses must be undertaken on admission to the rehabilitation centre. Thereafter an individualised programme with specific goals must be developed. Bond (Symposium on head injuries, 1977) stresses that in order to develop successful strategies to rehabilitate head injured persons effectively, there must be careful evaluation of the patient's disability. Lewin (1970) suggests that the patient's needs be determined by a multidisciplinary team. A detailed evaluation of the total person, the medical status, disability, psychosocial circumstance, economic situation and attitude is necessary for a complete assessment (Hirschberg, et al., 1976). According to Evans (1981), to allow for settling in time and re-orientation comprehensive assessment of the patient must take place two to three weeks after the patient has joined the unit. Nichols (1975) adds that delays in making clinical and administrative decisions about a patient's management is a potent cause of morbidity and reduces the chance of an early return to work.

b. The formulation of an appropriate rehabilitation goal and programme to bring the patient to optimal functional ability

The setting of realistic goals, by a multidisciplinary team that includes the patient and family is essential to the success of the rehabilitation programme. Unrealistic expectations may impede acceptance and affect future plans (Jennett, et al., 1981). To achieve maximum co-operation and rehabilitation goal setting involves the setting of immediate, intermediate and long term goals (Hirschberg, et al., 1976). It is important to concentrate on the achievement of established goals, new goals must not be set until stated goals have been achieved.

According to Evans (1981), head injured patients do benefit from an intensive rehabilitation programme. The rehabilitation programme must be planned to meet the physical, psychosocial, emotional, spiritual, educational and vocational needs of the patient and

"...should be adapted to suit the person in his entirety in the environment in which he is living." (De Villiers, 1981: 848)

From the outset of the plan it is imperative to begin the process of restructuring the patient's life, helping the patient to adapt to new circumstances and to accept his new role (Jennett, 1979). The candidate for rehabilitation needs physical rehabilitation, psychological and emotional services (Hirschberg, et al., 1976; Prigatano, et al., 1984).

"The treatment modalities in the rehabilitation of the head injured patient may be beneficial, prophylactic, palliative, harmful or they may have no effect at all." (Bloch, Symposium on head injuries, 1977: n.s.)

The researcher agrees with this statement and believes that:

1. Knowledge about comprehensive care, including rehabilitation is a pre-requisite to effective rehabilitation.
2. Timing for rehabilitation is essential.
3. Poorly planned intervention may cause the patient to retrogress rather than progress as a result of feelings of inadequacy and frustration when faced with tasks for which he is ill-prepared or unable to manage.

The programme must be dynamic and motivating in itself (Hirschberg, et al., 1976). Within the patient's programme it is necessary to define treatment strategies explicitly.

Therapeutic intervention must be planned to maximise spontaneous recovery (Rose, n.d.). The rehabilitation programme must be designed to carry out several tasks simultaneously. Each task may require different techniques for accomplishment (Hirschberg, et al., 1976).

In order to be effective, certain basic principles must be included in planning the rehabilitation programme:

(i) Maintenance of vital functions.

(ii) Prevention of secondary disabilities.

According to Hirschberg, et al. (1976), planning for rehabilitation starts on admission, nurses in intensive care units are well trained in techniques of preventive rehabilitation. Jennett and Teasdale (1981) state that the prevention of complications in the first months of injury is imperative. According to Bloch (Symposium on head injuries, 1977: n.s.), the following principles were considered in the design of a rehabilitation model in Hamilton, Canada:

- The assessment of the patient, by a member of the rehabilitation team in the first week after injury to set up prophylactic protocols to prevent contractures, malnutrition, skin breakdown, respiratory and urinary tract infections, deep vein thrombosis and sensory deprivation.
- The speech therapist must see the patient as soon as he/she starts responding to sensory stimuli.
- The family must be seen early by the social worker for counselling, support and crisis intervention.

Thus, in the opinion of the researcher, by suggesting the above, quality assurance in preventive rehabilitation is commenced.

(iii) Ensuring effective stimulation and motivation of the patient to achieve maximum physical, psychosocial and emotional recovery.

According to Cross (1977), from the first day after the injury it is important to subject the patient to as much stimulation as is permitted. Doman, et al. (1964) add that recovery of the patient depends on stimulation and re-organisation of the brain.

The head injured patient must be placed in an environment of the greatest impingement not the least, in order to halt physical and intellectual deterioration (Doman, et al., 1964). The patient must be subjected to a specific training programme of motivation and stimulation, based on associative learning (Goldstein & Oakley, 1985).

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Name of thesis The Comprehensive care of the Moderate and Severely Head injured Patient 1987

PUBLISHER:
University of the Witwatersrand, Johannesburg
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