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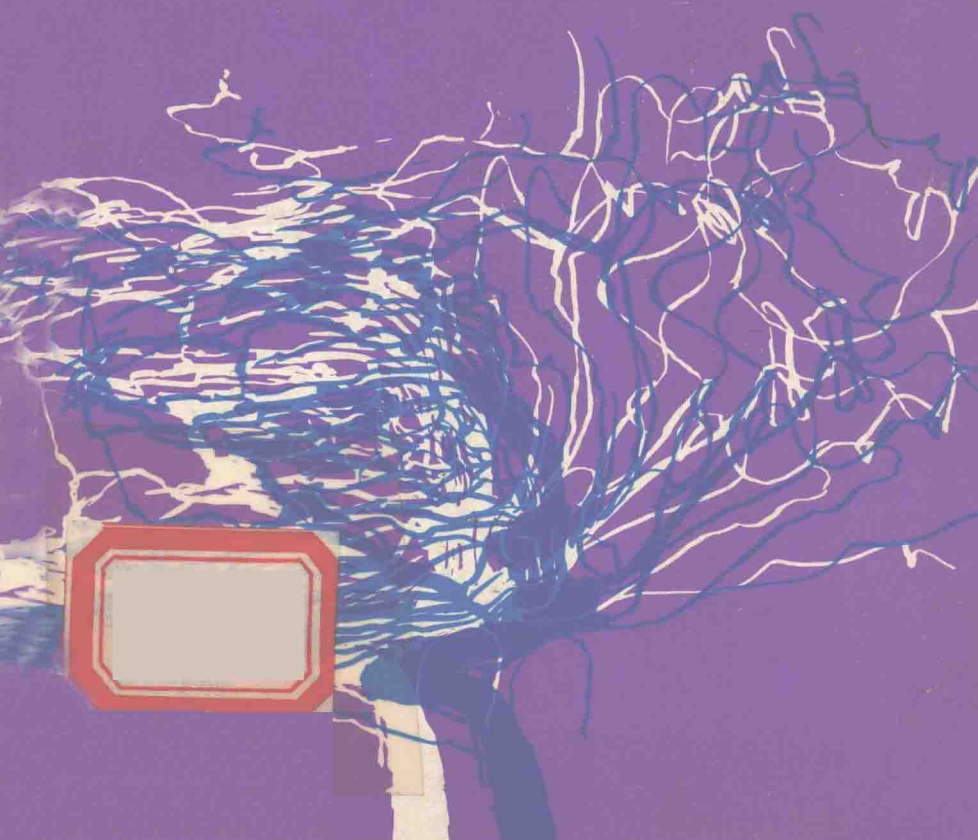
Spiral™
Manual

Nursing

Second Edition

Manual of Neurological Nursing

Nancy Swift-Bandini



Manual of Neurological Nursing

SECOND EDITION

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Second Edition

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*Dedicated to every nurse
who accepts the responsibility
of caring for neurological patients*

Foreword

Over the last 20 years, the field of neurological surgery has expanded significantly. The rapid development of neurosurgical centers around the country has created a pressing need for nurse specialists in this increasingly complex field. In order to understand the needs and plan for care of spinal, head-injured, and major intracranial surgery patients, general duty nurses must learn to comprehend and implement treatment rationales using modern surgical and monitoring techniques.

In *Manual of Neurological Nursing*, Nancy Swift-Bandini has provided an invaluable, up-to-date guide to this specialty for student and graduate nurses. This timely book is arranged for quick access so that immediate reference can be had to each neurological problem as it arises on the floor. It will frequently be used as a sourcebook, and should be required reading for all new personnel, nurses, students, and residents, who will be better guided in routine care through familiarity with this manual.

Ms. Swift-Bandini is very well prepared to write this text. Not simply a theoretician, she has worked in the field for a number of years and has managed major neurological units, including my own, with admirable skill and intelligence. Her other achievements include active participation in programs and scientific organizations related to specialty training in the field. Neurological nursing, a highly specialized profession, will be even further advanced by her efforts. I recommend the presence and daily use of this handbook in all neurological units.

JEWELL L. OSTERHOLM, M.D.

Preface

In the last decade neurological nursing has become a highly specialized and progressive field. The advent of sophisticated equipment and monitoring devices together with specialty programs to educate nurses has improved early diagnosis and affected therapy and overall outcome for many patients.

My interest in neurology and neurosurgery developed during many years of staff nursing on a busy neurosurgical unit. I remember being frustrated at knowing little about the neurological patient, but being expected to assess major changes in the patient's condition. My search for an appropriate text was futile; physician's texts were too complex for nurses lacking the basic sciences taught in medical school.

In pursuit of a wider background, I completed the one-year postgraduate course at the National Hospital for Nervous Diseases in London, England. Through my combined experience in the United States and abroad, I have written this book, relating the most commonly seen adult neurological disorders, relevance of clinical signs and symptoms, associated neuroanatomy and physiology, and subsequent nursing management.

It would be difficult to remember everyone in the fields of neurology and neurosurgery whose influence has made it possible for me to complete this book. The nurses with whom I have worked have provided the inspiration to write a manual of this type. Their dedication to patient care remains undiminished in spite of difficult physical work and, at times, unsatisfying results.

In the area of spinal cord injuries, I am indebted to Dr. Jewell Osterholm and Dr. John Alderman for their continued guidance. Their relentless effort in finding a cause for paralyzing spinal injuries deserves respect and offers hope for future treatment of one of the most devastating of all neurological conditions. I would like to thank Dr. Thomas Delgado for proofreading the manuscript and for providing valuable information on cerebral vascular disease. Dr. Marc Flitter contributed much information on diseases of the spine. My husband, Dr. Paul Bandini, spent many hours reviewing the manuscript; he has been kind, considerate, and understanding of the time I spent at the typewriter and has offered much criticism and support when necessary.

Finally, I would like to thank Julie Stillman of Little, Brown for her expertise, guidance, and, most of all, her friendship.

N. S.-B.

*Manual of
Neurological Nursing*

NOTICE

The indications and dosages of all drugs in this book have been recommended in the medical literature and conform to the practices of the general medical community. The medications described do not necessarily have specific approval by the Food and Drug Administration for use in the diseases and dosages for which they are recommended. The package insert for each drug should be consulted for use and dosage as approved by the FDA. Because standards for usage change, it is advisable to keep abreast of revised recommendations, particularly those concerning new drugs.

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1. Introduction to Neurological Nursing

Neurological nursing pertains to management of patients with diseases of the brain, spinal cord, and peripheral nerves. Advances in neurology and neurosurgery over the past 20 years have sparked more interest in the care of these patients among nurses; more and more specialists in this area of medicine rely heavily on adequate nursing care. Clinical research and newer and safer operative techniques, together with safer diagnostic studies, have improved the prognosis for many neurological patients.

Certain basic skills and areas of expertise must be learned in order to best care for the neurological patient. The professional nurse must acquire a thorough knowledge of many neurological diseases and problems and must correlate these with an objective observation of the patient.

Neurological nursing observation is an integral part of the patient's care. Accurate observation provides the nurse and the physician with a guide for intervention and interaction with the patient's needs. Prognosis is sometimes discouraging; complete recovery is not a realistic goal for some patients. For example, a patient who has undergone a craniotomy may do well for the first several days following surgery, appear stable, and then develop a host of complications such as cerebral edema, paralysis, or pulmonary complications. The nurse must be able to recognize and report significant changes. In evaluating a seizure patient, the nurse must be aware of the patient's seizure pattern and history and must be able to record seizures accurately by observation and by verbal communication with the patient.

The neurological nurse should formulate his or her own "nurse data base" relating to the care of neurological patients. Lines of communication with other health professionals such as physical therapists, speech therapists, and social service personnel must be established.

While it is probably true that more acute emergencies arise with neurosurgical patients, neurological patients also require special care and accurate observation and must be observed and cared for in a similar manner. The nature of many neurological diseases is insidious in onset, slowly progressive, and often chronic and debilitating. Neurosurgical emergencies include acute trauma to the head and spinal cord. Even routine procedures such as monitoring of vital signs can be essential in the evaluation of neurological disease.

2. Nursing Observation

Nursing observation of the patient, which should begin as soon as the patient is admitted, is an integral part of the patient's hospitalization. The following guidelines are primary areas of consideration in neurological observation.

THE PATIENT'S HISTORY

In neurology or neurosurgery, the history of the illness is often as important as the physical findings. Although the physician will work up a detailed history and physical examination of the patient, the nurse should discuss the onset of the disease with both the patient and his or her family. Because the patient may be a poor historian, owing to the nature of some neurological diseases, the family can be a tremendous asset in assisting the nurse with planning patient care. Patients and their families often feel more relaxed discussing problems with the nurse. In many cases, small details of the patient's illness not relayed previously to the physician may be elicited. The nurse should discuss with the patient and family the following considerations:

1. The patient's interpretation of the illness, time of onset, duration of symptoms. Have the symptoms become progressively worse? Are they intermittent? Does anyone in the family have similar symptoms?
2. Is the social history contributory? Does the patient drink alcoholic beverages heavily? Is the patient employed? Does he or she work around toxic fumes or substances?
3. Has there been any sleep disturbance? Does the patient wake at night or sleep during the day?
4. Has there been a personality change? Is the patient acting lethargic or aggressive? Is he or she confused or unable to maintain activities of daily living?
5. Is there incontinence? If there is incontinence, is it because of confusion or because of lack of sensation?
6. Discuss relevant physical findings such as headaches, speech disturbance, visual disturbance, abnormality of gait.
7. Discuss the patient's dietary needs. Are they being met? Determine if there has been weight loss during the course of the illness.
8. Is the patient presently taking any medications?

The nurse's history of the patient's condition will assist in formulating a nursing care plan even before the diagnosis is obtained, and relevant

factors in the patient's history should be recorded and reported to the physician. It is advisable that the nurse who initially admits the patient care for him on a daily basis, both for continuity of care and for further evaluation of the neurological status.

LEVEL OF CONSCIOUSNESS

The most important aspect of becoming a responsible neurological nurse is development of a keen sense of observation. It is crucial to state and record exactly what the patient's level of consciousness appears to be. This observation is essentially concerned with the *relationship of the patient to his surroundings*. Alterations in the level of consciousness are categorized as follows:

akinetic mutism Sleep state with no response to pain. At times the patient may open his eyes and appear to follow the nurse.

comatose No response to verbal or painful stimuli. Decerebrate or decorticate posturing may be seen (see section on coma).

confusion Lack of coherent thought.

delirium Lack of coherent thought with accompanying psychomotor overstimulation.

lethargy Drowsiness and inattention. Patient arousable to command.

semicomatose Patient arousable only to painful stimuli.

stupor Minimal activity. Patient difficult to arouse.

Although these terms are useful in helping the nurse to understand differences in the level of consciousness, recording of information is more useful when stating precisely what the patient's response appears to be. The patient's condition may waiver from one state of consciousness to another. Avoid stating that the condition is the "same" as it was at the previous observation. Do not rely on the next nurse to cross-reference and read the previous shift's notes. The nurse should record, for example:

Patient admitted to unit from emergency room. No spontaneous movement of extremities. No withdrawal to painful stimuli. Pupils equal and reactive to light. No verbal response to painful stimuli. Respirations 22/minute and shallow. Extremities appear flaccid.

Observations recorded in sentence form convey a wealth of information not found if the recording had stated: comatose.

The nurse should also determine a concept of the patient's level of consciousness and establish baseline data for the patient's response. Is he or she more or less alert than the last time you checked? A decrease in the level of consciousness is a warning that there is impending deterioration of the central nervous system. It is a reliable guide that the neurological condition has progressed, that there is an underlying complication or extension of the original problem. This is the *one phase* of neurological nursing observation that is the most significant.

ORIENTATION

Determine whether the patient is oriented and appropriate in his or her response. Orientation covers three specifics, which are, in order of importance: person, place, and time.

person Ask the patient his name. Does he open his eyes when his name is called? Does he reply? Is the response appropriate? Record the response.

place Does he know he is in the hospital? Is he aware of other persons in the room? Can he state his home address? Record your findings.

time Does he know if it is day or night? Ask him the approximate date and year.

After assessing the patient's response, clarify his statements by telling him the correct answers. Patients who have been unconscious for a period of time or who have been transferred between hospitals often lose track of where they are and what has happened to them. Ask the patient to remember what you tell him and use this information for a guide the next time you observe him.

MOTOR STRENGTH

Observe the patient's extremities. Does he move both arms and legs spontaneously? Is there flaccid paralysis? Is there rigidity? Does he move only one side of the body or only the arms? If the patient is awake, ask him to move his extremities on command. If he is not arousable, painful stimuli will often cause withdrawal or extension of extremities. Press on the nailbed to create a stimulus that is painful but not harmful to the patient. Record motor strength, withdrawal, or extension to painful stimuli and spontaneity of movement.

PUPILS

Pupillary response to light is an important nursing observation. You should note if the pupils are dilated or constricted, if they are equal in size, and if they react to light equally. Note if they are deviated to one side. Note especially if one or both pupils are fixed and dilated; this is indicative of brain stem damage. A pupil that does not react to light indicates a lesion of one or more reflex pathways.

The pupils should be tested with a flashlight. Normal pupils will constrict when light is shined into them. It should be remembered that the patient should not have a bright overhead light shining into his eyes as it will cause pupillary constriction before the nurse examines him. Record pupil size (pinpoint, widely dilated) and reaction to light (no reaction to light or constriction) on the nursing record.

Pupillary testing is most important when associated with decrease in the level of consciousness. The result of increased intracranial pressure that has remained undetected is *decrease* in the level of consciousness, followed by change in a constricted pupil, which rapidly becomes fixed and dilated. This dilated pupil is the result of pressure on the brain stem, called *herniation* (see section on increased intracranial pressure). Deterioration in the level of consciousness is an early sign of increased intracranial pressure and one for which there is treatment. Therefore, a fixed, dilated pupil noted in an alert and responsive patient *may not* be a neurological emergency. *Correlate* all your observations, rather than relying on one entity such as an unresponsive pupil.

BEHAVIOR

What is the patient doing? Stand at the bedside and observe face, extremities, and overall activity—or lack of it. Is the patient arousable only to painful stimuli? Is he agitated or constantly trying to get out of bed? Is he euphoric or lethargic? Is there a speech deficit? Record the patient's behavior exactly as you see it and compare the results each time neurological checking is carried out.

CEREBROSPINAL FLUID LEAKS

Observe for leakage of cerebrospinal fluid (CSF) from nose and ears. Stains on pillowcases should be saved for the physician. The patient must be instructed not to blow his nose if there is rhinorrhea (CSF

drainage from the nose). If there is continuity between the subarachnoid space and the nasopharynx, there may be increased pressure in the opposite direction. Bacteria can be sucked into the subarachnoid space, thus giving rise to infections such as meningitis.

A simple way to determine what is dripping from the nose is to use a glucose indicator, the device used for testing urine in diabetic patients. Spinal fluid will contain sugar whereas mucus will not. Another method is use of the "halo ring." Hold a 4- by 4-inch gauze pad under the dripping fluid. If the fluid is a mixture of blood and CSF, the two will separate on the pad, forming a red drop in the center, surrounded by a clear or serous ring which indicates the presence of CSF. If the nurse suspects a CSF leak, the physician should be notified. One of these tests may be carried out as soon as the CSF leak is suspected. Both tests are noninvasive and not harmful to the patient and they serve as useful guides for the physician.

POSITIONING

Neurological patients should not be nursed flat on their backs. Problems encountered in this position are lack of a proper airway, lack of provision for drainage of secretions, and increased susceptibility to respiratory infection and obstruction caused by poor oxygen exchange and by pooling of secretions. Some patients will need to be nursed *flat*, but they should still be turned from side to side every 1 to 2 hours.

AGITATION

Restlessness may be a sign of improvement or an indication of increased intracranial pressure in cases where the level of consciousness is deteriorating. Restlessness may be due to restraining, to headache, or to a full bowel or bladder. A patient should not be restrained unless his life is threatened by the possibility of his climbing out of bed or harming himself. Wrist and leg restraints are not advisable. A jacket is the most satisfactory type of restraining device because it allows freedom of the extremities.

PARENTERAL NUTRITION

Patients with neurological deficits may not retain the ability to consume adequate caloric intake and hydration. Hyperalimentation via