

# Technique of the Neurologic Examination

A PROGRAMMED TEXT

SECOND EDITION

William DeMyer

# Technique of The Neurologic Examination

*A Programmed Text*

Second Edition

**William DeMyer, M.D.**  
Professor of Neurology  
Indiana University School of Medicine  
Indianapolis

**McGRAW-HILL BOOK COMPANY**

A Blakiston Publication

**New York St. Louis San Francisco Düsseldorf Johannesburg  
Kuala Lumpur London Mexico Montreal New Delhi Panama  
Paris São Paulo Singapore Sydney Tokyo Toronto**

*. . . not for their elevated thoughts  
Will their books be searched through; but for  
Some casual sentence, which allows conclusions. . . .*

— BERTOLT BRECHT

**TECHNIQUE OF THE NEUROLOGIC EXAMINATION: A Programmed Text**

Copyright © 1969, 1974 by McGraw-Hill, Inc. All rights reserved.  
Printed in the United States of America. No part of this publication  
may be reproduced, stored in a retrieval system, or transmitted,  
in any form or by any means, electronic, mechanical, photocopy-  
ing, recording, or otherwise, without the prior written permission  
of the publisher.

\* 1234567890WHWH7987654

\* This book was set in Alphatype English with Futura Medium by  
\* University Graphics, Inc. The editor was Paul K. Schneider, and  
\* the production supervisor was Judi Frey.  
\* The Whitlock Press, Inc., was printer and binder.

**Library of Congress Cataloging in Publication Data**

DeMyer, William, date

Technique of the neurologic examination, a programmed  
text.

"A Blakiston publication."

Includes bibliographies.

1. Neurologic examination. I. Title.

DNLM: 1. Neurologic examination—Programmed texts.

WL18 D389t 1974

RC348.D44 1974 616.8'04'75 74-4098

ISBN 0-07-016351-0

## Preface to the Second Edition

Again I sit with you as a friend, guiding your eyes, hands, and mind through the neurologic examination. I have retained the programmed format because it does teach and because most students find it enjoyable. (An enjoyable neurologic examination? I wish I had the nerve or the presumptuousness to make that the title.) I have added a Summarized Neurological Examination at the beginning. It tells you just what the book attempts to teach you to do. I have added a synopsis of the neurologic investigation at the end. It tells you how to synthesize the individual clinical findings to formulate a provisional diagnosis.

If I have not made neurology easy, I have at least tried to eliminate the grunts and tears. I hope I free your mind to see the simplicity, order and, yes, the beauty in the neurologic examination. In essence it consists merely of a series of simple observations, inquiries, requests, and tests, all done according to prescribed rules of technique. Master it and apply it masterfully to the patients who come trustingly under your care. Give it your talents, your determination, and, if you be unafraid, your love.

WILLIAM DeMYER

## Preface to the First Edition

The purpose of this textbook is threefold: (1) to teach how to conduct a neurologic examination, (2) to review the anatomy and physiology for interpreting it, and (3) to show which laboratory tests help to clarify the clinical problem. This is not a differential diagnosis text nor a systematic description of diseases.

Anyone who sets out to write a textbook should place his manuscript on one knee and a student on the other. When the student squirms, sighs, or gives a wrong answer, the author has erred. He should correct it right then, before the ink dries. That is the way I have written this text, on the basis of feedback from the students.

The peril of student-on-the-knee teaching is that even though the student moves his lips, the words and voice remain the teacher's. To escape from ventriloquism, my text relies strongly on self-observation and induction. First, you learn to observe yourself, not as Narcissus, but as a sample of every man. Whenever possible you study living flesh, its look, its feel, and its responses. Why study a textbook picture to learn the range of ocular movements if you can hold up a hand mirror? Why memorize the laws of diplopia if you can do a simple experiment on yourself whenever you need to refresh your memory? In the best tradition of science, these techniques supplant the printed word as the source of knowledge. The text becomes a way of extending your own perceptions, of looking at the world through the eyes of experience.

Since programmed instruction is the best way for the learner himself to judge whether learning has taken place most of the text is programmed. He is not abandoned to guess whether he has learned something; the program makes him prove that he has learned. Programming, if abused or overdone, becomes incredibly dull, unmercifully slow. The reader is required to inspect a grain of sand at a time, yet he should have been shown the whole shoreline at a glance. Some programs err by bristling with objectivity, causing one to ask, "Isn't there a human being around here somewhere? Didn't someone think this, decide it, maybe even guess at it a little?" For interludes, I use quotations, anecdotes, and poetry. I even stoop to mnemonics. Sometimes I cajole, not pretending as it customary in textbooks, that the pages have been purified, relieved of an author. I am very much here, poking my head out of a paragraph now and then or peering at you through an asterisk. When I see that you are weary from filling in blanks, I offer some whimsy. When you overflow with something to say, I ask for an essay answer. Sometimes you are invited to anticipate the text, to match wits against the problem without the spoon. At all times as you practice the neurologic examination, I stand at your elbow, guiding your moves and

interpretations. You should be able to do a prideful neurologic examination when you finish the book. And lastly I include references. Only one reader in a hundred uses them? I am interested in him too, in his precious curiosity.

These then are the secrets: a lot of self-observation, a lot of programming, some irony and humor, a few editorials, and occasionally a summarizing paragraph, like this one. And as the leaven, lest they vanish from medical education, reminders of the bittersweet flowers of the mind, of tenderness, of understanding and compassion . . . like this stanza from Yeats, because it is perhaps all that should preface a text like this, into which I have poured the best teaching that I can offer, and yet the wish always exceeds the result, ah me, by far:

*Had I the heavens' embroidered cloths,  
Enwrought with gold and silver light,  
The blue and the dim and the dark cloths  
Of night and light and the half light,  
I would spread the cloths under your feet;  
But I, being poor, have only my dreams;  
I have spread my dreams under your feet,  
Tread softly because you tread on my dreams.*

To the many colleagues who have shared their knowledge with me over the years I am deeply grateful. I want especially to thank Dr. Alexander T. Ross, my own preceptor in clinical neurology, and many friends in the basic disciplines of neurology: Drs. Ralph Reitan, Charles Ferster, Sidney Ochs, Wolfgang Zeman, and Jans Muller. For their day-to-day help I thank my wife, Dr. Marian DeMyer, Dr. Mark Dyken, and the many medical students, interns, and residents who suffered through the stuttering phases of the programming. And then, Miss Irene Baird, who meticulously, maternally made the drawings, Mrs. Faith Halstead who typed and retyped the burgeoning manuscript; medical artist James Glore, and photographer Joseph Demma.

WILLIAM DeMYER

## Preparation for the Text

I assume that you have finished a year of medical school and have learned the basic concepts of neuroanatomy and neurophysiology (but I review some of them anyway). The text will teach you the vocabulary and intellectual and manual skills needed to do the neurologic examination. Your teachers, then freed from the necessity to transmit this kind of data by lectures, can use precious class hours solely for demonstrating patients who illustrate the material covered in the text. Then if you can go directly to the clinics and wards, you have the ideal situation for learning the neurologic examination.

Since the text requires you to inspect yourself and others, study in your own living quarters, preferably with a partner. You must have some basic examining equipment, which will be listed shortly, and some learning aids. As learning aids get colored pencils, a hand mirror, and a table tennis ball. Don't start until you have all of the items.

Do the text in order. Skipping around invites disaster since each learning sequence locks steps with the one before and presumes mastery of previous material. Allow approximately one hour for each nine pages of material you want to cover.

At the outset, I have found that students want most of all to know: just what is a neurologic examination? Thus I begin my text (and my classes) by outlining a standard complete neurologic examination. Of course you can't do the outline now—that's what the rest of text is for—but use it in two ways: (1) refer back to it each time you complete a text chapter, to fit what you have learned into the total examination and (2) take it with you to wards and clinics to guide you until you can do it alone.

## Abbreviations Used in this Text

<b>ACA</b>	Anterior cerebral artery	<b>MSR</b>	Muscle stretch reflex
<b>AComA</b>	Anterior communicating artery	<b>OFC</b>	Occipitofrontal circumference
<b>AICA</b>	Anterior inferior cerebellar artery	<b>PCA</b>	Posterior cerebral artery
<b>AP</b>	Anteroposterior	<b>PComA</b>	Posterior communicating artery
<b>ARAS</b>	Ascending reticular activating system	<b>PICA</b>	Posterior inferior cerebellar artery
<b>BE</b>	Branchial efferent	<b>R</b>	Right
<b>BP</b>	Blood pressure	<b>RBC</b>	Red blood cells
<b>C</b>	Cervical	<b>S</b>	Sacral
<b>CI</b>	Cephalic index	<b>SA</b>	Somatic afferent
<b>cm</b>	Centimeter	<b>SCA</b>	Superior cerebellar artery
<b>CNS</b>	Central nervous system	<b>SCM</b>	Sternocleidomastoid muscle
<b>cps</b>	Cycles per second	<b>SE</b>	Somatic efferent
<b>CSF</b>	Cerebrospinal fluid	<b>SSSS</b>	Solely Special Sensory Set (referring to cranial nerves I, II, and VIII)
<b>EEG</b>	Electroencephalogram	<b>SVA</b>	Special visceral afferent
<b>EMG</b>	Electromyogram	<b>T</b>	True
<b>F</b>	False	<b>TNR</b>	Tonic neck reflex
<b>IAA</b>	Internal auditory artery	<b>UMN</b>	Upper motor neuron
<b>ICA</b>	Internal carotid artery	<b>V</b>	Vertical
<b>L</b>	Lateral, left, or lumbar	<b>VA</b>	Visceral afferent
<b>LMN</b>	Lower motor neuron	<b>VE</b>	Visceral efferent
<b>MCA</b>	Middle cerebral artery	<b>WBC</b>	White blood cells
<b>MLF</b>	Medial longitudinal fasciculus		
<b>mm</b>	Millimeters		



# Summarized Neurological Examination

## I. Introduction

### A. *How the history guides the examination*

1. You can complete much of the neurological examination while you take the history. You appraise the patient's mental status and make several preliminary observations. Inspect his facial features for diagnostic abnormalities; watch his eye movements and eye blinking, and inspect the relation of limbus to lids and the palpebral fissures; look for en- or exophthalmos; note the degree and symmetry of facial movements; listen to his speech pattern, and observe how he swallows saliva; inspect his posture, and look for tremors and involuntary movements.
2. While you will, of course, do a basic routine examination on everyone, the history and preliminary observations tell you how to plan your examination and what areas to emphasize: either central or neuromuscular motor system; sensory system; cranial nerves; or cerebral functions. For example, if the history suggests a spinal cord problem, plan to do a detailed sensory examination of the perianal region for loss or preservation of sacral sensation. But if the history suggests a cerebral lesion, emphasize tests for astereognosis, aphasia, and inattention to simultaneous stimuli.
3. Finally, the history gives clues to or suggests special tests tailored to the particular patient's problems. During the examination, reproduce any conditions which the patient thinks may aggravate or precipitate his complaint. Some common examples are:
  - a. Dizziness when standing up: check for orthostatic hypotension.
  - b. Episodic complaints of numbness and tingling in extremities, black-out or fainting spells or suspected epilepsy: ask the patient to hyperventilate for a full three minutes.
  - c. Weakness in climbing stairs: watch the patient climb stairs.
  - d. Trouble swallowing: give the patient something to swallow.
  - e. Pathologic fatiguability, particularly of cranial nerve muscles: have patient make 100 repetitive movements and do edrophonium (Tensilon) test for myasthenia gravis.

### B. *How to remember to do a complete examination*

The formal examination must follow an orderly sequence. Neurologists may differ in the order they choose, but they will do essentially the same things. To remember how to follow the order I recommend, you must lay out your instruments in the order of use. As you finish with each one, re-

place it in your bag. When you have replaced every instrument or laid it aside, you will have done a complete examination, without forgetting anything. Here is the order of use for your instruments:

<i>Instruments</i>	<i>Use</i>
1. Flexible steel measuring tape scored in metric system	Measurement of occipitofrontal and other body circumference, size of skin lesions, length of extremities, etc.
2. Stethoscope	Auscultation of the neck vessels, eyes, and cranium for bruits.
3. Flashlight with rubber adaptor	Pupillary reflexes, inspection of pharynx, and transillumination of the head.
4. Transparent mm ruler	Measurement of pupillary size, diameter of skin lesions, distances on radiographic films.
5. Ophthalmoscope	Funduscopy, examination of ocular media and skin surface for beads of sweat.
6. Tongue blades	Three per patient: one for depressing tongue, one for eliciting gag reflex, one broken for eliciting abdominal and plantar reflexes.
7. Opaque vial of coffee	Testing sense of smell.
8. Opaque vials of salt and sugar	Testing taste.
9. Otoscope	Examination of auditory canal and drum.
10. Tuning fork	Testing vibratory sensation and hearing (256 cps recommended).
11. 10 cc syringe	Caloric irrigation of the ear.
12. Cotton wisp	One end rolled for eliciting corneal reflex, the other loose for testing light touch.
13. Two stoppered plastic tubes	Testing hot and cold discrimination.
14. Disposable straight pins	Testing pain sensation.
15. Reflex hammer	Eliciting muscle stretch reflexes.
16. Penny, nickle, dime, paper clip, and key	Testing stereognosis.
17. Page of figure-stimuli	Screening cerebral and intellectual functions.
18. Blood pressure cuff	Routine BP and orthostatic hypotension.

## **II. Mental Status Examination**

- A. *General behavior and appearance.* Is the patient normal, hyperactive, agitated, quiet, immobile? Is he neat, slovenly? Is he dressed in accordance with his peers, background, and sex?
- B. *Stream of talk.* Does he respond to conversation normally? Is his speech rapid, incessant, under great pressure? Is he very slow and difficult to draw into spontaneous talk. Is he discursive, able to reach the conversational goal?

- C. *Mood and affective responses.* Is the patient euphoric, agitated, inappropriately gay, giggling, or is he silent, weeping, angry? Does his mood swing in a direction appropriate to the subject matter of the conversation? Is he emotionally labile?
- D. *Content of thought.* Does the patient have illusions, hallucinations or delusions, and misinterpretations? Is he preoccupied with bodily complaints, fears of cancer or heart disease, or other phobias? Does he feel that society is maliciously organized to cause him difficulty?
- E. *Intellectual capacity.* Is he bright, average, dull, or obviously demented or mentally retarded?
- F. *Sensorium*
  - 1. Consciousness
  - 2. Attention span
  - 3. Orientation
  - 4. Memory, recent and remote, as disclosed during history taking
  - 5. Fund of information
  - 6. Insight, judgement, and planning
  - 7. Calculation

### III. Speech. Is it normal or does the patient display:

- A. *Dysphonia:* difficulty in producing the voice sound.
- B. *Dysarthria:* difficulty in articulating the individual sounds or the units (phonemes) of speech: f's, r's, g's, vowels, consonants, the labials (cranial nerve VII), gutturals (X), and linguals (XII).
- C. *Dysprosody:* difficulty with the stress of syllables, inflections, pitch of voice, and the rhythm of words.
- D. *Dysphasia:* difficulty in expressing or understanding words as the symbols of communication.

### IV. Head and face

- A. *Inspection*
  - 1. What general impression does the patient's face make? Any unusual features? Is it a diagnostic facial *gestalt*? Does it show normal motility and emotional expression?
  - 2. Inspect the eyes for ptosis, width of palpebral fissures, relation of iris to lids, pupillary size, and interorbital distance.
  - 3. Inspect contours of nose, mouth, chin, and ears.
  - 4. Inspect the hair of scalp, eyebrows, and beard.
  - 5. Inspect the head for abnormalities in shape and symmetry.
- B. *Palpate* the skull of a mature patient for lumps, depression or tenderness, and asymmetries and of an infant for fontanelles and sutures. Palpate the carotid and temporal arteries. Measure and record the occipitofrontal circumference in all infants.
- C. *Percuss* sinuses and mastoid processes for tenderness if the patient has headaches.
- D. *Auscultate* for bruits over the great vessels, eyes, temples, and mastoid processes.
- E. *Transilluminate* the sinuses if the patient has headaches. Attempt to transilluminate the skull of every young infant.

## V. Cranial nerves

### A. Optic group: II, III, IV, and VI.

1. Inspect width of palpebral fissures, relation of limbus to lid margins, interorbital distance, and en- or exophthalmos.
2. *Visual functions*: test acuity (central fields) by newsprint (each eye separately), and test peripheral fields by confrontation. Test for inattention to simultaneous stimuli if cerebral lesion suspected.
3. Test pupillary light reflexes, and record size of pupils.
4. Do ophthalmoscopy.
5. *Ocular motility*: test range of ocular movements by having patient's eyes follow your finger through all fields of gaze. During convergence check for miosis. Record nystagmus and any effects of eye movements on it.

### B. Branchiomotor group and tongue: V, VII, IX-X, XII, and XI.

1. V: inspect masseter and temporalis muscle bulk, and palpate masseter when the patient bites.
2. VII: forehead wrinkling, eyelid closure, mouth retraction, whistle, or puff out cheeks, wrinkle skin over neck (platysma), and labial articulation. Check for Chvostek's sign in selected cases.
3. IX-X: phonation, nasality of articulation, swallowing, gag reflex, palatal elevation.
4. XII: lingual articulations, midline and lateral tongue protrusion, inspect for atrophy, and fasciculations.
5. XI: inspect sternocleidomastoid and trapezius contours, and test strength of head movements and shoulder shrugging.
6. Test for pathologic fatigability by requesting 100 repetitive movements (eye blink, etc) if the history raises this question. Consider edrophonium C1 (Tensilon) test.

### C. Special sensory group:

1. *Olfaction (I)*: use aromatic, nonirritating substance and test each nostril separately.
2. *Taste (VII)*: use salt or sugar.
3. *Hearing (VIII)*:
  - a. Do otoscopy.
  - b. *Threshold and acuity*: adequacy of hearing for conversational speech, ability to hear tuning fork, watch tick or rustling of fingers.
  - c. If history or preceding tests suggest a deficit, do air-bone conduction test of Rinné and vertex lateralizing test.
  - d. If the history suggests a cerebral lesion, test for auditory inattention to bilateral simultaneous stimuli, using finger rustling.
  - e. In infant or uncooperative patient, use auditopalpebral reflex as crude screening test.
4. *Vestibular function (VIII)*: do caloric irrigation in selected patients, and test for positional nystagmus.

### D. Somatic sensation of the face (Testing trigeminal area sensation now obviates a return to the face after examining the patient's anogenital area and feet.)

1. Corneal reflex (V-VII arc).
2. Light touch over the three divisions of the Vth nerve.

3. Pain perception over the three divisions of the Vth nerve.
4. Temperature discrimination.
5. Buccal mucosa sensation is tested in selected cases.

## VI. Somatic motor system (exclusive of cranial nerves)

### A. Inspection:

1. Initial appraisal of the motor system occurs when you take the history. Inspect the patient for his postures, general activity level, tremors, and involuntary movements.
2. Undress the patient and ponder his somatotype (his build or body *gestalt*).
3. Search his entire skin surface for lesions, particularly neurocutaneous stigmata such as *café au lait* spots.
4. Observe the size and contour of his muscles looking for atrophy, hypertrophy, body asymmetry, joint malalignments, fasciculations, tremors, and involuntary movements.
5. *Gait testing*: free walking, toe and heel walking, tandem walking, deep-knee bend. If a child, have him hop on each foot and run.

B. *Palpation*: palpate muscles if they seem atrophic, hypertrophic, or if the history suggests that they may be tender or in spasm.

### C. Strength testing:

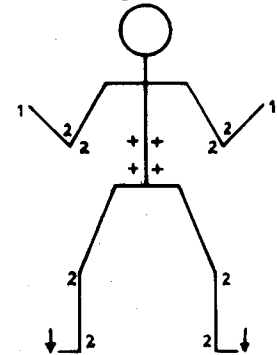
1. *Shoulder girdle*: try to press the patient's arms down after he abducts them to shoulder height. Look for scapular winging.
2. *Upper extremities*: test biceps, triceps, wrist dorsiflexors, and grip. Test strength of finger abduction and extension.
3. *Abdominal muscles*: have patient do a situp. Watch for umbilic migration.
4. *Lower extremities*: test hip flexors, abductors and adductors, knee flexors, foot dorsiflexors, invertors, and evertors. (Knee extensors were tested by the deep-knee bend.)
5. Discern whether any weakness follows a distributional pattern such as proximal-distal, right-left, or upper extremity-lower extremity. Grade strength on a scale of 0 to 5 or describe as paralysis, severe, moderate or minimal weakness, or normal.

D. *Percussion*: percuss the thenar eminence for percussion myotonia and test for myotonic grip if patient has generalized muscular weakness.

E. *Muscle tone*: make passive movements of joints to test for spasticity, clonus, or rigidity.

F. *Muscle stretch (deep) reflexes* (Grade 0 to 4+ and designate whether clonic):

1. Jaw jerk (V afferent, V efferent).
2. Biceps reflex (C5-6).
3. Triceps reflex (C7-8).
4. Finger flexion reflex (C7-T1).
5. Quadriceps reflex (L2-4).
6. Hamstrings reflex (L5-S1-2).
7. Triceps surae reflex or ankle jerk (L5-S1-3).
8. Toe flexion reflex (S1-2).



**G. Skin-muscle (superficial) reflexes:**

1. Abdominal skin-muscle reflexes (upper quadrants T 8-9); lower quadrants, (T11-12). Do umbilical migration test (Beevor's sign) in selected cases if a thoracic cord lesion is suspected.
2. Cremasteric reflex (afferent L1—efferent L2).
3. Test anal pucker (S4-5) and bulbocavernosus reflexes in patients suspected of sacral or cauda equina lesions.
4. Extensor toe sign or Babinski sign (afferent S1—efferent L5-S1-2).

**H. Cerebellar system:** (gait tested previously).

1. Finger-to-nose, rebound, alternating movements.
2. Heel-to-knee.

**I. Nerve root stretching tests:** done in selected cases:

1. If meningitis is suspected test for nuchal rigidity and concomitant leg flexion (Brudzinski's sign) and do leg raising tests.
2. If disc or low-back disease is suspected, do leg raising tests: straight-knee leg raising test (Laseague's sign) and bent-knee leg raising test (Kernig's sign).

**VII. Somatic sensory system:**

**A. Superficial sensory modalities:** (include trigeminal area if not previously tested).

1. Light touch over hands, trunk, and feet.
2. Pain perception over hands, trunk, and feet.
3. Temperature discrimination.

**B. Deep sensory modalities:**

1. Vibration perception at knuckles, finger nails, and malleoli of ankles.
2. Position sense of fingers and toes (4th digits).
3. Romberg (swaying) test.
4. Stereognosis.

**C. Determine the distributional pattern of any sensory loss:** dermatomal, peripheral nerve(s), central pathway, or nonorganic.

**D. Summary of dermatomal relations:** Trigeminal nerve to interaural line and abuts on C2 (no C1). C3-4 over "cape" area of shoulders, 5-6-7-8-1 are pulled out on arms, C4 abuts on T2, T4 is nipple level, T10 is umbilical level, L5 to big toe, S1 to small toe, S4 and 5 supply perianal zone.

**VIII. Cerebral functions:**

**A.** When the history or antecedent examination suggests a cerebral lesion, test for agrapagnosia, finger agnosia, poor two-point discrimination, right-left disorientation, atopagnosia, and tactile, auditory, and visual inattention to bilateral simultaneous stimuli. Test for tactile inattention to simultaneous ipsilateral stimulation of face-hand and foot-hand.

**B.** Have the patient do the cognitive, constructional, and performance tasks of the Halstead-Reitan cerebral function screening test. See the tables on pages xxi and xxiii and refer to text pages 340-342 for additional instructions.

**IX. Case Summary:**

**A.** Write a three-line summary of the pertinent positive and negative historical and physical findings. (If you can't put it in three lines, you don't understand the problem).

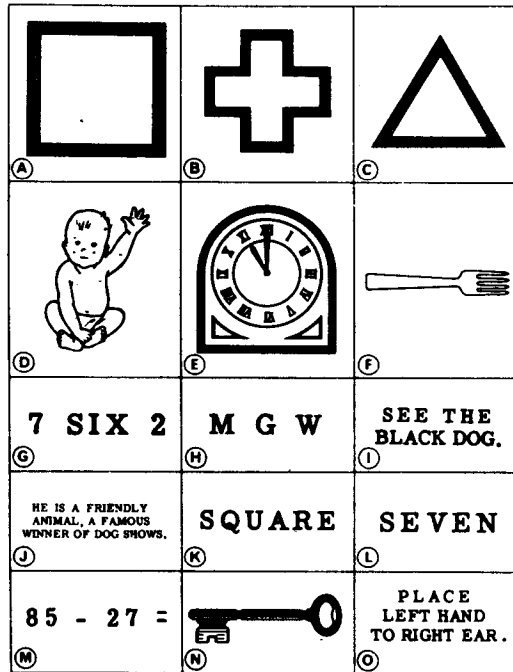
**B.** Write down a provisional clinical diagnosis and outline the differential diagnosis.

**Table: Halstead-Reitan Cerebral Function Screening Test.**

Patient's Task	Examiner's Instructions To the Patient
1. Copy SQUARE (A).	FIRST, DRAW THIS ON YOUR PAPER. (Point to Square, item A). I WANT YOU TO DO IT WITHOUT LIFTING YOUR PENCIL FROM THE PAPER. MAKE IT ABOUT THIS SAME SIZE.
2. Name SQUARE	WHAT IS THAT SHAPE CALLED?
3. Spell SQUARE	WOULD YOU SPELL THAT WORD FOR ME?
4. Copy CROSS (B)	DRAW THIS ON YOUR PAPER. GO AROUND THE OUTSIDE LIKE THIS UNTIL YOU GET BACK TO WHERE YOU STARTED. MAKE IT ABOUT THIS SAME SIZE.
5. Name CROSS	WHAT IS THAT SHAPE CALLED?
6. Spell CROSS	WOULD YOU SPELL THAT WORD FOR ME?
7. Copy TRIANGLE (C)	Similar to 1 and 4 above
8. Name TRIANGLE	WHAT IS THAT SHAPE CALLED?
9. Spell TRIANGLE	WOULD YOU SPELL THAT WORD FOR ME?
10. Name BABY (D)	WHAT IS THIS? (Show baby, item D).
11. Write CLOCK (E)	NOW, I AM GOING TO SHOW YOU ANOTHER PICTURE BUT DO NOT TELL ME THE NAME OF IT. I DON'T WANT YOU TO SAY ANYTHING OUT LOUD. JUST WRITE THE NAME OF THE PICTURE ON YOUR PAPER. (Show clock, item E).
12. Name FORK (F)	WHAT IS THIS? (Show fork, item F).
13. Read 7 SIX 2 (G)	I WANT YOU TO READ THIS. (Show item G).
14. Read M G W (H)	READ THIS. (Show item H).
15. Reading I (I)	NOW, I WANT YOU TO READ THIS. (Show item I).
16. Reading II (J)	CAN YOU READ THIS? (Show item J).
17. Repeat TRIANGLE	NOW, I AM GOING TO SAY SOME WORDS. I WANT YOU TO LISTEN CAREFULLY AND SAY THEM AFTER ME AS CAREFULLY AS YOU CAN. SAY THIS WORD: TRIANGLE.

Patient's Task	Examiner's Instructions To the Patient
18. Repeat MASSACHUSETTS	THE NEXT ONE IS A LITTLE HARDER BUT DO YOUR BEST. SAY THIS WORD: MASSACHUSETTS.
19. Repeat METHODIST EPISCOPAL	NOW REPEAT THIS ONE: METHODIST EPISCOPAL.
20. Write SQUARE (K)	DON'T SAY THIS WORD OUT LOUD. JUST WRITE IT ON YOUR PAPER. (Point to stimulus word "square," item K).
21. Read SEVEN (L)	CAN YOU READ THIS WORD OUT LOUD. (Show item L.)
22. Repeat SEVEN	NOW, I WANT YOU TO SAY THIS AFTER ME: SEVEN.
23. Repeat-explain. HE SHOUTED THE WARNING	I AM GOING TO SAY SOMETHING THAT I WANT YOU TO SAY AFTER ME. SO LISTEN CAREFULLY: HE SHOUTED THE WARNING. NOW YOU SAY IT. WOULD YOU EXPLAIN WHAT THAT MEANS?
24. Write: HE SHOUTED THE WARNING	NOW, I WANT YOU TO WRITE THAT SENTENCE ON THE PAPER.
25. Compute $85 - 27 =$ (M)	HERE IS AN ARITHMETIC PROBLEM. COPY IT DOWN ON YOUR PAPER ANY WAY YOU LIKE AND TRY TO WORK IT OUT. (Show item M).
26. Compute $17 \times 3 =$	NOW, DO THIS ONE IN YOUR HEAD: $17 \times 3$
27. Name KEY (N)	WHAT IS THIS: (Show item N).
28. Demonstrate use of KEY (N)	IF YOU HAD ONE OF THESE IN YOUR HAND, SHOW ME HOW YOU WOULD USE IT. (Show item N).
29. Draw KEY (N)	NOW, I WANT YOU TO DRAW A PICTURE THAT LOOKS JUST LIKE THIS. TRY TO MAKE YOUR KEY LOOK ENOUGH LIKE THIS ONE SO THAT I WOULD KNOW IT WAS THE SAME KEY FROM YOUR DRAWING. (Point to key, item N.)
30. Read (O)	WOULD YOU READ THIS? (Show item O).
31. Place LEFT HAND TO RIGHT EAR	NOW, WOULD YOU DO WHAT IT SAID?
32. Place LEFT HAND TO LEFT ELBOW	NOW, I WANT YOU TO PUT YOUR LEFT HAND TO YOUR LEFT ELBOW.





Stimulus figures for testing cerebral functions. This test is the Halstead-Wepman screening test as modified by Dr. Ralph Reitan and currently used in the Neuropsychology Laboratory at Indiana University and many other testing centers.

C. Write down a sequential plan of management for:

1. Diagnostic tests to discriminate between the diagnostic possibilities.
2. Therapy: state the therapeutic goals.
3. Management of the emotional, educational, and socioeconomic problems which the illness causes the patient.
4. Identification of and prophylaxis for other persons now known to be "at risk" because of the patient's illness, if his illness is infectious, genetic, or environmentally induced.