RANCHO LOS AMIGOS HOSPITAL

PHYSICAL THERAPY DEPARTMENT

DEPARTMENT POLICY AND PROCEDURE MANUAL DATE: December 13,1967

PROCEDURE FOR HEMIPLEGIA EVALUATION

NOTE: IF PATIENT HAS BILATERAL INVOLVEMENT, TEST PATTERNS, SENSATION, SPASTICITY, RANGE OF MOTION, AND SELECTIVE STRENGTH BILATERALLY.

I . SELECTIVE STRENGTH, RANGE OF MOTION, AND SPASTICITY

A. Selective Strength

1. Use Standard manual muscle test procedure and grading key with the following exceptions:
   a. Scapula
      (1) Test patient for scapular abduction and upward rotation (serratus anterior) if he has selective shoulder flexion.
         (a) Position - sitting (sidelying if unable to sit).
            Instruction - raise arm (shoulder flexion).
               1) Support the arm if shoulder flexion is weak; observe and palpate for serratus anterior; give resistance to scapula.
               2) For grades Fair and above, resist shoulder above elbow or at wrist (depending upon strength of total extremity); base grade on “break” of glenohumeral joint or scapulo - thoracic joint.
      (2) Test patient for scapular adduction and downward rotation.
         (a) Position - prone (sidelying or sitting if unable to prone). Ask patient to adduct and internally rotate the shoulder and attempt to place his hand near the area of the lumber spine.
         (b) Resistance is given at elbow and wrist in direction of abduction. Patient need not complete total range of motion if pain or range prohibits.
   b. Evaluate hip abduction and adduction for grades of Poor and below with the entire lower extremity over the edge of mat to rule out hip flexion and to more carefully observe knee motion.
2. Test and record the uninvolved side of the trunk, hip extension and abduction and knee extension. If strength of the uninvolved side is Fair or below, test and record the entire extremity.

B. Range of Motion

1. Use standard testing procedure except:
   a. Measure glenohumeral flexion; stabilize the upper border of the scapula.
   b. Evaluate dorsiflexion range supine with only slight pressure and weight bearing if the patient is able to stand. Measure shoulder rotation with elbow flexion and upper arm by side.
   c. Measure hip rotation with hip extension.
2. Evaluate hip flexion bilaterally.
3. Briefly describe range of fingers and thumb.
   Example: Normal
   Example: Lacks 10° M.P. flexion, 30° I.P. flexion.
4. Describe in COMMENTS if resting posture is appreciably different from available range.

C. Spasticity

1. Record sev. (severe), mod. (moderate), sl. (slight), or 0 in each space based on:
   a. The presence of resistance to passive motion elicited by a quick stretch, and its effect on function.
   b. Grading key:
      (1) Severe - prevents function.
      (2) Moderate - interferes with function.
      (3) Slight - dose not interfere with function.
      (4) Zero - none

Ⅱ.REFLEX PATTERNS

A. Upper Extremity

1. First determine if the patient has selective motion in his upper extremity by putting his arm in a gravity - eliminated position and testing for motion outside of the pattern.
   For example: In the supine position, ask patient to abduct his shoulder with his elbow extended. If patient demonstrates selective motion, record strength under selective motion. If motion occurs at only one joint and it cannot be determined whether the patient has the beginning of mass patterns or selective motion, record as “beginning motion” in COMMENTS.

2. Flexion Pattern (Scapular upward rotation and abduction, shoulder abduction or extension, external rotation, elbow flexion, and forearm supination.)
   a. Starting Position : Sit with elbow extended at side of trunk.
   b. Instruction: Ask patient to lift his arm as high as he can. (Do not support arm.)
   c. If he uses a mass flexion pattern, evaluate his strength with the following key:
      Shoulder Abduction: Zero - - no mass pattern muscle contraction
      Weak - - active motion to 30° range.
      Moderate - - active motion between 30 to 60° range
      Strong - - active motion of 60°or more range
      Elbow: Zero - - no mass pattern muscle contraction.
      Weak - - active motion to 60° range.
      Moderate - - active motion between to 60 to 100°range.
      Strong - - active motion between 100 to 140°range.
      Forearm: Record forearm motion.
      Grasp and Release: Indicate if patient has gross voluntary grasp and active release.

3. Extension Pattern (Scapular adduction and downward rotation, shoulder adduction, internal rotation, elbow extension, and forearm pronation.)
   a. In the sitting position, elevate and support the patient's arm in abduction and neutral rotation. Ask him to straighten his elbow and see if he goes into an extension pattern. If he uses a mass extension pattern, evaluate his strength with the following key:
      (1) Starting position: Place patient's arm at end of passive pain - free range in shoulder abduction, external rotation, and elbow flexion. (Patient may not be able to initiate extension pattern at the end of his range. If not, use as starting position, point in range of motion where pattern motion can be initiated)
      (2) Instruction: Ask patient to straighten his elbow, supporting arm if necessary.
      (3) Scapula: Record scapular motions.
      (4) Shoulder: Zero - - No mass pattern muscle contraction.
      Weak - - Muscle contraction of shoulder adductors and internal rotators. May move through partial range.
      Moderate - - Moves arm through full range but takes no resistance.
      Strong - - Takes resistance at end of range.

(5) Elbow: Zero - - No mass pattern muscle contraction.
Weak - - Muscle contraction of triceps.
Moderate - - Moves forearm through partial or full range, but does not take resistance.
Strong - - Takes resistance at end of range.

(6) Forearm: Record forearm motion.

B. Lower Extremity

1. First determine if the patient has selective motion. Position him sidelying and test for motion of all joints out of a pattern, i.e., with knee flexed, ask him to extend his hip. Observe any knee extension or ankle plantar flexion motion. Another example would be to ask the patient to flex his hip with his knee extended. Observe any knee flexion (within his hamstring range) or ankle dorsiflexion motion. In all motions performed, watch for his rotation and abduction and adduction components of patterns.

   To test selectivity of hip abduction and adduction, position patient supine with both legs and hips over the edge of the mat to rule out (full out?) hip flexion and to more carefully observe knee motion.

2. Determine if the patient has mass patterns in the lower extremity in the supine or sidelying position. If pattern movement is present, record a check (✓) mark; if absent, record (0) in column headed Rec. (recumbent).

3. Grade lower extremity pattern strength in the standing position. Use the following key:

   a. Extension Pattern (hip extension, knee extension, ankle plantar flexion and inversion).

      (1) Position: Have patient stand with feet parallel and ask him to lift uninvolved leg. Allow use of the good upper extremity for balance only. (Observe amount of support on hand)

      (2) Instruction: "Stand as straight as you can."

      Hip: Zero - - No palpable muscle contraction.
      Weak - - Trunk flexes at hips. Pelvis drops on opposite side.
      Moderate - - No forward trunk flexion. Pelvis drops slightly on opposite side.
      Strong - - Trunk remains erect. Pelvis dose not drop or rotate.

Knee: Zero - - No muscle contraction.

Weak - - Can palpate or see quads contract, but patient is unable to extend to 0 or available range. Cannot support body weight on involved leg.

Moderate - - supports body weight with knee extended to 0^0 or available range and takes minimal or manual resistance from 0^0. Resistance should be given from 0^0 extension and applied posteriorly just below the knee.

Strong - - Supports body weight with knee extended to 0^0 or available range, and takes maximum manual resistance from 0^0. Resistance should be given from 0^0 extension and applied posteriorly just below the knee.

If hip and/or knee strength are inadequate, provide manual stabilization.

Ankle: Zero - - No palpable muscle contraction.

Weak - - Palpable contraction, but ankle assumes dorsiflexed position.

Moderate - - Adequate power to maintain ankle in neutral(functional).

Strong - - Such a forceful contraction that to get the body weight forward, the ankle is in plantar flexion, the knee is locked or in hyperextension, and the trunk is flexed at the hip.

b. Flexion Pattern (hip flexion, knee flexion, ankle dorsiflexion and inversion).

(1) Position: Have patient stand with feet parallel and ask him to lift involved leg using good arm for balance only.

(2) Instruction: Tell patient to lift his affected leg as high as he can. (Base your grades on the patient's most consistent performance.)

Hip: Zero - - No active hip flexion power.

Weak - - Hip flexes to 30° or less.

Moderate - - Hip flexes between 30 - 60°.

Strong - - Hip flexes to 60° or more.

Knee: (Hamstrings contract)

Zero - - No palpable contraction.

Weak - - From palpable contraction to 60°flexion.

Moderate - - Knee flexes to 60 - 90°.

Strong - - Knee flexes to an acute angle.

Ankle: Zero - - No palpable contraction.

Weak - - Palpable contraction through part of available range.

Moderate - - Ankle dorsiflexes through available range.

Strong - - Ankle dorsiflexes through available range and takes resistance.

Ⅲ. SENSORY EVALUATION

Grading key: Severe Involvement - sev.
Slight Involvement - sl.
No Involvement - N

A. Proprioception in the Upper Extremity in the Sitting Position

1. Ask patient to close his eyes.
2. Move his affected extremity to any normal pain free position, and ask him to copy the position with his good extremity.
3. If patient cannot follow the directions for this test, try an alternate method of placing the affected joints in certain positions, and asking the patient to indicate to you whether the arm is up or down.

4. Grading Key:

a. Severe Involvement (sev.) - Unable to identify the body part being moved and/or in what position it is being placed.

b. Slight Involvement (sl.) - Able to identify the body part being moved and in what position it is being placed. Patient's responses are slower than on uninvolved side or patient may be consistent in a few responses, but correct majority of time.

c. No Involvement(N) - Normal.

B. Tactile: Pin prick(pain)and light touch.

1. Severe Involvement (sev.) - No response to either stimulus or responds to stimulus of pin, but cannot distinguish pin from light touch.

2. Slight Involvement (sl.) - Inconsistently able to distinguish pin prick from light touch. Responses may be slower than those on uninvolved side. May be able to distinguish pin from light touch consistently, may feel "different" from those on uninvolved side.
3. No Involvement(N) - Normal

C. Two - point Discrimination. Use this test if the patient can distinguish light touch from pin prick and his proprioception deficit is no greater than Slight, and record results in COMMENTS.
1. Hand - Test palmar and dorsal surfaces, concentrating on finger tips , thumb tip, and thenar eminence.
2. Determine two - point discrimination of corresponding uninvolved part to use as a basis for comparison.
3. Grading Key:
   a. Severe Involvement (sev.) - Unable to discriminate between one or two points of stylus.
   b. Slight Involvement (sl.) - Able to correctly discriminate between one or two points of stylus majority of times and/or responses may be slower than on the uninvolved side.
   c. No Involvement(N) - Normal.

D. Proprioception During Gait.
1. Examples of Severe Involvement (sev.)
   a. Patient is unaware of the position of his affected leg during standing or walking.
   b. "Wandering foot" - ankle inverts and everts during swing.
   c. "Knee wobbles" between extension and flexion as it searches for a secure position.
   d. Patient attempts to compensate for lack of proprioception by making a loud sound with his foot or causing a jarring motion of the leg at weight acceptance.
2. Slight Involvement (sl.) - Same as Severe Involvement except patient compensates for poor proprioception. Examples:
   a. Patient has to watch affected leg to walk.
   b. Locks knee in hyperextension to compensate for poor proprioception at the knee.

E. Body Image is the "awareness" of the affected side of the body.

1. Severe Involvement (sev.)

a. When patient transfers, he leaves arm in sling and affected foot on foot pedal.

b. He lets affected foot drag on floor while pushing wheelchair.

c. When standing, patient puts weight on affected leg even though it is too weak to hold his weight: falls to affected side.

d. Patient is unable to see the need to compensate for his weak side and, therefore, has poor balance.

e. Continues to walk even though his foot is behind him.

f. Leaves hand in spokes of wheelchair.

2. Slight Involvement (sl.) - May have some of the same problems as the patient who has Severe involvement, but he can correct the problems temporarily with instruction.

3. No Involvement (N) - Normal.

F. Visual Field

1. Test each eye separately for lateral and medial fields.

a. Cover one of patient's eyes.

b. Examiner closes or covers his opposite eye and asks patient to fix his gaze on examiner's open eye.

c. Place finger, pen, or pencil at extreme of peripheral field and slowly bring toward midline; ask patient to indicate when he first sees object.

(Alternate Method)

a. Stand directly in front of patient. Instruct patient to look directly at your nose.

b. Place fingers, pens, or pencils at extremes of both peripheral fields and slowly bring to midline. Ask patient to indicate when he first sees objects.

2. Grading Key;

a. Severe Involvement (sev.) - Loss of 1/2 or more of visual field.

b. Slight Involvement (sl.) - Less than 1/2 visual field deficit.

c. No Involvement (N) - Normal.

Ⅳ. RESPIRATORY

A. Evaluate breathing pattern based on normal of 2 diaphragm, 2 chest: acceptable abbreviations: diaphragm - diaph., abdominals - abdom.

B. Record chest expansion (maximum inspiration and maximum expiration). in inches, measured at xyphoid process.

C. Order vital capacity on admission and discharge if patient can cooperate. Record V.C. in cc. and percent of normal.

Ⅴ. UPRIGHT MOTOR CONTROL

A. Evaluate patient's gait without shoes or braces.

B. Write in equipment used, such as quad cane, parallel bars, etc

C. Forward progression includes heel strike through push - off, referring to that part of gait previously called stance. Forward Swing and Leg Length Adjustment refer to swing phase.

D. From analysis of the patient's upright motor control, check the applicable items. Select his major problems from the deviation checked. Circle the check mark in RED.

Ⅵ. BRACE DESCRIPTION

Indicate with a check (✓) the description of the patient's brace.

Ⅶ. FUNCTIONAL ABILITY

A. Key:

1. Independent - A patient is independent in an activity when he does the following:
   a. Performs the activity safely alone.
   b. Feels secure alone.
   c. Initiates the activity.
   d. Activity is accomplished in a practical amount of time.
2. Supervised - A patient is supervised when he requires verbal assistance because of:
   a. Inability to remember the steps necessary for the activity.
   b. Poor judgement.
   c. He feels insecure to perform the activity alone.
   d. He does not initiate the activity.

3. Assisted - A patient is assisted when, with the physical help of one person, he is able to perform the activity without danger to himself or to the person assisting him.

4. Unable - A patient is unable in an activity when he requires the help of more than one person to perform the activity, or when that activity is impractical for him to attempt to perform.

B. Activities

1. Sits up and maintains balance without support.
2. Transfers - include approach and proper position to begin transfer.
3. Stands and maintains balance - with support of hand on cane, etc.

Ⅷ. SAMMARY

A. From your evaluation, make a judgment of degree of involvement of strength, range of motion, spasticity, and sensation of total extremity in relation to how they affect function.

B. Bulbar

1. Grading Key:

   Severe - Fed by tube or gastrostomy. Unable to produce sound.

   Moderate - Eats soft or ground diet and/or has difficulty swallowing liquids. Poor laryngeal control.

   Slight - Drooling or saliva. Facial weakness.

   Normal.

2. Bulbar test is indicated for patients with moderate to severe involvement.

C. Behavior

1. Understands Instructions
   a. Grading Key:

      Unable - Unable to follow verbal or demonstrated instructions.

      Demonstrated - Able to follow demonstrated instructions.

      Verbal - Able to follow concrete verbal instructions.

      Series - Able to follow series of verbal instructions.

2. Response to Treatment

a. Grading Key:

None - No active participation in any part of program.

Poor - Occasional active participation usually under protest; needs escort to treatment area.

Fair - Routine active participation in program; occasional protest.

Good - Eager for treatment; follows through with activities of daily living

D. From your evaluation, decide what type of a treatment program the patient should be on:

1. Slow program - nursing rehabilitation.
2. Moderate program - highly structured program with limited stimulation.
3. Active program - all indicated treatment within patient's tolerance.
4. No program - patient independent and needs only minimal instruction in activities of daily living in home and/or ordering of equipment.

IX. MISCELLANEOUS

A. Hand Dominance - Circle left or right.

B. Record N.A. (not applicable) for items you are unable to test because of medical problems, cognition deficit, etc.

DIRECTOR, PHYSICAL THERAPY

MI : JM : hg