

D-00-07-30172

Back and Neck Surgery - Post-op Assessments and Laminectomy Checks

Related Protocols/Procedures:

- P-1 Post-operative Assessment and Management on the Unit

1. PURPOSE

1. To outline the specific patient assessment required following spinal column surgery (e.g. laminectomy, discectomy, spinal fusion, cervical surgery).
Note: The following procedure outlines the most common areas of surgery. If other areas are involved, consult the physician for specifics of assessment.
2. To enable recognition and communication of complications or problems so that early intervention may be instituted.

2. LEVEL

1. RN/LPN

3. POLICY

1. If deficits are noted a physician is notified and checks are performed more frequently.
2. Bladder is scanned if patient has not voided within 8 hours and is distressed or distended. Intermittent catheterization is performed as per physician's order.

4. PRACTICE GUIDELINE

1. Spinal nerve function (refer to [Appendix 1](#), [Appendix 2](#), [Appendix 3](#)), appropriate to the level of surgery, is assessed minimum:
 - for 1st 12 hours: q1h until fully awake, then q 4 h x 12 hr.
 - then bid until discharge**Note:** If deficits are noted:
 - the physician is notified,
 - checks are performed more frequently (as per physician's order), and/or nursing judgment
 - spinal nerve function is assessed to determine whether the deficit is worsening (i.e., check above and below deficit to level of normal function).
 2. Bladder function is assessed minimum q8h x 24 hours and until normal function is established.
 3. Bowel sounds are assessed q4h until return of function is evident.

5. MATERIALS

2. Clean safety pin

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6. PROCEDURE

A. General Principles (Cervical or Lumbar Surgery)

Note: Routine post-op vital sign checks are performed as per guidelines P-1

2. Check operative record for vertebral level of surgery
3. Check physician's and nurse's admission record for:
 - a. previous deficit
 - b. anticipated deficit post-op
4. Identify the spinal nerve between the involved vertebrae:

C-6 spinal nerve is between C-5 & C-6 vertebrae

C-7 spinal nerve is between C-6 & C-7 vertebrae

C-8 spinal nerve is between C-7 & T-1 vertebrae

L-4 spinal nerve is between L-4 & L-5 vertebrae

L-5 spinal nerve is between L-5 & S-1 vertebrae

- **C-2 - C-7 spinal nerves** leaves vertebral canal above corresponding vertebrae.
 - **T-1 - L-5 spinal nerves** leaves vertebral canal below corresponding vertebrae. Refer to Appendices 2 & 3.
4. Perform assessment by incorporating the following:
 - a. Check motor and sensory function of:
 - i. spinal nerve between involved vertebrae,
 - ii. spinal nerves above and below involved vertebrae

Surgery involving these vertebrae	Check these spinal nerves
C-5 - C-6	C-5, C-6, C-7
C-6 - C-7	C-6, C-7, C-8
L-4 - L-5	L-3, L-4, L-5
L-5 - S-1	L-4, L-5, S-1

- b. Compare movement and sensation on both sides.
- c. Assess **Movement (motor function)** by checking active movement against resistance
 - i. Refer to Appendix I.
- d. Assess **Sensation (sensory function)** by:
 - i. Using light fingernail scratch; if impaired, using pinprick
 - If using pin prick for stimulus, use a clean safety pin. Pressure must never cause a break in skin integrity
 - ii. Determine if pain, paraesthesia or numbness is present.

See Policy 3.1

Note: Physician is notified of deficits. If a deficit is noted, assessments must include spinal nerve checks to a level where normal function is elicited, in order that a worsening of the patient's condition is recognized and reported.

5. Check dressing/operative site for bleeding or CSF leakage
 - a. If patient has a wound drain with suction (e.g. Hemovac), anticipated drainage is sanguinous and less than 50ml in first 24 hours, with decreasing amounts thereafter. Clear or pale drainage indicates a CSF leak.
6. Check bladder function and bowel sounds.

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B. Additional Observations Post-op Cervical Surgery

7. Check for difficulty swallowing, ineffective cough or hoarseness.

- This may occur as a result of:

- a. hematoma formation, or
- b. injury to the recurrent laryngeal nerve.

8. Check for cerebral insufficiency by assessing level of consciousness and orientation

9. Check for potential cord compression by assessing movement and sensation of lower extremities:

- a. plantar flexion and dorsiflexion against resistance,
- b. sensation to sole of foot.

8. PATIENT TEACHING

7. Inform patient to report deficits.

9. DOCUMENTATION

0. 24 Hour Flow Sheet (A.0221)

1. Nurses' Notes (A.1062)

. Cervical surgery:

- spinal nerves checked
- stimulus used
- motor and sensory response (if abnormal: Motor - chart specific findings; Sensory - chart patient's description)
- state of dressing and amount and type of drainage, if drain insitu
- voiding, bowel sounds
- difficulty swallowing, coughing, hoarseness
- level of consciousness, orientation
- motor and sensory response of lower limbs

a. Lumbar surgery:

- spinal nerves checked
- stimulus used
- motor and sensory response (if abnormal: Motor - chart specific findings; Sensory - chart patient's description)
- state of dressing; amount and type of drainage, drain insitu
- voiding, bowel sounds

8. RESOURCES

1. Ricco, M.M. (editor) Core Curriculum for Neuroscience Nursing 2 nd ed. American Assoc. of Neuroscience Nursing 1984
2. Hickey, J. The Clinical Practice of Neurological and Neurosurgical Nursing J.B. Lippincott, Co. (Toronto, 1981)
3. Self Directed Learning Package - Back and Neck Surgery Post-Operative Assessment/Laminectomy Checks

Reviewed by: Neuroscience Clinician

Resource: Orthopedic Clinician; CRN Orthopedics & Neurosciences

Effective Date: Jan/87

Revision Dates: Apr/92; May/00; Dec/04

Appendix 1

Patient Care Guidelines

Index: B-1 Appendix 1

APPENDIX 1

C-5 Spinal Nerve Root

Diagram A

Sensory innervation: lateral aspect of upper arms

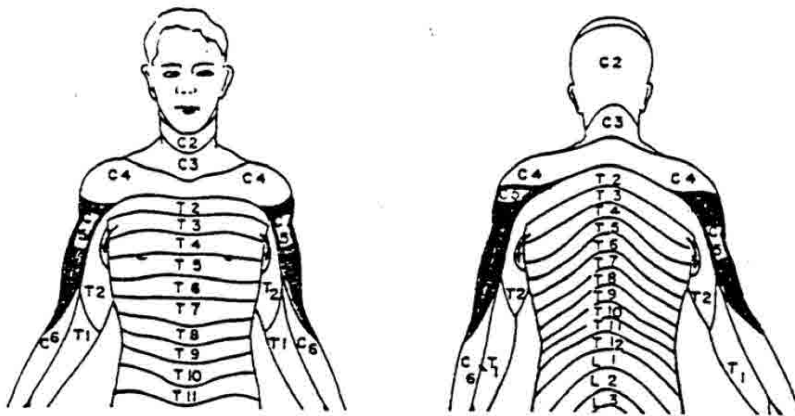
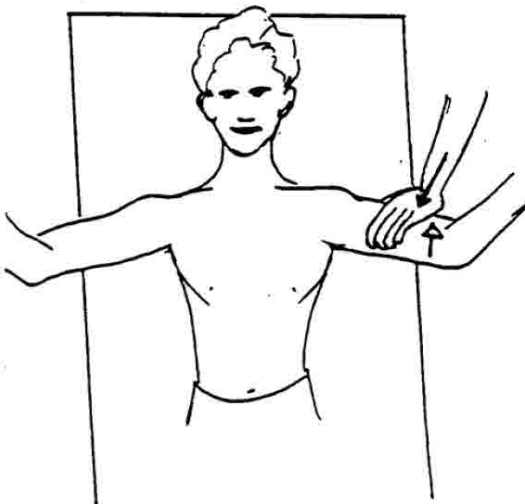


Diagram B

Muscle innervation: deltoid

Motor test: Shoulder abduction against resistance



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Diagram C

C-6 Spinal Nerve Root

Sensory innervation: thumb and index finger

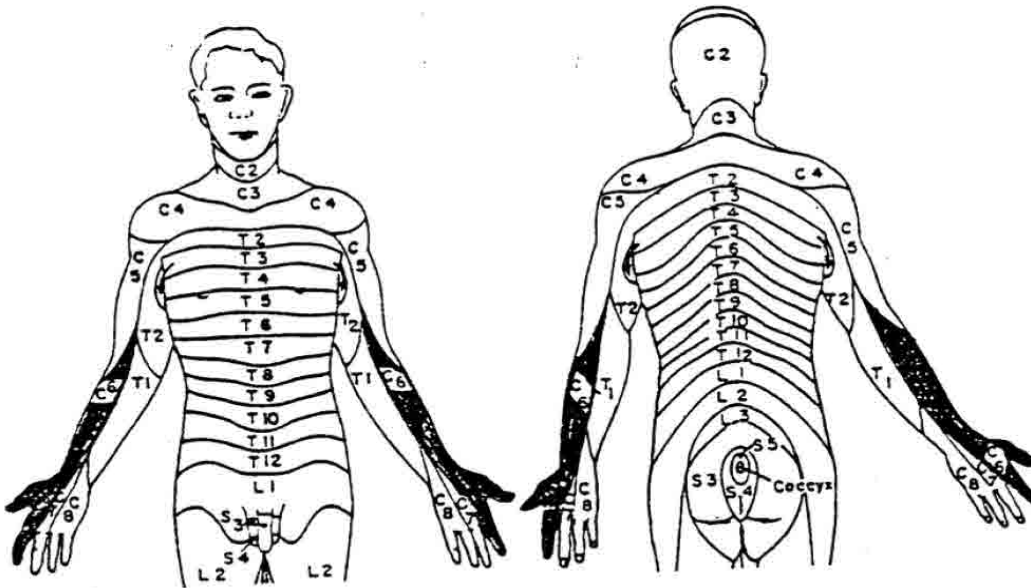
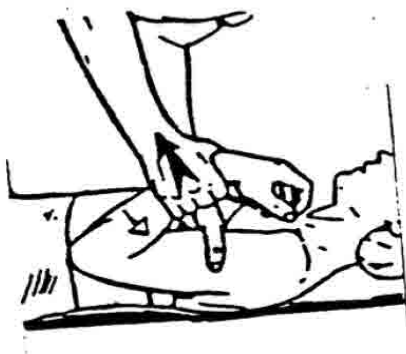


Diagram D

Muscle innervation: biceps

Motor test: elbow flexion against resistance



APPENDIX 1

Diagram E C-7 Spinal Nerve Root

Sensory innervation: middle finger

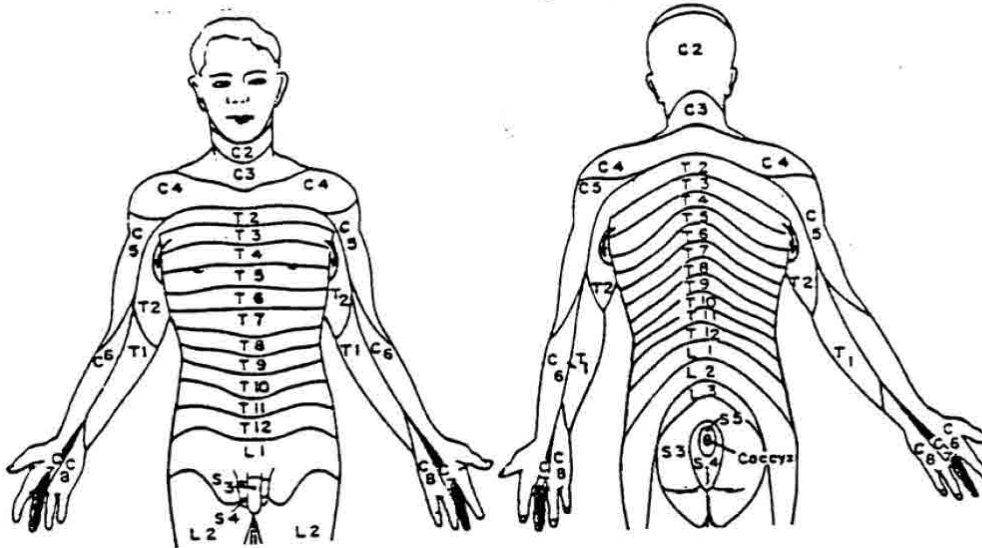
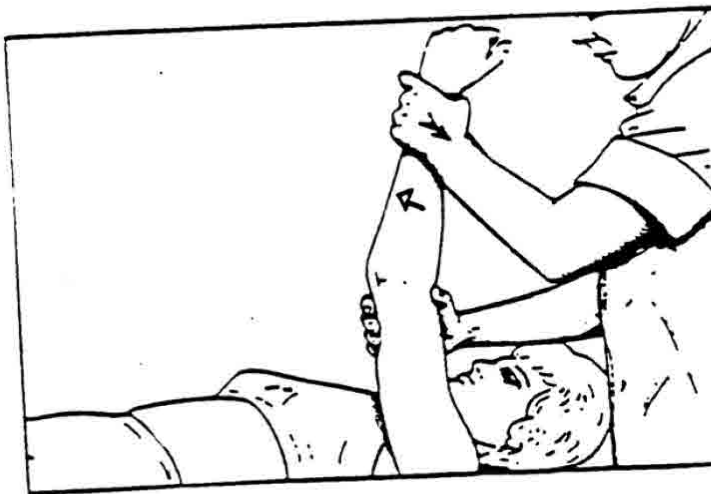


Diagram F Muscle innervation: triceps

Motor test: elbow extension against resistance



APPENDIX 1

Diagram G C-8 Spinal Nerve Root

Sensory innervation: 5th finger

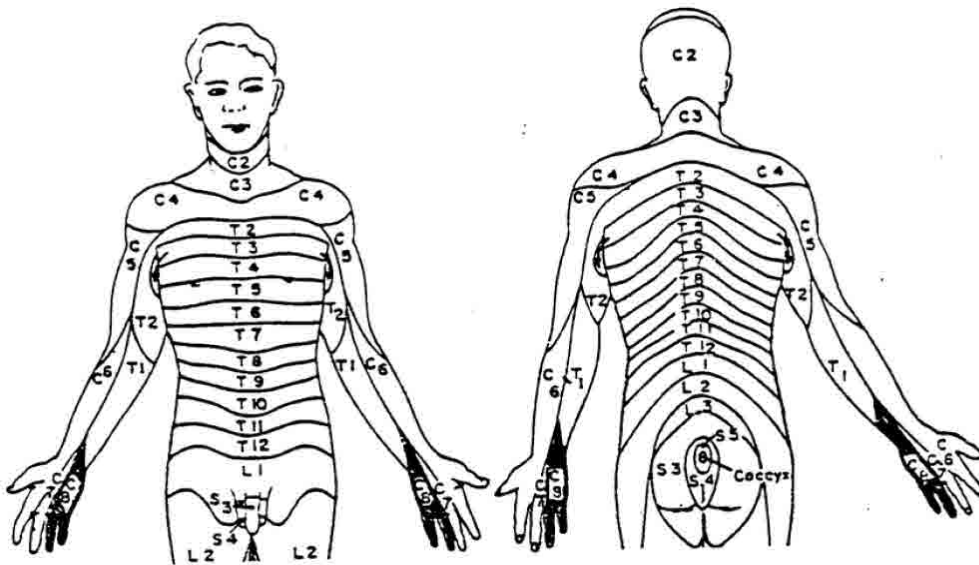


Diagram H

Muscle innervation: fingers
resistance

Motor test: abduction of fingers against

A.



B.



APPENDIX 1

Diagram I

L-3 & L-4 Spinal Nerve Roots

Sensory innervation: L-3 – knee; L-4 – inner aspect of calf

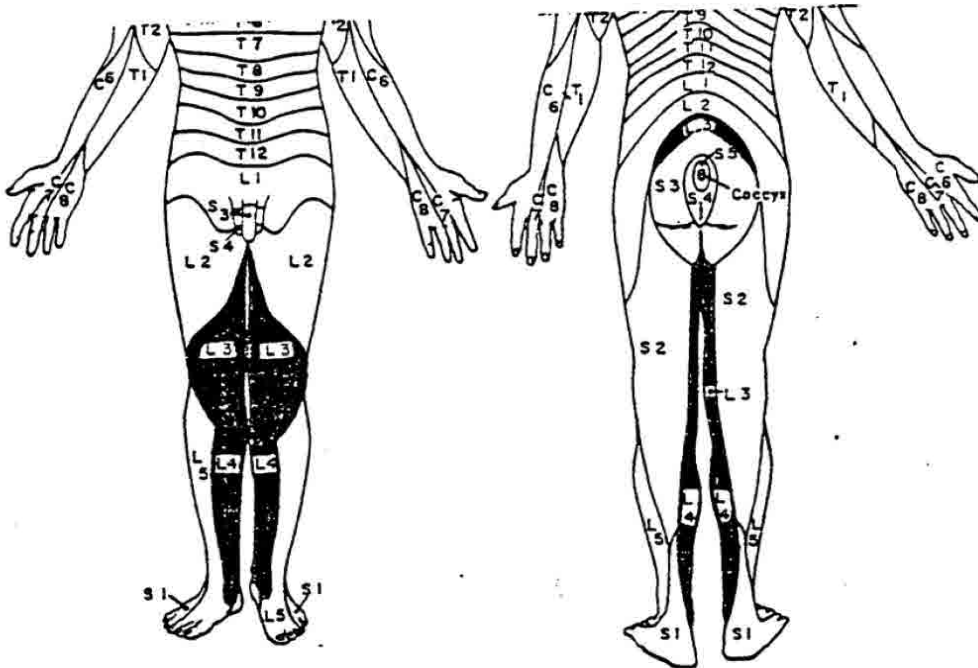
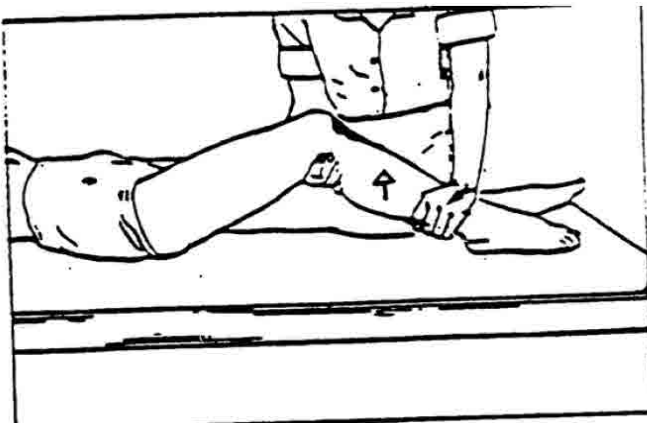


Diagram J

Muscle innervation: quadriceps

Motor test: Knee extension against resistance



APPENDIX 1

Diagram K

L-5 Spinal Nerve Root

Sensory innervation: great toe

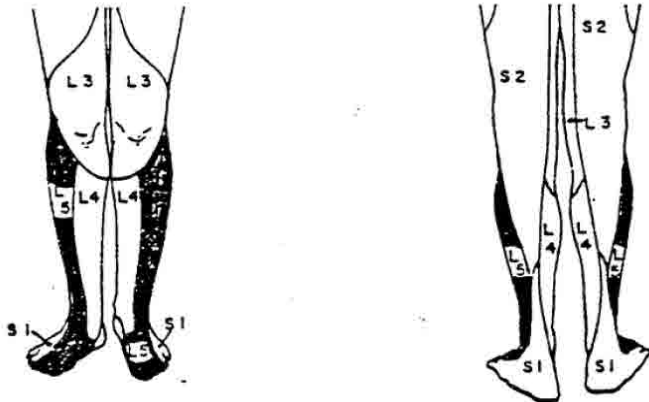
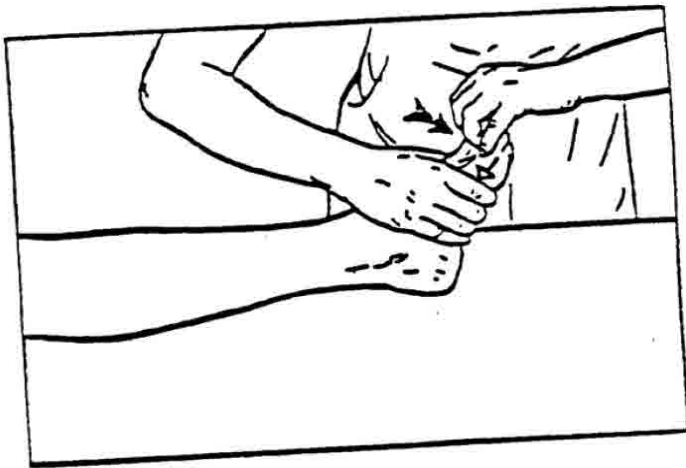


Diagram L

Muscle innervation: foot

Motor test: dorsiflexion of toes against resistance



APPENDIX 1

Diagram M

S-1 & S-2 Spinal Nerve Roots

Sensory innervation: S-1 – 5th toe; S-2 – dorsal aspect of thigh

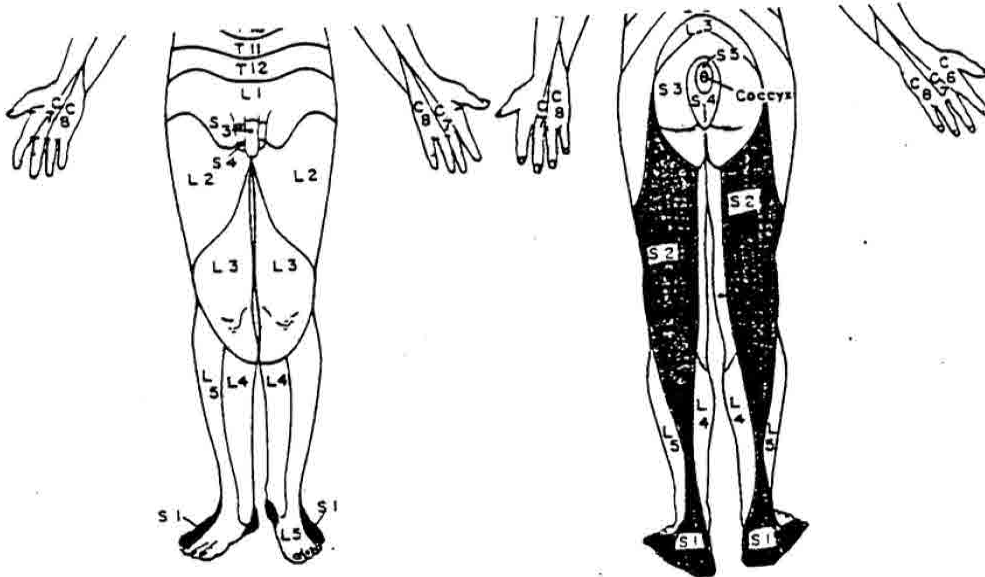
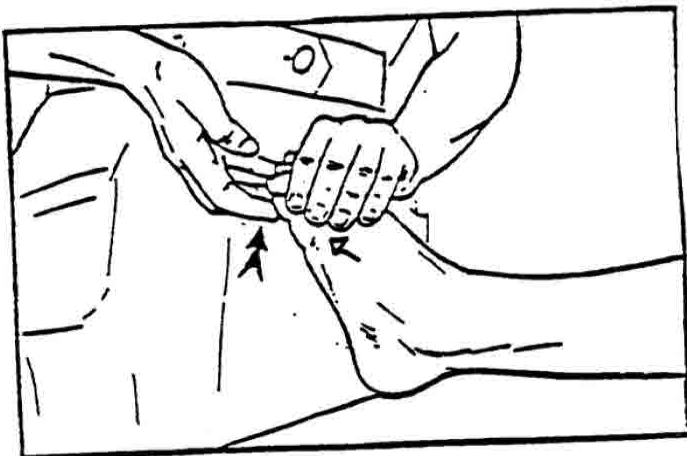


Diagram N

Muscle innervation: gastrocnemius & soleus

Motor test: plantar flexion of toes against resistance



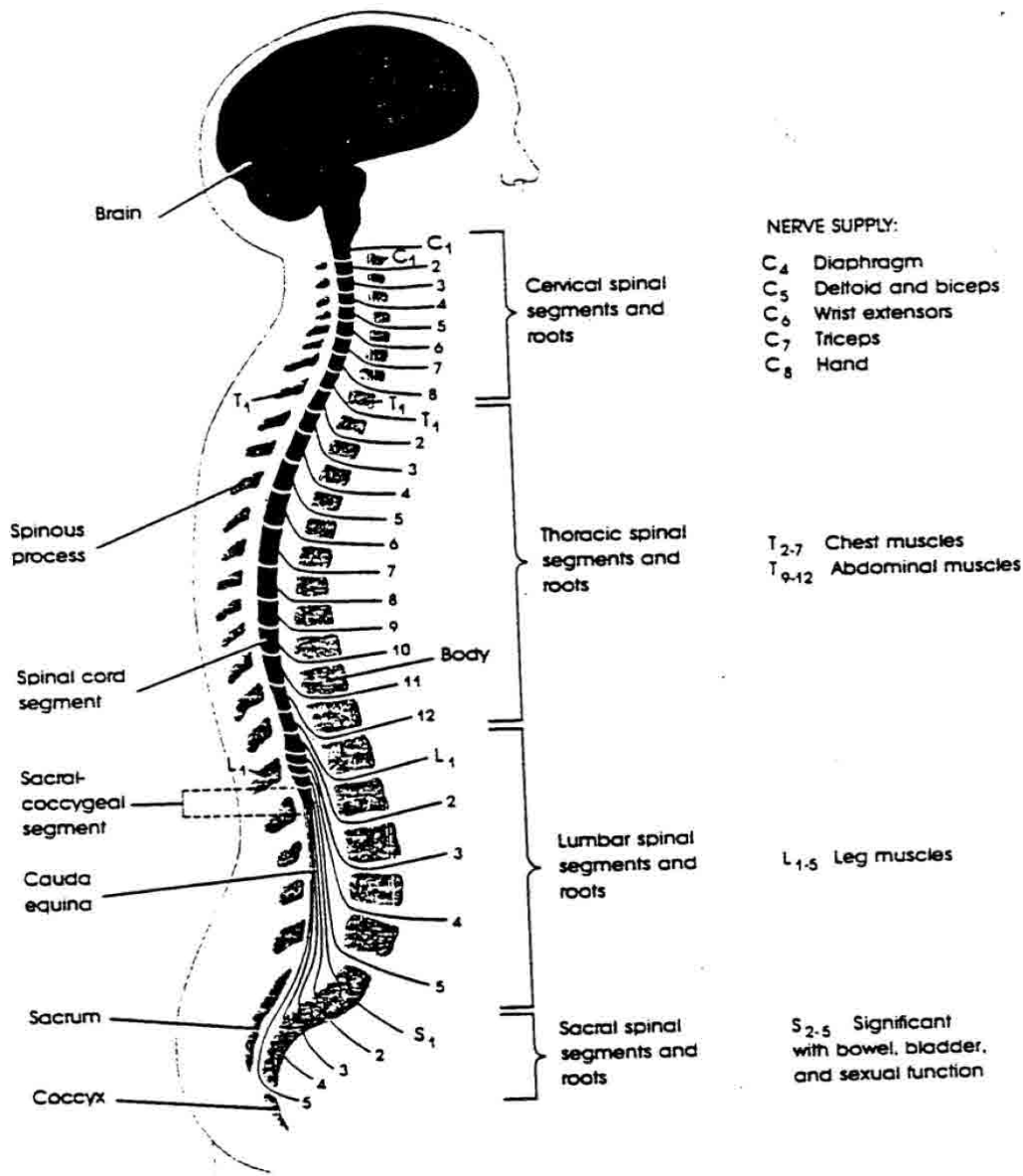
Appendix 2

Patient Care Guidelines

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APPENDIX 2

RELATIONSHIP OF SPINAL NERVES & VERTEBRAE



From: Zejdlik, C.M. Management of Spinal Cord Injury, Wadsworth Health Sciences Division (California 1983)

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Appendix 3

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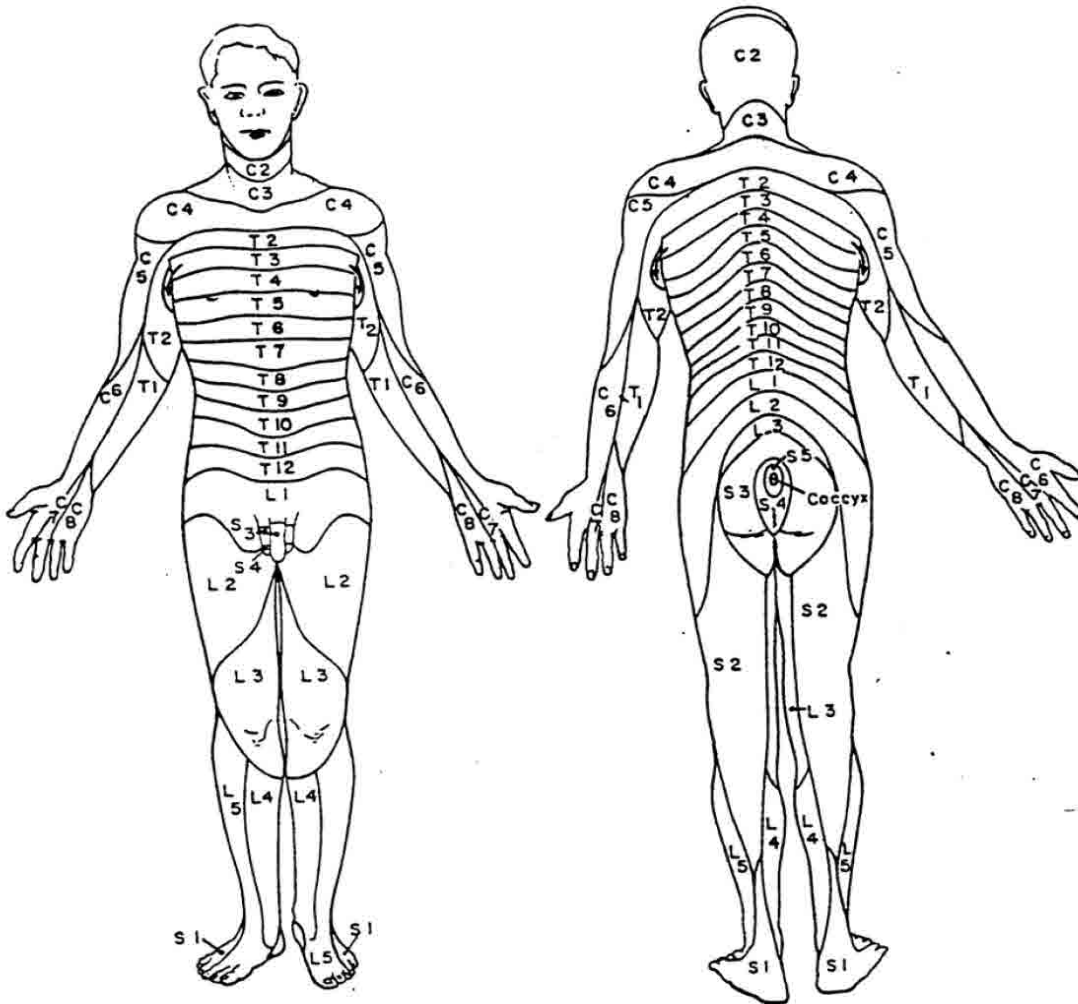
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APPENDIX 3

DERMATOMES
(CUTANEOUS DISTRIBUTION OF SPINAL NERVES)



DERMATOMES
(CUTANEOUS DISTRIBUTION OF SPINAL NERVES)