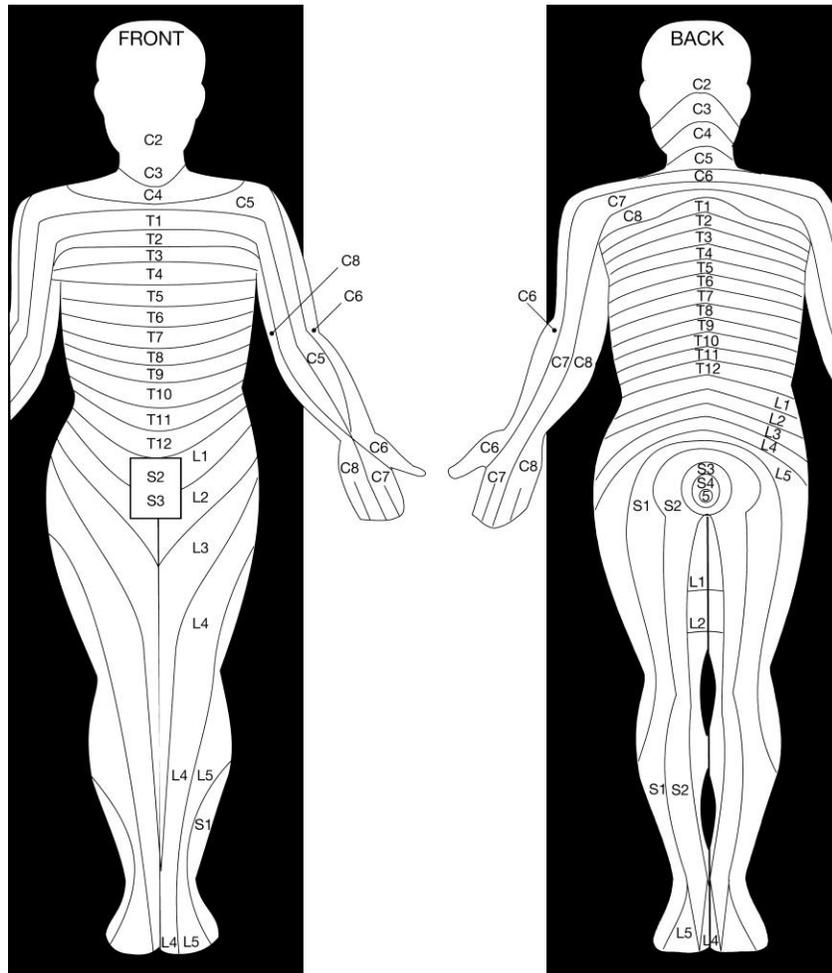


## Dermatome Levels



This is the most common anatomical configuration. Variation may occur among patients.

## Assessment of Neuraxial Blockade Level

Differential blockade occurs due to anatomy and the mechanism of action of local anesthetics. Local anesthetics injected into the subarachnoid/epidural space block transmission at spinal nerve roots. Blockade of nerve transmission is dependent on the concentration that reaches the site of action and the duration of contact. As local anesthetic spreads and distance increases, a smaller concentration of local anesthetic is available to reach nerve roots. Spinal nerve roots contain several nerve fiber types. In general, small myelinated fibers are more susceptible to blockade than larger unmyelinated fibers. With a neuraxial block there is a difference between sympathetic, sensory, and motor block level. The sympathetic level is generally two to six dermatome levels higher than the sensory level. The sensory level is approximately two dermatome levels higher than the motor level.

Knowledge of key dermatome levels assists the anesthesia provider in assessing the level of neuraxial blockade. An alcohol wipe is useful to assess the level of sympathectomy by measuring the patients' ability to perceive skin temperature sensation. A blunt needle is useful in the assessment of the sensory level. It should be sharp enough to cause a "pin prick" sensation but not so sharp as to

break the patient's skin. The use of the spinal needle stylet can be used. Pinching the patient can also be used. The table below will help determine if the level of blockade achieves the minimum level required for a proposed surgical procedure. When reviewing the required sensory levels, it seems odd that the sensory level is higher than where the surgical procedure actually takes place. For example, why is the level for lower extremity surgery with a tourniquet four levels higher than a surgical procedure without a tourniquet? Especially when the dermatome map indicates that sensation from the hip down entails the dermatome levels of L1-S1! The answer lies in the function of the afferent autonomic nerves. Afferent autonomic nerves innervate visceral sensations and viscerosomatic reflexes at spinal segments that are higher than the skin dermatome level of the proposed surgical intervention.

Operative Site	Level
Intraabdominal Procedures (other than lower abdominal)	T4
Lower Intraabdominal Procedures	T6
Lower extremities with a tourniquet Testicular and ovarian surgical procedures	T8
Hip surgery Vaginal or uterine surgical procedures Bladder and prostate surgical procedures	T10
Lower extremity surgery without a tourniquet	T12

The table below will help correlate surface anatomy, sensory dermatome levels, and anticipated systemic effects.

Surface Anatomical Area	Dermatome Level	Systemic Effects
Fifth finger (digit)	C8	Blockade of all cardioaccelerator fibers (T1-T4)
Inner aspect of arm and forearm	T1-T2	Some degree of cardioaccelerator fiber blockade
Apex of axilla	T3	Possible cardioaccelerator fiber blockade
Nipple	T4-T5	Possible cardioaccelerator fiber blockade
Bottom of xiphoid process	T7	Possible splanchnic blockade (T5-L1)
Umbilicus	T10	Sympathetic nervous system blockade
Inguinal ligament area	T12	Sympathetic nervous system blockade is limited to the legs
Lateral foot	S1	

It is important to remember key surface anatomical levels to determine if neuraxial blockade is sufficient. This will allow time to administer general or alternative methods of anesthesia prior to skin incision.

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