

Performing a Neurovascular Assessment

Purpose

Neurovascular status assessment helps identify circulatory and neurologic problems affecting the extremities. Prompt recognition and treatment of neurovascular abnormalities may help to prevent mobility impairment, tissue death, and loss of limb.

Red Flags

- Perform neurovascular status assessment per facility practice or clinician order, as indicated, to identify abnormalities in timely manner. Delay in assessment may increase risk of neurovascular impairment. ¹
- Compare assessment findings bilaterally. Promptly report differences and abnormalities to treating clinician to avoid neurovascular impairment. ^{1, 2}
- Assess for **signs/symptoms of neurovascular impairment** and if present, notify treating clinician.
- Identify **conditions increasing risk of neurovascular impairment**. Assess affected extremity first and compare to unaffected extremity. Promptly report differences to treating clinician. ¹

Procedure

SUPPLIES



- Nonsterile gloves
- Other **personal protective equipment** if you anticipate exposure to bodily fluids
- Pain assessment tool, facility-approved
- Neurovascular assessment tool, facility-approved
- Doppler ultrasound device with probe, as appropriate, for detecting nonpalpable pulses
- Digital watch or analog watch with second hand
- Cotton swab
- Tongue blade, or object with sharp end

- Intracompartmental pressure monitor, as appropriate, for suspected [compartment syndrome](#)

PREPROCEDURE STEPS ^

1. Check care plan, treating clinician orders, and facility practice on performing [neurovascular status assessment](#).
2. Review patient's medical history/medical record for:
 - [Conditions increasing risk of neurovascular impairment](#) ¹
 - Mobility impairments potentially requiring adjusted movements during assessment ³
 - Labs/other diagnostic test results
 - Allergies (use alternatives, as appropriate)
3. Follow [standard preprocedure steps](#), as appropriate. ^{4, 5, 6}
4. Assess patient's LOC and ability to follow commands. ¹
5. Assist patient to position of comfort that provides access to extremities. ²

PROCEDURE STEPS ^

1. Perform hand hygiene. Apply nonsterile gloves.
2. Expose extremities to be assessed. ³
 - If there is injury or damage to an extremity, assess that extremity first for comparison.
 - Assess bilateral extremities concurrently. Use neurovascular assessment tool for guidance.
3. Assess for pain. Note severe pain to extremity unrelieved by analgesics may indicate neurovascular impairment. ^{1, 2}
4. Verify [rights of safe medication administration](#). Administer prescribed analgesics, as appropriate, for any pain or discomfort. ^{4, 7, 8}
5. Visually inspect skin for color and texture.
 - [Pallor](#) may indicate poor arterial perfusion. ²

- **Cyanosis** may indicate decreased tissue oxygenation. ²
 - Shiny, pale skin suggests pressure buildup and may indicate **compartment syndrome**. ¹
6. Palpate extremities for temperature using dorsal aspect of hand. Coolness may indicate diminished arterial blood flow. ^{1, 2}
7. Assess capillary refill.
- a. Press on nailbed of each finger and toe until it appears white.
 - b. Release pressure, observing time it takes for patient's normal color to return to nailbed.
 - c. Normal finding is 2-3 seconds or less. Refill time longer than 3 seconds indicates abnormal perfusion. ^{1, 2}
8. Palpate pulses (including brachial, radial, ulnar, femoral, popliteal, posterior tibialis, and dorsalis pedis).
- Note presence, rate, and rhythm. ^{1, 2, 9}
 - Assess pulse strength using 0-4+ point scale. 0 indicates absent pulse. 4+ indicates strong/bounding pulse. Normal, expected finding is 2+. ^{1, 2, 9}
 - Use Doppler ultrasound device to assess weak or absent pulses. ¹
9. Assess for sensation.
- Ask patient whether they feel **paresthesia**. ²
 - Ask patient to close eyes. Apply touch to various areas of extremities with cotton swab. Ask patient to identify where sensation is felt. ⁹
 - Break tongue blade to obtain sharp end. Ask patient to close eyes. Apply touch to various areas of extremities with sharp end. Ask patient to identify where superficial pain sensation is felt. ⁹
10. Assess degree of movement by asking patient to perform active **ROM** of joints (including shoulders, arms, elbows, wrists, hands/fingers, hips, knees, ankles, and feet/toes). **Paralysis** may indicate prolonged nerve compression or muscle damage. ²
11. If compartment syndrome is suspected, assist treating clinician with measuring intracompartmental pressure. ¹⁰
12. Remove gloves. Perform hand hygiene.



PATIENT/FAMILY EDUCATION ^

- Explain purpose of performing neurovascular assessment.
- Explain physical findings to patient/family.
- Emphasize importance of reporting [signs/symptoms of neurovascular impairment](#) to nurse or treating clinician, as appropriate. ^{1, 2}
- Provide patient education resources, if available, to reinforce verbal education.

POSTPROCEDURE STEPS ^

1. Promptly communicate to treating clinician any abnormal physical findings or changes from previous assessment. ⁴
2. Anticipate preparing patient for emergent interventions, such as [fasciotomy](#), to treat [compartment syndrome](#). ¹⁰
3. Follow [standard postprocedure steps](#), as appropriate. ⁴

DOCUMENTATION ^

Update patient's plan of care and medical record, as appropriate. Include:

- Date/time of [neurovascular status assessment](#)
- Patient assessment findings (including pain level, skin color and temperature, capillary refill time, pulse characteristics, sensation, and mobility)
- Patient's response to neurovascular status assessment
- Administration of prescribed analgesics for pain, if indicated
- Any unexpected patient events or outcomes, interventions performed, and whether treating clinician was notified

- Patient/family education, such as topics presented, response to education, plan for follow-up education, any communication barriers, and techniques that promoted successful communication

Care Considerations

- Frequency of [neurovascular status assessment](#) is determined by patient's condition, specific clinician order, or facility protocol. Typical assessment frequencies range from every 15 minutes to every 4 hours. ^{1, 10}
- Components of neurovascular status assessment are commonly known as "the 5 Ps" (pain, [pallor](#), [paresthesia](#), pulses, and [paralysis](#)). ¹⁰

Published by EBSCO Information Services. Copyright © 2025, EBSCO Information Services. All rights reserved. No part of this may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission.

EBSCO Information Services accepts no liability for advice or information given herein or errors/omissions in the text. It is merely intended as a general informational overview of the subject for the healthcare professional.