

NURSING PRACTICE STANDARD

B-00-13-10111 – Intradialytic Hypotension (NCS6395)

Hemodialysis: Intradialytic Hypotension

Site Applicability

All PHC Renal Program Hemodialysis units (In-centre and Community Dialysis Units)

Related Standards and Resources:

1. [Hemodialysis: Patient Assessment Pre, Intra and Post Dialysis](#)
2. [Appendix A: Hypotension Treatment algorithm](#)

Skill Level: Specialized:

Registered Nurses and Licensed Practical Nurses who have completed the required education, and provide care in a PHC Renal Program hemodialysis unit.

Need to Know:

1. Nurses treat hypotension following a thorough assessment and according to the following protocol and algorithm.
2. The protocol is intended for periodic and unexpected hypotension during hemodialysis. It does not replace the need for careful clinical assessment of goal weight and/or acute illness in a hemodialysis patient.
3. When the target is reduced by 0.5 kg. as part of treating hypotension, this change is not considered a new goal weight.(Goal weight still needs to be assessed)
4. A Nephrologist should be alerted and/or assess a patient with symptomatic hypotension over 3 consecutive treatments or as per unit specific protocol.

Intradialytic Hypotension:

- Intradialytic hypotension is defined as the presence of a decrease in systolic blood pressure of equal or greater than 20 mmHg or a decrease in mean pressure by 10 mmHg, providing the decrease in blood pressure is associated with clinical events and need for nursing interventions.
- Intradialytic hypotension maybe associated with symptoms that include abdominal discomfort, yawning, sighing, nausea, vomiting, muscle cramps, restlessness, dizziness, dyspnea, hoarseness, fainting, or anxiety.
- Intradialytic hypotension may occur if the ultrafiltration rate exceeds the plasma refilling rate within the blood vessels of the patient.
- It is a common complication during hemodialysis treatments.
- It may be minor or severe, asymptomatic or very symptomatic with changes in consciousness-decreased level of consciousness or even cardiac decompensation.

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Potential Causes of Intradialytic Hypotension:

- Rapid fluid removal in an attempt to attain target or goal weight. This may lead to the blood vessels inability to refill from the interstitial space. The decrease in blood volume may lead to decrease in cardiac filling and in cardiac output. This may lead to hypotension.
- Inaccurate determination of true goal weight.
- Ingestion of a meal immediately prior or during dialysis.
- A rapid reduction in plasma osmolality, which causes extracellular water to move into the cells.
- Sepsis, active bleeding, and anemia
- Autonomic neuropathy-affects with patients with longstanding diabetes mellitus are at particularly elevated risk.
- Diminished cardiac reserve
- Intake of antihypertensive medications that can impair cardiovascular stability.
- Sudden release of adenosine during organ ischemia.
- Arrhythmias or pericardial effusion with tamponade(volume-unresponsive causes)
- Reactions to the dialyzer membrane, which may cause wheezing, dyspnea and hypotension
- Increase synthesis of endogenous vasodilators such as nitric oxide.
- High magnesium concentrations in the dialysate.

Assessments:

- Decrease in blood pressure
- Increased in heart rate
- Yawning
- Restlessness
- Vertigo
- Diaphoresis
- Nausea and vomiting
- Muscle cramp with decreased blood pressure
- Dyspnea
- Hoarseness
- AVF- Arterial supply
- Critline or Blood Volume Monitor

Follow the attached algorithm if the patient exhibits any of the above signs and symptoms.

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Strategies to prevent Intradialytic Hypotension:

1. Accurate goal weight assessments
2. Avoid eating directly prior to or during dialysis
3. Dialysate sodium profiling and / or ultrafiltration profiling
4. Cool dialysate
5. Increasing dialysis time or frequency- if rests of the measures fail to decrease the frequency of intradialytic hypotension
6. Improving cardiac performance with higher dialysate calcium
7. Consider sequential ultrafiltration followed by isovolemic dialysis (no ultrafiltration
8. Alpha agonist- midodrine
9. Review antihypertensive agents (needs to be ordered by Nephrologist)

Patient Education and Resources

1. Education regarding intradialytic weight gains, accurate pre and post dialysis weights, assessing goal weight, and signs and symptoms of hypotension.
2. Education regarding medications- what they are prescribed for and when to take or hold medications.
3. Immediately notify a nurse if they have any signs of intradialytic hypotension.
4. Importance of having call bell within reach at all times.

Documentation:

- Vital signs
- Symptoms and/ or patient condition
- Hypotension algorithm use (all interventions)
- Significant findings such as: excessive fluid being removed, nitro patch in situ, error in calculating target, and patient outcomes.

References:

1. Daugirdas, J., Blake, P., & Ing. T. (Eds.). (2007). *Handbook of Dialysis* (4th ed). Lippincott Williams & Wilkins.; Philadelphia , PA
2. Kotanko, P., Henrich, W., Schwab, S., Sheridan, A. (Editors) (2018). UpToDate®Literature Review: Hypotension in an Otherwise Stable Patient. Wolters Kluwer Health. Retrieved on March 16, 2018 from <https://www.uptodate.com>
3. Vancouver Island Health Authority Renal Services. (2007). *Intradialytic Hypotension Protocol*. Victoria, BC



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Appendix A: Hypotension Treatment Algorithm

