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OPINION: LPN IV CERTIFIED (IV-C)
COURSE REQUIREMENTS
APPROVED DATE: November 5, 2013
REVIEWED DATE:
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ORIGINATING COMMITTEE:
Education Committee

An advisory opinion adopted by WSBN is an interpretation of what the law requires. While an advisory opinion is not law, it is more than a recommendation. In other words, an advisory opinion is an official opinion of WSBN regarding the practice of nursing as it relates to the functions of nursing. Facility policies may restrict practice further in their setting and/or require additional expectations related to competency, validation, training and supervision to assure the safety of their patient population and/or decrease risk.

Within the Scope of Practice/Role of ___APRN ___RN __X_LPN ___CNA

ADVISORY OPINION LPN IV CERTIFIED (IV-C) COURSE REQUIREMENTS

Current WSBN Rules and Regulations, Ch. 2, Sect 5(c) is updated to combine basic and advanced LPN IV certification to one level of infusion therapy certification as outlined in this curriculum.

Effective no later than August 1, 2018, all LPNs who wish to administer infusion therapy shall meet one of the following requirements:

- Current WY certification in advanced IV therapy;
- Completion of Board approved LPN IV course material within a Wyoming approved nursing program curriculum;
- Completion of a Board approved LPN IV Certified (IV-C) Course set forth in this Advisory Opinion; or
- Completion of a course or nursing program curriculum from another state that meets or exceeds curriculum set forth in this Advisory Opinion.

LPNs meeting these requirements shall be known as *IV Certified (IV-C)*.
 LPNs certified in basic IV therapy must complete a course offering curriculum set forth by this Advisory Opinion.

Introduction:

The LPN IV-C Course may either be offered as a part of a Board approved nursing program curriculum or after basic practical nursing education has been completed, as an community-based course. IV-C courses shall be administered by a licensed health care facility or nursing education program in an institution of higher learning.

The LPN must submit a certificate of completion to the WSBN in order to receive designation of IV-C. Infusion therapy courses taken in other states are accepted providing the course meets or exceeds curriculum set forth by the WSBN in this Advisory Opinion. Once approved for certification in Wyoming, the LPN must practice within the scope outlined in *LPN IV-C Scope of Practice* advisory opinion.

Certification does not expire nor are CEUs required if the LPN IV-C maintains competency.

Intent of Advisory Opinion:

In accordance with W.S. 33-21-122 (c) (iii) of the Wyoming Nursing Practice Act (NPA), the WSBN has approved the following Advisory Opinion on LPN IV-C Course Requirements. The purpose of this opinion is to define specific guidelines for program development, course content, and evaluation.

COURSE REQUIREMENTS

General Course Requirements:

- The LPN IV-C Course is offered and administered by a licensed health care agency or nursing program in an institution of higher education.
- The length shall be a minimum of 16 hours classroom and 8 hours clinical or lab experience or per nursing program curriculum. Class attendance is mandatory. Any classes missed must be made up at the convenience of the instructor.
- Graduates shall receive a "certificate of completion."

Demonstration of Competency:

In order to successfully obtain certificate of completion, the student shall complete the following:

- If offered in a nursing program curriculum, the student must show competency for the knowledge and skills
- Pass an infusion fluid and drug calculations exam. Students must be proficient.
- Competently perform each of the following skills in a supervised clinical or simulated

environment, or within nursing curriculum:

- o Insertion of a peripheral vascular access device (VAD) (must complete a minimum of 3 successful insertions);
- o Fluid administration using a primary infusion set;
- o Mix, label and administer a medication using a secondary infusion set;
- o Obtaining a blood specimen from a central vascular access device (CVAD); and
- o Complete a CVAD/PICC dressing change.
- o Safely push IV medications; administration of IV push medications and intravenous pharmacological agents are within the scope of practice for the LPN IV-C as defined in the advisory opinion, LPN IV-C Scope of Practice.

Faculty Qualifications:

- Hold a current license to practice as a registered nurse (RN) in Wyoming or registered in at least one state if employed in a federal institution.

CURRICULUM REQUIREMENTS

Course Description:

The LPN IV-C Course is designated to provide fundamental knowledge, skills and abilities needed by the LPN to perform specified infusion therapy procedures. Content should include, but not be limited to:

- Legal considerations and risk management issues for LPNs in infusion therapy;
- Related anatomy and physiology including fluid and electrolytes balance;
- Principles of pharmacology as related to infusion therapy;
- Infusion equipment and preparation;
- Principles and procedures for administration of specified solutions and medications via intravenous route;
- Principles and procedures for peripheral VAD and CVAD site maintenance;
- Assessment of and appropriate interventions for complications related to infusion therapy; and
- Demonstration and practice of specified infusion therapy procedures.

Content should be consistent with current evidence-based guidelines from a nationally accepted nursing organization including, but not limited to, the current Infusion Nurses Society *Infusion Nursing Standard of Practice*.

Curriculum:

Course must include at a minimum, all objectives listed below. Recommended content (topics) will guide program curriculum development. Curriculum is based on *Infusion Nurses Society Core Curriculum for Infusion Nursing* (2014). Recommended content is adapted with permission

from Omnicare Pharmacy Services *LPN Infusion Therapy Course*.

UNIT 1 – LEGAL CONSIDERATIONS & RISK MANAGEMENT

<p>Discuss the legal implications, nursing responsibility, and risk management of LPN practice as related to the performance of infusion therapy procedures.</p>	
<p>RECOMMENDED CONTENT (topics)</p>	
<p>A. Sources of Authority:</p> <ul style="list-style-type: none"> - Wyoming Nurse Practice Act - Administrative Rules and Regulations of the WSBN - Related WSBN Advisory Opinions - National nursing standards of practice - Health care facility policies and procedures <p>B. Scope of practice for the LPN in infusion therapy</p> <p>C. Accountability and responsibility of the RN and LPN in the performance of specified infusion therapy procedures</p> <p>D. Informed consent</p> <p>E. Documentation</p> <p>F. Common errors regarding infusion therapy</p> <p>G. Potential consequences:</p> <ul style="list-style-type: none"> - WSBN discipline - Legal actions (negligence, malpractice, assault, and battery) - Employer action <p>H. Quality control/assurance and risk management</p> <p>I. Reporting faulty equipment/products</p>	

UNIT 2 – ANATOMY & PHYSIOLOGY

<p>Objective: Identify the structure and function of body systems as they relate to infusion therapy. Discuss changes to the structure and function of body systems related to aging.</p>	
<p>RECOMMENDED CONTENT (topics)</p>	
<p>A. Integumentary system</p> <p>B. Respiratory system</p>	

- C. Urinary system
- D. Circulatory system
- E. Vascular system
 - Peripheral vein structure
 - Peripheral vein location
 - o Hand
 - o Forearm
 - Nerve and artery considerations

UNIT 3 – FLUID & ELECTROLYTES

Objective:
 scribe the relationship between IV fluid administration and the body’s homeostatic and regulatory functions.

RECOMMENDED CONTENT (topics)

- A. Distribution of body fluids
 - Intracellular
 - Extracellular
 - Interstitial
 - Intravascular
- B. Dynamics of fluid balance
 - Homeostasis
 - Osmosis
 - Diffusion
 - Oncotic pressure
 - Hydrostatic pressure
- C. Objectives for fluids and electrolytes
 - Maintenance
 - Replacement
 - Restoration
- D. Regulatory mechanisms
 - Cardiovascular
 - Renal
 - Respiratory
 - Integumentary

- Endocrine system
 - o Antidiuretic hormone
 - o Aldosterone

- E. Fluid imbalances
 - Hypovolemia
 - Hypervolemia

- F. Assessment of fluid status
- G. Osmolarity and pH factors

Objectives:

Outline the functions of electrolytes.

Discuss the causes and signs/symptoms of electrolyte imbalances.

RECOMMENDED CONTENT (topics)

- A. Functions of potassium, sodium, calcium, and magnesium
- B. Hyper/hypokalemia causes and signs/symptoms
- C. Hyper/hyponatremia causes and signs/symptoms
- D. Hyper/hypocalcemia causes and signs/symptoms
- E. Hyper/hypomagnesemia causes and signs/symptoms

Objective:

Identify effects of infusion of isotonic, hypertonic, and hypotonic IV solutions on the fluid compartments of the body (intracellular, intravascular, and interstitial).

Differentiate between commonly used IV fluids as isotonic, hypertonic, or hypotonic.

RECOMMENDED CONTENT (topics)

- A. Isotonic solutions
- B. Hypertonic solutions
- C. Hypotonic solutions
- D. Water intoxication
- E. Circulatory overload
- F. Vascular dehydration

UNIT 4 – PHARMACOLOGY

<p>Objective: Describe types and effects of incompatibility. Outline management measures for incompatibility.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<ul style="list-style-type: none"> A. Incompatibility <ul style="list-style-type: none"> - Types <ul style="list-style-type: none"> o Physical o Chemical o Therapeutic - Effects B. Management measures for incompatibility

<p>Objective: Define and describe types of drug interactions and adverse drug reactions. Outline nursing responsibilities regarding drug interactions and adverse drug reactions.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<ul style="list-style-type: none"> A. Drug interactions <ul style="list-style-type: none"> - Drug/drug - Antagonism - Synergism - Drug/fluid - Drug/food B. Adverse drug reactions <ul style="list-style-type: none"> - ADR classifications A-F C. Anaphylaxis <ul style="list-style-type: none"> - Signs & symptoms - Nursing interventions <p>Reporting/documenting adverse and serious adverse events</p>

<p>Objective: Identify the drugs and solutions commonly used in infusion therapy, including TPN, with considerations for administration.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<p>A. Address following for the classifications of intravenous medications that may be administered by the LPN, including but not limited to:</p> <ul style="list-style-type: none"> - Indications for use; - Pharmacological properties; - Contraindications; - Dosing; - Clinical mathematics; - Anticipated side effects; - Potential complications/antidotal therapy; - Compatibilities; - Stabilities; and - Any other specific special considerations.

<p>Objective: Accurately calculate infusion rates and drug dosages (Must score 90% on infusion fluid and drug calculations exam).</p>
<p>RECOMMENDED CONTENT (topics)</p>
<p>A. Infusion calculations and formulas</p> <ul style="list-style-type: none"> - Hourly IV rate (ml/hr) - Drops/minute (gtts/min) - Drug dosages (mg/ml)

UNIT 5 - INFUSION EQUIPMENT AND PREPARATION

<p>Objective: Identify basic infusion therapy equipment and its proper usage.</p>
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RECOMMENDED CONTENT (topics)
<ul style="list-style-type: none"> A. Solution containers B. Peripheral vascular access devices (VAD) C. Transparent semi-permeable membrane dressing D. Catheter stabilization devices E. Primary and secondary administration sets F. Needleless connectors (with and without extension sets) G. Navigational and visualization devices (such as light devices) H. Manual infusion devices I. Electronic infusion devices J. Flushing and locking access devices

RECOMMENDED CONTENT (topics)
<p>Objective:</p> <p>Explain the process for medication administration via VAD.</p>
RECOMMENDED CONTENT (topics)
<ul style="list-style-type: none"> A. Provider orders B. Medication administration record C. Allergies/compatibilities D. Mixing medications <ul style="list-style-type: none"> - Infusion systems (such as add-vantage, vial spike systems) - Admixtures <ul style="list-style-type: none"> o Pre-mixed o Pharmacy prepared - Adding medication to IV fluids E. Labeling <ul style="list-style-type: none"> - Solution - Tubing F. Add mixing system G. Initiating a primary infusion H. Changing a medication/solution container I. Administration of an intermittent infusion J. Administration of an intermittent infusion using a secondary administration set K. Dangerous tubing misconnections L. Flushing and locking access device M. Intravenous pharmacological agents NOT within the scope of the LPN IV-C are; <ul style="list-style-type: none"> ● Cardiac pressor agents, ● Neuromuscular blocking agents

<ul style="list-style-type: none"> ● Concentrated electrolytes (ie. potassium, magnesium sulfate) ● Moderate sedation in adults and children, ● Minimal sedation in children ● Lipid-based medications ● Heparin ● Insulin ● Albumin ● Conventional counterparts methotrexate for non-oncologic use, ● Chemotherapy agents ● Parenteral anticoagulants ● Neuraxial opioids ● or any other IV medication class the RN determines may cause an unsafe reaction/response based on the individual patient and the LPN's abilities <p>N. An LPN IV-C can bolus/push antibiotics but the first dose must be bolused/pushed by the RN who assesses for allergic response</p> <p>O. An LPN IV-C may monitor blood and blood products infusion after the RN has assessed the first hour of the infusion</p>

<p>Objective: Discuss principles of infection control.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<ul style="list-style-type: none"> A. Standard precautions B. Preparing the work area C. Equipment and solutions <ul style="list-style-type: none"> - Product /package integrity - Expiration date D. Skin preparation E. Site assessment F. Disposing of used equipment

UNIT 6 – INFUSION THERAPY VIA PERIPHERAL VAD

<p>Objective: Outline correct procedure for insertion, assessment, and removal of a peripheral VAD that is less than 3” in length.</p>

RECOMMENDED CONTENT (topics) MINIMUM TIME
<ul style="list-style-type: none"> A. Indications B. Advantages/disadvantages C. Selection of device D. Care and maintenance E. Factors contributing to vein damage F. Suitable locations G. Tips for successful insertion H. Preparation of the patient I. Site selection and preparation J. Venipuncture technique K. Dressing application L. Assessment of site and infusion M. Removal

<p>Objective: Identify differences between a short peripheral catheter and a midline catheter.</p>
RECOMMENDED CONTENT (topics)
<ul style="list-style-type: none"> A. Midline catheter <ul style="list-style-type: none"> - Termination of catheter - Advantages/disadvantages - Insertion process - Assessment, care, and maintenance

UNIT 7 – INFUSION THERAPY VIA CENTRAL VASCULAR ACCESS DEVICE (CVAD)/PICC

<p>Objective: Describe the indications for and types of CVADs.</p>
RECOMMENDED CONTENT (topics)

<p>A. Indications</p> <p>B. Types:</p> <ul style="list-style-type: none"> - Peripherally inserted central catheter (PICC) - Nontunneled - Tunneled - Implanted port <p>C. Description of device</p> <ul style="list-style-type: none"> - Composition - Size and length - Properties - Size and length - Lumens - Ports <p>D. Outline who may insert CVADs/PICC and catheter insertion process (note – insertion is not within the LPN scope of practice)</p>
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Objective:

Outline care requirements for CVADs.

RECOMMENDED CONTENT (topics)

- A. Assessment
 - Site assessment
 - Measure external length of catheter
- B. Care:
 - Access/deaccess an implanted port
 - Aspirating for blood return
 - Flushing /locking
 - o Solution
 - o Syringe size
 - o Positive pressure
 - Needleless connector/cap change
 - Dressing change

UNIT 8 - COMPLICATIONS

<p>Objective: Identify local complications of infusion therapy, including causes. outline preventative measures and nursing interventions for local complications.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<ul style="list-style-type: none"> A. Occlusion B. Mechanical C. Hematoma/ecchymosis D. Infiltration/extravasation E. Phlebitis F. Site infection G. Arterial/venous spasm H. Nerve injury

<p>Objective: Identify systemic complications of infusion therapy, including causes. outline preventative measures and nursing interventions for systemic complications.</p>
<p>RECOMMENDED CONTENT (topics)</p>
<ul style="list-style-type: none"> A. Bacteremia/septicemia B. Embolism <ul style="list-style-type: none"> - Pulmonary - Air - Catheter C. Pulmonary edema D. Speed shock E. Allergic reaction F. CVAD specific complications <ul style="list-style-type: none"> - Pinch-off syndrome - Dislodgement - Catheter migration

UNIT 9 – DOCUMENTATION

<p>Objective:</p>

Review documentation requirements for infusion therapy related procedures.

RECOMMENDED CONTENT (topics)

- A. General principles of documentation
- B. Peripheral VAD
 - Insertion
 - Removal
 - Assessment
 - Complications
 - Dressing change
 - Medication/fluid administration
- C. CVAD
 - Insertion
 - Removal
 - Assessment
 - Complications
 - Dressing change
 - Medication/fluid administration

UNIT 10 – PRACTICE AND DEMONSTRATION OF INFUSION THERAPY PROCEDURES

All skills may be completed in a simulated environment. Programs shall develop skills checklists that identify critical elements required to complete the skill competently. The checklists shall be consistent with current evidence-based guidelines from nationally accepted organizations including, but not limited to the current Infusion Nurses Society *Infusion Standards of Practice*.

LPN infusion therapy student shall demonstrate critical elements for each of the following skills:

Insertion of a peripheral VAD (must complete a minimum of 3 successful insertions).

Fluid administration using a primary infusion set.

Mix, label and administer a medication using a secondary infusion set.

Obtaining a blood specimen from a CVAD.

Complete a CVAD dressing change.

LPN IV-C COURSE APPROVAL

Educational programs or facilities who would like to offer the LPN IV-C Course shall submit all required documents to WSBN Education wsbn-pe-info@wyo.gov at least two (2) months in advance of the planned course. All of the following documents should be submitted:

- Student syllabus that meets or exceeds requirements listed in this advisory opinion.
- Curriculum that meets or exceeds requirements listed in this advisory opinion.
- List of teaching materials (textbooks or journal articles).
- Outline the anticipated number of courses for the next year.
- Resume or CV for all instructors.
- Classroom evaluation materials which include:
 - Quizzes;
 - Infusion fluid and drug calculations exam; and
 - Comprehensive final exam.
- Skills checklists (to be developed by the program) that are consistent with current evidence-based guidelines from nationally accepted nursing organizations including, but not limited to, the Nurses Society's *Infusion Nursing Standard of Practice*.
 - Skills checklists including, but not limited to:
 - Insertion of a peripheral VAD (must complete a minimum of 3 successful insertions);
 - Fluid administration using a primary infusion set;
 - Mix, label and administer a medication using a secondary infusion set;
 - Obtaining a blood specimen from a CVAD; and
 - Complete a CVAD dressing change.

This statement articulates the WSBN position with regard to the joint responsibilities of nurses, programs and employers to reduce risks and create and sustain a culture of safety. Nurses, programs and employers in all care settings must collaborate to reduce the risks and promote the implementation of evidence-based strategies to proactively address errors in IV therapy administration. This document is also relevant to other health care providers and stakeholders who collaborate to create and sustain a safe interprofessional work environment.

It is within the scope of practice of an appropriately trained and competent LPN to participate in IV therapy as ordered by a physician, APRN or PA and delegated by the RN if the following criteria are met:

- A. There are institutional policies and procedures to guide this practice;
- B. The nurse has completed training and demonstrated continuing competency;
- C. The agency/facility maintains documentation on training and competency for each nurse;
- D. The care is provided under the direction of a physician, APRN or PA and delegated by an RN; and
- E. The patient's condition is assessed prior to, during, and after the procedure to current standard of practice.

REFERENCES

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