



Practice Guideline

LPNs and Administration of Intravenous (IV) Medication

Introduction

The College of Licensed Practical Nurses of Nova Scotia (CLPNNS) is the regulatory body for the Licensed Practical Nurses (LPN) of Nova Scotia. Its mandate is to protect the public while ensuring the profession of safe, competent and ethical nursing care. The College is responsible for setting, monitoring and enforcing the Code of Ethics and Standards of Nursing Practice for all LPNs in Nova Scotia.

The practical nursing profession in Nova Scotia has been delegated the privilege of self-regulation. The College of Licensed Practical Nurses of Nova Scotia (CLPNNS) sets requirements for entry into the profession, establishes, promotes, and enforces standards of practice and conduct and ensures the safe, competent care of clients through the continuing competency requirements of its members. The College of Licensed Practical Nurses of Nova Scotia maintains that Licensed Practical Nurses are accountable and liable for their own practice/actions. The practice of practical nursing means the provision of nursing services

- (i) independently, for clients considered stable with predictable outcomes, and
- (ii) under the guidance or direction of a registered nurse, medical practitioner or other health care professional authorized to provide such consultation, guidance or direction, for clients considered unstable with unpredictable outcomes

Definitions

Bolus Medication Administration

The administration of concentrated medication into a vein given rapidly over a short period of time. Bolus medication may be delivered by two methods.

Intermittent Intravenous Medications

Any administration of a medication that is not continuous. Intermittently delivered medications are delivered via an external delivery system (I.E. solu-set or mini bag) which is attached or “piggy-backed” into the injection port of an existing intravenous line or through a previously placed intravenous catheter with a saline lock. Intermittent IV medications are generally infused over 15 to 90 minutes, depending on the medication at regular intervals.

Intravenous Push (IVP)

The administration of a medication into a vein through the injection port of an existing intravenous line or through a previously placed intravenous catheter with a saline lock. There is no external system and the medication is “pushed” into the existing IV system via a syringe

Nursing Care Plan

The *nursing* care plan is a guide to clinical care developed to address the nursing related problems and represents the nursing component of the broader Plan of Care. The nursing care plan is a set of nursing specific patient problems and interventions designed to mitigate, reduce, manage or eliminate the identified problems. The plan is

organized so that any nurse can quickly identify the client's needs, goals, outcomes and interventions. (Potter & Perry, 2006)

Written nursing specific or interprofessional care plans are the most effective manner of communicating and making the needs of the client visible. The goal of the nursing care plan is to be able to identify the priority issues for the client. In some circumstances, such as a crisis, newly admitted patients or changes in patient conditions, the *established nursing care plan* may be a verbal or narrative form, rather than a written form. The assumption is that when client care permits, the nursing care plan gets officially written.

Plan of Care

A patient plan of care defines actual & potential problems, accountability for the interventions, supports and outcomes. It is a vehicle to communicate, monitor and track progress and is developed collaboratively by the person and the health care team. (Potter & Perry, 2006). The plan of care has an interprofessional approach which means that each health discipline brings their unique knowledge base to address the patient problems and support the patient to return to optimal state of health.

Predictable

The extent to which one can identify in advance a client's response on the basis of observation, experience or scientific reason

Stable

A situation in which the client's health status can be anticipated with predictable outcomes

Unpredictable

Client's health outcomes cannot reasonably be expected to follow an anticipated path

Unstable

A situation in which a clients' health status is fluctuating with atypical responses, the care is complex requiring frequent assessment of the client and modification of the care plan and the client is managed with interventions that may have unpredictable outcomes or risks

Client predictability or complexity is determined by reviewing patient needs and problems using clinical judgment and critical thinking. Nurses use these tools to review each patient to individualize their care to meet their specific needs. Groups or populations of patients cannot be assumed to be complex or predictable without the critical review of nurses. Each nurse is accountable to make certain she/he possess the necessary knowledge and skill to competently care for patients, regardless of their level of predictability or complexity.

Professional Practice

The College supports and encourages LPNs to work to

their full scope of practice within the clinical parameters defined by employers through policies and procedures. Each LPN is accountable and responsible for determining their individual capacity to undertake their roles, functions and activities within employer's policies.

Currently, the activity of administration of medication via IV or IVP is a **Beyond Entry Level Competency** and as such, the LPN must first complete an educational training program *before* engaging in this activity in the clinical setting. *The employer is responsible and accountable for developing, delivering and maintaining the educational training program.*

It is important to note that the administration of medications including IV and/or IVP will become an entry-level competency for LPNs beginning with the graduation class of 2012.

Administration of intravenous medications (either intermittent or push) can be associated with patients whose conditions are frequently changing with complex or poorly understood outcomes and in limited context, can be appropriately performed by the LPN. *The nurse and the employer must recognize that medication administration via intravenous push has limited and specific context to LPN practice and lacks broad applicability across patient types. The nurse and employer are responsible and accountable to determine the limited and specific patient populations within the agency.*

DETERMINING APPROPRIATE PRACTICE CONTEXT

The LPN is able to provide nursing services independently to clients who have established predictable outcomes. To determine the appropriateness of the LPN administering IV or IV push medications, both the clinical patient outcomes and the outcomes of the medications/medication administration must be deemed predictable. Apply a **Double Predictability Review** to the practice context by reviewing both the overall predictability of the client context (care, outcomes and plan) **and** the predictability of the outcomes of the IV or IVP medications.

Predictable is defined as the extent to which one can identify in advance a client's response on the basis of observation, experience or scientific reason. Medication predictability is the extent in which one can identify in advance a client's response to a specific medication or group of medications.

To apply the Double Predictability Review, answer the following 4 questions. All answers to the questions must be yes. Any "NO" response would indicate that the client context **DOES NOT SUPPORT** the LPN to engage in this activity.

1. Are the overall outcomes of the client identified and documented in a plan of care and are deemed to be predictable and well anticipated? (Client Predictability)

- Is the route (IV or IVP) deemed to be best practice for *this* client based on their established plan of care? (Medication Predictability)
- Are the medications to be administered via IV/IVP *not* identified by the Institute of Safe Medication Practices (ISMP) as **HIGH-ALERT** Medications? (Medication Predictability) SEE APPENDIX A
- Are the outcomes of the prescribed medications identified in a plan of care and well established? (Medication Predictability)

BEYOND LPN PRACTICE CONTEXT

Certain client situations **will not** support the LPN to administer IV/IVP medications. **Situations where client needs are deemed complex or the plan of care is unknown/un-established would preclude the LPN from performing IV/IVP regardless of the medications to be administered.**

Below is a sample list (not exhaustive) of situations which indicate that client care needs are beyond the scope of practice of the LPN. Both the nurse and the employer are reminded that each situation should be evaluated individually.

Client Issue	Rationale
Lack of or established plan of care (verbal or written)	The overall predictability of the client's needs have not been established
Initial doses of medications	The clients response to the medication has not been determined
Sliding scale orders for medications based on patient assessment findings	Active titration would indicate that the client's needs are changing and unanticipated.
Crisis situations	Requires advanced priority decision making
Any medication that could immediately (within 5-10 minutes) impact the hemodynamic stability of the client	Requires advanced assessment and decision making. Is listed on the ISMP HIGH ALERT *medication list.
A medication that requires the interpretation of additional assessment parameters before, during or after IV/IVP (IE cardiac, hemodynamic or fetal monitoring)	Interpretation of the data requires advanced decision making and assessment

*LPNs cannot administer any medication via IV/IVP appearing on the ISMP High Alert list or medications identified by individual agencies as High Alert, regardless of the client context

EXAMPLES

#1 Johnny is 7 years old and admitted to the pediatric unit for management of asthma and associated pneumonia. By day 3 he is improving as anticipated and expected to be discharged home in 24-48 hours. He is receiving **Cefuroxime 1g IVP** Q8h to help manage his pneumonia.

Use the Double Predictability Review to determine if administration of the IVP medications is within the LPN scope of practice.

Are the overall outcomes of the client identified in a plan of care and deemed to be predictable and well anticipated? (Client Predictability)	YES This is day 3 for Johnny on the unit. He is progressing well and meeting identified targets and set for DC in next 1-2 days
Is IV bolus, as the prescribed route, deemed to be best practice for this client based on their established plan of care? (Medication Predictability)	YES IVP medications is appropriate practice in the administration of IV medications in the pediatric population where there is risk associated with fluid overload (Clayton, Stock and Cooper 2007).
Are the medications to be administered via the IV bolus <i>not</i> identified by the Institute of Safe Medication Practices (ISMP) as HIGH-ALERT Medications? (Medication Predictability)	YES Cefuroxime in not on the ISMP High Alert medication list
Are the outcomes of the prescribed medications identified in a plan of care and well established? (Medication Predictability)	YES Johnny has received multiple doses of cefuroxime without noted incident or allergic response indicating that his responses to the medication are established and understood.

All positive responses to the Double Predictability Review indicate that the necessary supports are in place that would support LPNs engaging in this activity.

#2 Mrs. MacDonald has been recently admitted to your unit. She was diagnosed with Congestive Heart Failure (CHF) 5 years ago and has been managed at home since then. There have been approximately 4 admissions for exacerbation of CHF since her initial diagnosis. Her primary problem this admission are indicative of fluid overload as well as a new problem of vomiting of coffee ground emesis. On day 4 she has Naso-gastric tube connected to low intermittent suction and been prescribed her medications to be given IVP. Her lungs have crackles, respiratory rate is 32 at rest and o2 saturation level read between 86% and 90% on room air (baseline 94%), depending upon her mobility. Her meds include:

Lasix 40 mg IV bid
Digoxin 0.625 mg IV Q Day

Use the Double Predictability Review to determine if administration of the IVB medications is within the LPN scope of practice

Are the overall outcomes of the client identified in a plan of care and deemed to be predictable and well anticipated? (Client Predictability)	NO Even though this is day 4 of her admission, Mrs. MacDonald continues to have symptoms of fluid overload (crackles) and inconsistent o2 saturation levels.
Is IV bolus, as the prescribed route, deemed to be predictable or best practice for <i>this</i> client based on their established plan of care? (Medication Predictability)	YES The client is NPO, and experiencing coffee ground emesis. IV/IVP would be the most appropriate medication delivery route.

Are the medications to be administered via the IV/IVP <i>not</i> identified by the Institute of Safe Medication Practices (ISMP) as HIGH-ALERT Medications? (Medication Predictability)	NO and YES Lasix is not, however, Digoxin is on the list because of the potential life threatening rapid outcomes that can occur when administered IV
Are the outcomes of the prescribed medications identified in a plan of care and well established? (Medication Predictability)	UNKNOWN The process diuresis is incomplete (increased respiratory rate and crackles indicate there is still fluid in her lungs.) Although there is no indication that she has had any untoward outcomes as a result of allergy or intolerance to the medication, the overall outcome is not fully predictable <i>because the client has not yet achieved</i> the desired target of no shortness of breath and clear lung fields.

A NO answer, indicates that the client context does not support the LPN to engage in IVB medication administration.

References:

- College of Licensed Practical Nurses of Nova Scotia (2006). *Nova Scotia LPN Act 2006; Scope of Practice*.
- Clayton, B., Stock, Y. and Cooper, S. (2007). *Basic Pharmacology for Nurses* (14th ed.). St. Louis MO: Mosby
- Institute of Safe Medication Practices. www.ISNP.org
- Phillips, D. (2005). *Manual of IV Therapeutics*. (4th ed.) Philadelphia, PA: F.A. Davis Company.
- Potter, P., Perry, A. (2006) *Canadian Fundamental of Nursing* (3rd ed.). Toronto, ON: Elsevier and Mosby.

<http://www.ismp.org/Tools/highalertmedications.pdf>

A Word About ISMP High Alert Medication List

Please see ISMP list of high alert medications @ <http://www.ismp.org/Tools/highalertmedications.pdf>
Please review list regularly as the list is subject to change.
Individual nurses and employers are accountable to monitor this list, print and post on a regular basis.

Please Note:

Although subcutaneous insulin is on ISMP high alert list.
It may be administered by LPN's as long as agency policies permit.



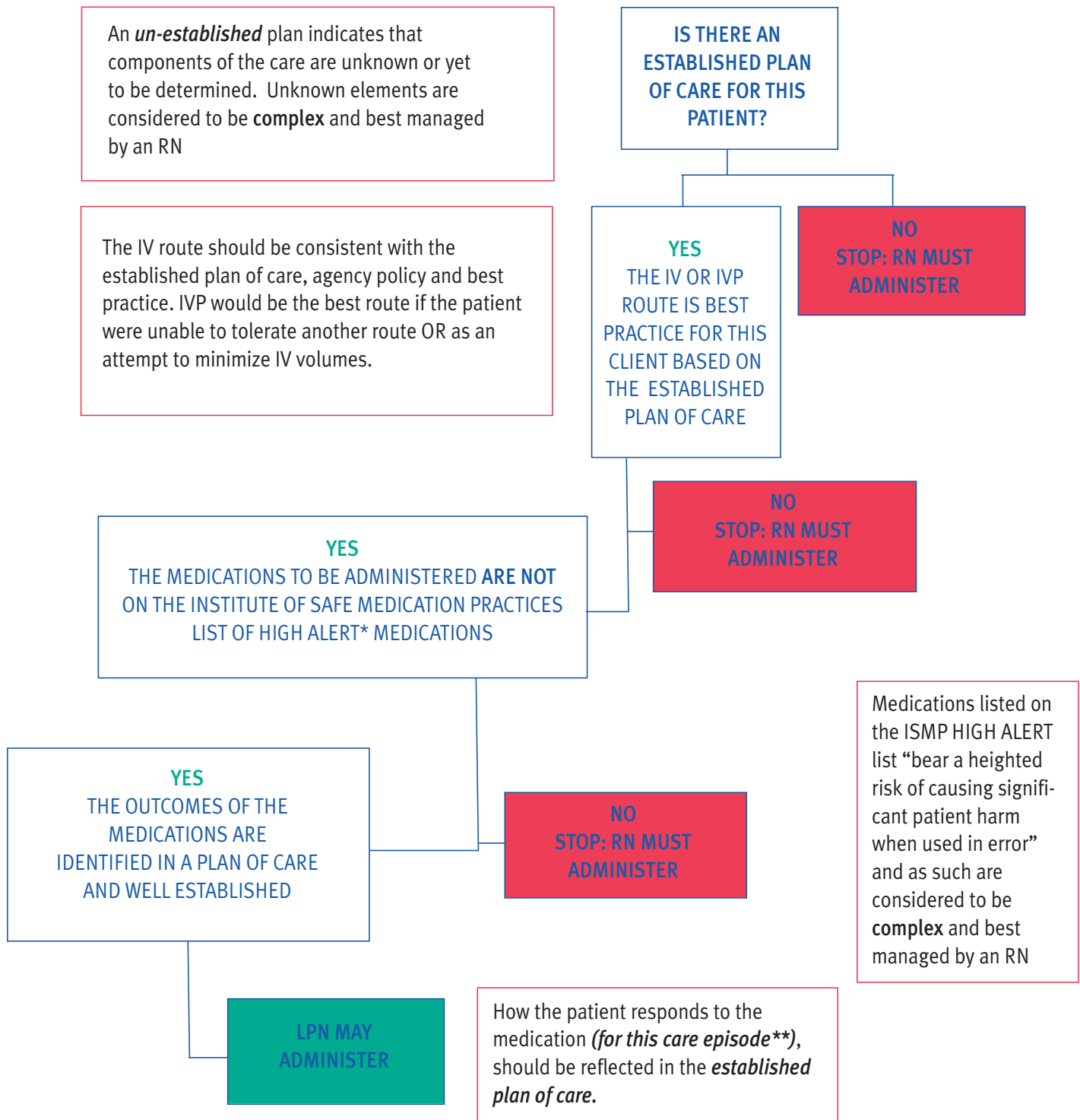
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Appendix A

Decision Making Framework for Administration of IV Medication



*Please note: Although subcutaneous insulin is on high alert list - it can be administered by LPNs.

Care episode is defined as the **current experience of healthcare, IE, from admission to discharge.



ISMP's List of *High-Alert Medications*

High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. Although mistakes may or may not be more common with these drugs, the consequences of an error are clearly more devastating to patients. We hope you will use this list to determine which medications require special safeguards to reduce the risk of errors. This may include strategies like improving access to information about

these drugs; limiting access to high-alert medications; using auxiliary labels and automated alerts; standardizing the ordering, storage, preparation, and administration of these products; and employing redundancies such as automated or independent double-checks when necessary. (Note: manual independent double-checks are not always the optimal error-reduction strategy and may not be practical for all of the medications on the list).

Classes/ Categories of Medications
adrenergic agonists, IV (e.g., epinephrine, phenylephrine, norepinephrine)
adrenergic antagonists, IV (e.g., propranolol, metoprolol, labetalol)
anesthetic agents, general, inhaled and IV (e.g., propofol, ketamine)
antiarrhythmics, IV (e.g., lidocaine, amiodarone)
antithrombotic agents (anticoagulants), including warfarin, low-molecular-weight heparin, IV unfractionated heparin, Factor Xa inhibitors (fondaparinux), direct thrombin inhibitors (e.g., argatroban, lepirudin, bivalirudin), thrombolytics (e.g., alteplase, reteplase, tenecteplase), and glycoprotein IIb/IIIa inhibitors (e.g., eptifibatide)
cardioplegic solutions
chemotherapeutic agents, parenteral and oral
dextrose, hypertonic, 20% or greater
dialysis solutions, peritoneal and hemodialysis
epidural or intrathecal medications
hypoglycemics, oral
inotropic medications, IV (e.g., digoxin, milrinone)
liposomal forms of drugs (e.g., liposomal amphotericin B)
moderate sedation agents, IV (e.g., midazolam)
moderate sedation agents, oral, for children (e.g., chloral hydrate)
narcotics/opiates, IV, transdermal, and oral (including liquid concentrates, immediate and sustained-release formulations)
neuromuscular blocking agents (e.g., succinylcholine, rocuronium, vecuronium)
radiocontrast agents, IV
total parenteral nutrition solutions

Specific Medications
colchicine injection***
epoprostenol (Flolan), IV
insulin, subcutaneous and IV
magnesium sulfate injection
methotrexate, oral, non-oncologic use
opium tincture
oxytocin, IV
nitroprusside sodium for injection
potassium chloride for injection concentrate
potassium phosphates injection
promethazine, IV
sodium chloride for injection, hypertonic (greater than 0.9% concentration)
sterile water for injection, inhalation, and irrigation (excluding pour bottles) in containers of 100 mL or more

***Although colchicine injection should no longer be used, it will remain on the list until shipments of unapproved colchicine injection cease in August 2008. For details, please visit: www.fda.gov/oc/ohrt/topics/NEWS/2008/NEW01791.html.

Background

Based on error reports submitted to the USP-ISMP Medication Errors Reporting Program, reports of harmful errors in the literature, and input from practitioners and safety experts, ISMP created and periodically updates a list of potential high-alert medications. During February-April 2007, 770 practitioners responded to an ISMP survey designed to identify which medications were most frequently considered high-alert drugs by individuals and organizations. Further, to assure relevance and completeness, the clinical staff at ISMP, members of our advisory board, and safety experts throughout the US were asked to review the potential list. This list of drugs and drug categories reflects the collective thinking of all who provided input.



Please Note: Although subcutaneous insulin is on ISMP high alert list. It may be administered by LPN's as long as agency policies permit.

MISSION

In the interests of the public, the College of Licensed Practical Nurses of Nova Scotia regulates the practice of Licensed Practical Nurses in the province.

VISION

A dynamically regulated profession committed to excellence.