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## Preamble

The following definitions are for the purposes of the Provincial Parenteral Manual and any associated policies or procedures.

## Routes of Administration Definitions

### Definition of Parenteral

- Administration by injection, infusion, or implantation (NOT through the alimentary or respiratory routes (unless otherwise noted) through the following routes:

### Routes in ALL Parenteral Monographs

#### Intravenous (IV)

- Administration within or into a vein or veins.
- Direct IV
  - Injection of a medication from a syringe directly into a vein, via the lowest access injection port on the IV tubing or through an intermittent injection cap. This is often referred to as direct IV push.
  - NOTE: Injecting saline/ heparin lock solution into an existing central/ peripheral IV site for the purposes of maintaining patency of the vascular access device is not considered direct IV medication delivery.
  - Also refers to IV injections administered over 10 minutes or less.
- Intermittent Infusion
  - The administration of intravenous medications or solutions at prescribed intervals.
  - Also refers to IV infusions administered over 10 minutes or more.
- Continuous Infusion
  - Intravenous administration of a medication at a specified volume or concentration at a prescribed rate – usually over 24 hours.
- Peripheral Venous Access (Peripheral IV)
  - A peripheral venous catheter (or peripheral venous line or peripheral venous access catheter) is placed into a peripheral vein to administer medication or fluids.
  - A peripheral vein is any vein that is not in the chest or abdomen. Commonly used peripheral vein sites include: cephalic, basilic, metacarpal and accessory cephalic veins.

- Central Vascular/Venous Access
  - The administration of a medication or solution centrally via a central venous access device. A central venous access device permits access to the central vascular system.
  - A catheter is inserted with the tip residing in the lower one-third of the superior vena cava, or above the level of the diaphragm in the inferior vena cava.

### **Intramuscular (IM)**

- Administered by injection directly into a muscle.

### **Subcutaneous Injection**

- Administered into the subcutaneous, the layer of skin directly below the dermis and epidermis.

### **Subcutaneous Infusion**

- The administration of medications or solutions into the subcutaneous tissue (under the skin).
- In a subcutaneous infusion, a needle is inserted under the skin, rather than into a vein, and connected to an infusion pump which allows parenteral medication to slowly enter the injection site.
- This definition is interchangeable with hypodermoclysis.

## **Other Routes in the Parenteral Monographs**

### **Bladder Instillation**

- Administration into the urinary bladder.
- This route is interchangeable with intravesical.

### **Catheter Occlusion/ Vascular Access Device (VAD) Patency**

- To remove catheter occlusion and restore VAD patency (e.g. dialysis catheter, central line).

### **Epidural**

- Administration upon or over the dura mater.

### **Endotracheal:**

- Administration directly into the trachea via an endotracheal tube.
- Although this is not a parenteral route, this information may be included in the neonatal dosage section of the parenteral monographs.

**Intra-Arterial**

- Administration within an artery or arteries.

**Intra-Articular**

- Administration within a joint.

**Intra-Atrial**

- The administration of a medication injected into the atrium of the heart.

**Intra-Cardiac**

- Administration within the ventricle of the heart.
- This definition is interchangeable with intraventricular - heart

**Intra-Cavitary**

- Administration within a non-pathologic cavity, such as the cervix, uterus, or penis, or such as that which is formed as the result of a wound.

**Intra-Cerebral**

- Administration into the cerebrum.

**Intra-Dermal**

- Administration within the dermis.

**Intra-Lesional**

- Administration within or introduced directly into a localized lesion.

**Intranasal**

- Administration of a parenteral formulation within the nasal cavity.
- Not a parenteral route of administration; however it is included in the Provincial Parenteral Manual monographs if it was stated in one of the zonal legacy monographs.

**Intramyometrial**

- Administration within the muscular coat of the uterus.

**Intraosseous**

- Administration of solutions and medications into the space located in the marrow of the bone.
- Commonly used intraosseous sites are the proximal tibia and distal tibia.

**Intra-Pericardial**

- Administration within the pericardium.

**Intra-Peritoneal**

- Administration within the peritoneal cavity.

**Intra-Pleural**

- Administration within the pleura.

**Intrathecal**

- Administration within the cerebrospinal fluid at any level of the cerebrospinal axis, including injection into the cerebral ventricles.

**Intraventricular - brain**

- Administration within a ventricle of the brain.

**Intraventricular - heart**

- See intra-cardiac definition.

**Intravitreal**

- Administration into the vitreous body of the eye.

**Hypodermoclysis**

- This definition is interchangeable with Subcutaneous Infusion.
- The subcutaneous administration of isotonic fluids for the treatment or prevention of dehydration.
- See Provincial Parenteral Manual Usage Guidelines for suggested or recommended maximum volumes.

**Nerve Blocks**

- A procedure in which an anesthetic agent is injected directly near a nerve to block pain. A nerve block is a form of regional anesthesia.
- Includes local infiltration, intermittent and continuous infusions.

**Patient Controlled Analgesia (PCA)**

- A method of pain control designed to allow the patient the ability to administer IV bolus doses of an analgesic as needed.
- During PCA therapy, a patient is connected to a PCA pump which is programmed to deliver a specific dose of medication when the patient activates the delivery switch. The pump program includes safeguards to prevent self-overdose.

**Patient Controlled Epidural Analgesia (PCEA)**

- A method of pain control designed to allow the patient the ability to administer epidural bolus doses of an analgesic as needed.
- During PCEA therapy, a patient is connected to a PCEA pump which is programmed to deliver a specific dose of medication when the patient activates the delivery switch. The pump program includes safeguards to prevent self-overdose.

## Staff Definitions

### Authorized prescriber

A health care professional who is permitted to prescribe medications as defined by Federal or Provincial legislation, her/his regulatory college, Alberta Health Services, and practice setting (where applicable).

### Clinical Competence

Clinical competence is the responsibility of the individual practitioner and encompasses the knowledge, skill, ability and judgment required for safe and ethical clinical practice. These clinical activities may have been taught in basic education programs, however the clinical competence required to perform these skills, may require additional education and supervised practice.

### Healthcare professional (or qualified healthcare provider)

An individual who is a member of a regulated health discipline, as defined by the *Health Disciplines Act* or the *Health Professions Act*, and who practises within scope or role.

### Most responsible health practitioner

The most responsible health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by Alberta Health Services to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of his/her practice.

### Physician-Only / Nurse Practitioner-Only Drug Administration

- This refers to routes of administration restricted to physicians or nurse practitioners.
- The administration of the drug by this specified route and monitoring of its effects can be done by a qualified practitioner only if the physician or nurse practitioner is immediately available during the administration of the medication and for a minimum of 15 minutes (or as specified in the individual monograph) after drug administration.



## Monitoring Definitions

The following definitions are for the purposes of the Provincial Parenteral Manual and any associated policies or procedures.

### Critical Care Areas

- Areas with healthcare professionals that are capable of high-intensity monitoring (e.g. ECG, invasive BP monitoring). These include intensive care units, critical care units, OR (operating room), recovery room, and emergency departments.

### Vital Signs – Heart Rate, Blood Pressure, Respiratory Rate and Temperature

- If there are specific vital sign monitoring requirements (e.g. heart rate, blood pressure, respiratory rate and temperature) for administration of a particular drug, these will be identified in the parenteral monograph. Otherwise, vital sign monitoring and frequency will be at the discretion of the qualified healthcare provider administering or ordering the drug, patient care area standard, potential adverse effects of the drug, and the patient's clinical condition.
- **Heart rate / pulse:**
  - Heart rate or pulse is a measure of cardiac activity expressed as the number of heart beats per minute. The heart rate may be measured manually by palpation, using a stethoscope or by using a vital signs or pulse oximetry monitor.
  - Pulse rate is also a measurement of heart rate, or the number of times the heart beats per minute.
  - Monitoring of heart rate can be performed as part of electrocardiography, with heart rate or pulse oximetry monitors, via invasive lines (e.g. arterial line, pulmonary artery catheter), manually by palpation, and using a stethoscope.
- **Invasive blood pressure monitoring:**
  - Invasive (intra-arterial) blood pressure (IBP) monitoring is a commonly used technique in critical care areas. The technique involves the insertion of a catheter into a suitable artery and then displaying the measured pressure wave on a monitor.
- **Blood pressure monitoring:**
  - This refers to intermittent monitoring by an external cuff.

## Cardiac and Electrocardiogram (ECG) Monitoring

- **Cardiac Monitoring:**

- Cardiac monitoring is the continuous monitoring with electrocardiography and the assessment of the patient's condition relative to their cardiac rhythm. It provides a view of three or more leads of electrocardiographic data, including heart rate.
  - The number of leads will be determined by patient care area policy and the patient condition.
- The duration of monitoring will be stated in the monograph where applicable. This timeframe may also be at the discretion of the healthcare professional administering or ordering the drug, patient care area standard, organizational policy, potential adverse effects of the drug, and the patient's clinical condition.
  - Healthcare professionals must have the knowledge and skills to review the tracings on the monitor, be able to identify abnormalities or changes in the cardiac rhythm and determine the impact on patient responses and outcomes. .
  - Cardiac telemetry is the continuous monitoring of a patient's heart rate and rhythm from a remote location. Telemetry monitoring provides information about a patient's rhythm, but is limited when providing information about ST- segment changes.

- **ECG Monitoring:**

- ECG (electrocardiogram) is a diagnostic test for interpretation of cardiac rhythm, conduction system abnormalities, and the evaluation of cardiac abnormalities. An ECG provides a view of electrical events over a period of time.
- The number of leads (3, 5 or 12) required will be determined by patient care area policy.
- Healthcare professionals must be able to identify abnormalities or changes in the cardiac rhythm and determine the impact on patient care. The only exception is remote telemetry monitoring.

## Respiratory Support

- **Airway Management:**

- At a minimum, equipment for airway management must be readily available in the patient care area; this includes oral airway, manual ventilator (bag valve mask device), airway suctioning, and oxygen administration.
- Respiratory status can be measured by manually counting the rise and fall of the chest or breaths/minute or by using pulse oximetry to determine the oxygen saturation level of the patient (percentage/%). It is important to note that the oxygen saturation may remain high if the patient is on oxygen and the patient respiratory condition may be deteriorating at that time.
- Healthcare professionals must have the individual competence, experience and education to perform airway management and care for the patient. This also includes emergency or rapid response teams which are readily available.

- **Intubation and Manual / Mechanical Ventilation:**
  - The patient must have an endotracheal tube, laryngeal mask airway (LMA), or tracheostomy tube in place to be manually or mechanically ventilated.
  - The patient care area must have ventilators and qualified staff to monitor the patient. Examples: Critical care areas, emergency, operating room, post-anesthesia and recovery areas, etc.
  - Healthcare professionals must have the individual competence, experience and education to perform advanced airway management skills and monitor and care for the intubated and mechanically ventilated patient.

### Fetal Monitoring

- Fetal monitoring is performed using an electronic fetal monitor during pregnancy and labor, to detect and trace the fetal heart rate and uterine contractions.
- Healthcare professionals must have the individual competence, experience and education to perform fetal monitoring, to perform the procedure and be able to identify abnormalities or changes, and determine the impact on patient care.

## Extravasation and Infiltration Definitions

### Extravasation

- Inadvertent administration of a vesicant IV solution/ medication into the perivascular, subcutaneous or interstitial space instead of the intended vascular pathway.
- Extravasation of medications may result in injuries that range from minor ones that resolves spontaneously to serious complications with full-thickness skin loss, muscle and tendon necrosis that requires surgery or amputation.

### Flare Reaction:

- A painless localized venous inflammatory process along the venous pathway or injection site with subsequent histamine release. Flare reactions may include immediate red blotches, streaks, local wheals or edema. This type of reaction usually does not require any intervention and subsides within 30 - 45 minutes.

### Infiltration

- Inadvertent administration of a non-vesicant intravenous (IV) solution /medication into the perivascular, subcutaneous or interstitial space instead of the intended vascular pathway.
  - See Extravasation definition for more information.

### Irritant

- An agent capable of producing discomfort or pain along the internal lumen of a vein.
- Reactions range from mild erythema and burning to pain and inflammation at the injection site.
- These drugs do not usually cause tissue damage unless a very large amount of concentrated drug inadvertently infiltrates the tissues.

### Phlebitis:

- Acute inflammation of the intima of a vein directly related to the medication that is infused and the presence of a vascular access device in the vein characterized by erythema, pain and induration along the pathway of the vein.

### Vesicants

- An agent capable of causing blistering, tissue sloughing, or necrosis when it escapes from the intended vascular pathway into surrounding tissue.

## Other Definitions

### Heparin or Saline Locking

- The instillation of a solution (usually saline or heparin) into a vascular access device to maintain device patency.

### Infusion Pumps

- Infusion pumps are mechanical / electronic devices that control the volume and rate of infusion. These include pumps for IV infusion, epidurals, patient-controlled analgesia, and also smart infusion pumps and syringe pumps.
- The “Required Education, Equipment, or Monitoring” section of the parenteral monographs will identify those drugs requiring infusion pumps.

### Loading Dose

- A loading dose is an initial dose of a drug that may be given at the beginning of a course of treatment before switching to a maintenance dose, in order to achieve an immediate target concentration.

### SMART Infusion Pump

- Acronym for “Safer Medication Administration (through) Technology”, adopted by the Institute for Safe Medical Practices (ISMP) to describe infusion pumps with dose error reduction systems (DERS).
- These DERS pumps are defined as technology with software that incorporates institution-established dosage limits, warnings to the clinician when dosage limits are exceeded, configurable settings by patient type, and access to transaction data.

### Standard Concentrations

- Medication infusions that are mixed according to a limited number of pre-determined drug concentrations.

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