AMOXICILLIN

Drug Class	**Antibiotic – Semisynthetic Penicillin (of the amino penicillin group)**
Description	It acts through the inhibition of synthesis of the bacterial wall, leaning to the formation of a defective bacterial cell causes cell death. Its spectrum covers gram-negative susceptible bacteria and penicillin sensitive gram-positive bacteria (such as *S.Pneumonaie*).
Onset	**ONSET:** Rapidly absorbed after oral administration with peak concentrations achieved within 1-2 hours of oral administration.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of increased dyspnea, sputum productions, sputum purulence, and change in sputum colour from baseline. UTI- Assess urine for Leukocytes, Nitrites, and blood
Indications	Indicated in the treatment of lower respiratory tract infections in mild-to-moderate community acquired pneumonia and uncomplicated exacerbations of chronic obstructive pulmonary disease. 1. Respiratory Distress AND 2. Suspected exacerbation of COPD; Indicated in the treatment of suspected Urinary Tract Infection with mandatory consultation to MRP. 1. Urinalysis test positive for Leukocytes, Nitrites and/or blood
Contraindications	Allergy or sensitivity to Amoxicillin or Penicillin.
Adverse Reaction	***Common side effects:*** rashes (<10%), gastrointestinal upset (up to 20%) specifically in patients with colitis, headache (up to 7%). Prolonged therapy may cause drug resistance. Patients who have experienced an immediate hypersensitive reaction to penicillin or other beta-lactam antibiotics may have adverse reactions.
Supply	500mg tablets
Notable Drug Interactions	Allopurinol – may increase incidence of rash. Methotrexate – penicillins compete with renal absorption & decrease clearance, increasing risk of toxicity. Tetracyclines – may inhibit bacterial activity of penicillins Vitamin K – may increase anticoagulant effect when co-administered or cause coagulation when stopped.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Acute large ingestion may cause nausea, vomiting, diarrhea and abdominal pain. **MANAGEMENT:** For acute ingestion >250mg/kg activated charcoal is indicated. For acute ingestion <250mg/kg, monitor electrolytes.
Clinical Considerations	**CONSIDER PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment for COPD exacerbation. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. **MANDATORY PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment for Urinary Tract Infections. Consider urinalysis assessment for suspected UTI or Diabetes exacerbation.

ADMINISTRATION FOR *COPD EXACERBATION OR UTI*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral	TID	As prescribed up to 3 days
DOSAGE for 500mg tablets		
1 tablet – may crush and dissolve into water to put under tongue (make paste)		

Doxycycline

Drug Class	**Antibiotic- Tetracycline Antimicrobial**
Description	Doxycycline inhibits bacterial protein synthesis by binding to the 30S ribosomal subunit. Doxycycline had bacteriostatic activity against a broad range of Gram-positive and Gram-negative bacteria.
Onset	**ONSET:** Rapidly absorbed after oral administration with peak concentrations achieved within 3 hours of oral administration.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of increased dyspnea, sputum productions, sputum purulence, and change in sputum colour from baseline.
Indications	Indicated in the treatment of lower respiratory tract infections in mild-to-moderate community acquired pneumonia and uncomplicated exacerbations of chronic obstructive pulmonary disease. 3. Respiratory Distress AND 4. Suspected exacerbation of COPD
Contraindications	Hypersensitivity to Doxycycline, other tetracycline's or any component of the formulation; or Myasthenia Gravis; or concurrent use with Isotretinoin
Adverse Reaction	***Common side effects:*** rashes (<10%), gastrointestinal upset (up to 20%) specifically in patients with colitis, headache (up to 7%). Prolonged therapy may cause drug resistance. Patients who have experienced an immediate hypersensitive reaction to penicillins or other beta-lactam antibiotics may have adverse reactions.
Supply	500mg tablets
Notable Drug Interactions	Anticoagulants-increases anticoagulant capabilities Antacids and Iron Preparations- Impairs absorption of antibiotic Barbiturates and Anti-Epileptics- decrease the half-life of doxycycline Pentrane- use of both together could result in fatal renal toxicity Penicillin- bacteriostatic drug may interfere with the bactericidal action of penicillin
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Acute large ingestion may cause nausea, vomiting, diarrhea and abdominal pain. **MANAGEMENT:** For acute ingestion >250mg/kg activated charcoal is indicated. For acute ingestion <250mg/kg, monitor electrolytes.
Clinical Considerations	**CONSIDER PATCH POINT** to the Primary Care Physician or On-Call Community Paramedic Physician for consultation prior to administration of treatment. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. Consider requesting a point-of-care order during the mandatory patch point, if required.

ADMINISTRATION FOR *COPD EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral	BID	As prescribed up to 3 days
DOSAGE for 100mg		
1 tablet		

CLARITHROMYCIN

Drug Class	**Antibiotic – Semi-Synthetic Macrolides**
Description	Prevents bacteria from growing by interfering with their ability to make proteins. Due to the differences in the way proteins are made in bacteria and humans, the macrolide antibiotics do not interfere with production of proteins in humans. Brand name is Biaxin.
Onset and Duration	Rapidly absorbed after oral administration with peak concentrations achieved within 2 hours of oral administration.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of increased dyspnea, sputum productions, sputum purulence, and change in sputum colour from baseline.
Indications	Indicated in the treatment of lower respiratory tract infections and acute bacterial exacerbation of chronic bronchitis caused by *S. pneumoniae*, *H. influenzae.* 1. Respiratory Distress AND Suspected exacerbation of COPD
Contraindications	Allergy or sensitivity to Clarithromycin.
Adverse Reaction	***Common side effects:*** Caution should be taken in patients with hepatic failure or renal impairment, patients with known QT prolongation or are taking medications that prolong QT-time. May cause GI upset including constipation, nausea, or diarrhea. Clarithromycin should be avoided by patients known to be allergic to clarithromycin or other chemically related macrolide antibiotics, such as erythromycin. Treatment with clarithromycin and other antibiotics can alter the normal bacteria flora of the colon and permit overgrowth of *C. difficile*, a bacterium responsible for pseudomembranous colitis.
Supply	250mg or 500mg tablets
Notable Drug Interactions	Saquinavir – Concomitant therapy may cause cardiac arrhythmia. Quetiapine – may cause malignant neuroleptic syndrome. Oral hypoglycemic agents – may cause significant hypoglycemia. Midazolam – may cause CNS effects Calcium Channel Blockers – May cause hypotension
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Acute large ingestion may cause nausea, vomiting, diarrhea and abdominal pain. **MANAGEMENT:** For acute ingestion activated charcoal may be indicated. General supported measures are recommended.
Clinical Considerations	**CONSIDER PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. Consider requesting a point-of-care order during the mandatory patch point, if required.

ADMINISTRATION FOR *COPD EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral	TID	As prescribed up to 3 days

DOSAGE for 500mg tablets 1 tablet – may crush and dissolve into water to put under tongue (make paste)

DEXTROSE

Drug Class	**Simple Sugar**
Description	A simple sugar made from starch. Usually corn.
Onset and Duration	**ONSET:**. Within 10 minutes. Usually less than 1 minute. **DURATION OF ACTION:** 40mins (PO)
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: -age 2 or older -BGL under 4.0mmols -Full set of vitals
Indications	Agitation; or Altered LOA; or Seizure; or Symptoms of stroke; BGL <4.0mmols
Contraindications	Allergy or sensitivity or Dextrose (or corn)
Adverse Reaction	***Common side effects:*** -Hyperglycemia, hypokalemia, fluid buildup
Supply	10g/100mls (250ml bag)
Notable Drug Interactions	None noted.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Ongoing hyperglycemia can be treated with insulin.
Clinical Considerations	**CONSIDER PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment for hypoglycemia. Get accurate BGL reading with Glucometer or CHEM 8 blood test.

ADMINISTRATION FOR *HYPOGLYCEMIA*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
IV	0.2g/kg (2mls/kg) q 10 mins	2

MAX single Dose
10g (100mls)

GLUCAGON

Drug Class	**Synthetic Hormone**
Description	Glucagon triggers your liver to convert stored glycogen into a usable form and then release it into your bloodstream. It also helps your body make glucose from other sources, such as amino acids.
Onset and Duration	**ONSET:**. Within 8-10 minutes **DURATION OF ACTION:** 21-31 minutes
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: -BGL under 4.0mmols -Full set of vitals
Indications	Agitation; or Altered LOA; or Seizure; or Symptoms of stroke; BGL <4.0mmols
Contraindications	Allergy or sensitivity to Glucagon; Pheochromocytoma
Adverse Reaction	***Common side effects:*** -Nausea, vomiting, headache
Supply	1mg/1ml Has to be reconstituted prior to administration.
Notable Drug Interactions	Used as an antidote for Betablocker overdose. 10mg bolus over 10 mins.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Ongoing hyperglycemia can be treated with insulin.
Clinical Considerations	**CONSIDER PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment for hypoglycemia. Get accurate BGL reading with Glucometer or CHEM 8 blood test.

ADMINISTRATION FOR *HYPOGLYCEMIA*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
IM	<25kgs 0.5mg q 20mins >25kgs 1.0mg q 20mins	2

Post Treatment
BGLs of >5.0 mmols/L for 30 mins prior to discharging pt.

FOSFOMYCIN

Drug Class	**Antibiotic**
Description	A synthetic broad spectrum, bactericidal, oral antibiotic
Onset and Duration	**ONSET:**. Within 2 hours when taken orally. **DURATION OF ACTION:** Half-life of 5-9 hours
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: -Urinalysis with positive Leukocytes, Nitrites and/or blood. -Full set of vitals
Indications	Known or suspected Urinary Tract Infection
Contraindications	Allergy or hypersensitivity to Fosfomycin or any component of the formulation
Adverse Reaction	***Common side effects:*** -C. difficile associated diarrhea -burning or painful urination
Supply	3g
Notable Drug Interactions	Metoclopramide- lowers the serum concentration and urinary excretion of Fosfomycin. Other drugs that increase gastrointestinal activity may produce similar effects.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Serious toxicity is unlikely. Most common side affect is c. difficile associated diarrhea.
Clinical Considerations	**MANDATORY PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment for Urinary Tract Infections. Consider urinalysis assessment for suspected UTI or Diabetes exacerbation.

ADMINISTRATION FOR *URINARY TRACT INFECTION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral	1 time dose of 3g sachet	1

DOSAGE for 3g sachet
1 sachet mixed with ½ cup cold water

FUROSEMIDE (LASIX)

Drug Class	**Loop-Diuretic**
Description	Furosemide acts by inhibiting the sodium-potassium-chloride co-transporter in ascending loop of Henle. This results in a decreased renal reabsorption of sodium, chloride and water. It also inhibits electrolyte reabsorption in the proximal and distal convoluted tubules. It causes renal vasodilation and renal blood flow causing increased glomerular filtration rate, especially with large doses.
Onset and Duration	**ONSET:** Peak concentrations are reached in approximately 60 minutes with oral consumption. **DURATION OF ACTION:** Elimination half-life is reported at 1.5-2 hours and duration of diuresis lasts anywhere from 6-8 hours following oral consumption. Half-life may extend to 9 hours in those with endstage renal failure and therefore duration of action extended as well to upwards of 24 hours.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of prior use of Furosemide.
Indications	Indicated in the treatment of lower respiratory tract infections and acute bacterial exacerbation of chronic bronchitis caused by *S. pneumoniae*, *H. influenzae.* Respiratory Distress, OR Fluid retention, OR Suspected exacerbation of CHF
Contraindications	Allergy or sensitivity to Furosemide
Adverse Reaction	May worsen existing fluid or electrolyte imbalances specifically, hyponatremia, hypokalemia, hypocalcemia, hypochloremia, hypomagnesemia and dehydration. ***Common side effects:*** observe patients for signs of fluid and electrolyte depletion that present with dry mouth, thirst, weakness, rapid weight loss, drowsiness, restlessness, muscle pain or cramping, hypotension, oliguria, tachycardia, nausea and vomiting. Hypokalemia can cause life threatening arrhythmias and blood glucose control resulting in hyperglycemia. Tinnitus has been reported with furosemide use. Excessive diuresis can lead to acute renal impairment.
Supply	20, 40, 80, 500 mg tablets
Notable Drug Interactions	May worsen hypotensive effects of antihypertensive medications causing orthostatic hypotension. Digoxin – Increased risk of digoxin toxicity and cardiac arrhythmias due to electrolyte disturbance. Lithium – decrease lithium clearance. Methotrexate – may block the diuretic effect NSAIDS – may increase risk of nephrotoxicity.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** signs and symptoms of overdose are an extension of its diuretic effects and include dehydration, hypovolemia and electrolyte imbalances and cardiac arrhythmias. **MANAGEMENT:** If ingestion is acute (with in 1 hour) activated charcoal may be administered. Otherwise, supportive management that restores fluid and electrolyte balance and vital signs is prudent.
Clinical Considerations	**MANDATORY PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. Consider requesting a point-of-care order during the mandatory patch point, if required.

ADMINISTRATION FOR *HEART FAILURE EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral (SQ for Palliative)	As per prescription on consultation	3

DOSAGES for 20mg tablet or SQ 40mg/4mls

As per prescription on consultation – *to calculate number of tablets, divide dose to administer by 20*

HYDROMORPHONE (DILAUDID)

Drug Class	**Opioid Analgesic**
Description	Opioid analgesics have multiple actions but exert their primary effects on the central nervous system and organs containing smooth muscle. The principal actions of therapeutic value are analgesia and sedation. Opioid analgesics also suppress the cough reflex. Dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range and titrated slowly. ***See Equivalent Dose Chart for Comparison between various opioid dosages and routes of administration.***
Onset and Duration	**ONSET:** 5 minutes with peak effects in approximately 20 minutes **DURATION OF ACTION:** 2-4 hours
Required Assessments	History and physical assessment; **AND** Complete set of vitals; **AND** Palliative Performance Scale; **AND** Edmonton Symptom Assessment System; **AND** Do Not Resuscitate – Goals of care.
Indications	1. Stated palliative goals of care **AND** 2. Uncontrolled Pain or Dyspnea
Contraindications	Known allergy or hypersensitivity to hydromorphone or to any component of the product.
Adverse Reaction	***Common side effects:*** constipation, light-headedness, dizziness, sedation, nausea, vomiting, and hyperhidrosis. To a lesser degree: respiratory arrest, circulatory depression, CNS depression. ***Opioid Neurotoxicity:*** *Presents with myoclonus, hallucinations, agitation, somnolence, cognitive dysfunction, hyperalgesia.* ***MANAGEMENT:*** *Reduce dose, switch opioid, hydrate*
Supply	**2 mg/ml** Non-medical ingredients include: Citric acid or sodium citrate
Notable Drug Interactions	**Interaction with Benzodiazepines and other CNS Depressants** *(alcohol, anesthetics, antidepressants, antipsychotics, hypnotics, opioids, sedating antihistamines)* – Additive CNS depressant effects. Concomitant administration with *opioids* may lead to enhanced euphoria and psychological dependence.
Symptoms of Overdose and Management	**MILD OVERDOSE:** drowsiness, impaired coordination, diminished reflexes, confusion and lethargy. **MORE SERIOUS OVERDOSE:** Miosis, respiratory depression loss of consciousness. ***MANAGEMENT:*** *If mild to moderate – hold next dose and reduce dose. If severe, administer Naloxone and provide respiratory support.*
Clinical Considerations	1. *If existing orders are available for the patient*, hydromorphone may be administered **within the range specified within this directive.** 2. *If there are no orders available or patients are opioid naïve,* **the lower range of doses should be used.** 3. *If the patient is already on a regular opiate*, **the same opiate should be used.** 4. *If the patient is on a regular opiate regimen that does not include hydromorphone and does not have emergency orders available,* **paramedics should confirm medication and dose with the MRP.**

ADMINISTRATION *UNCONTROLLED PAIN AND DYSPNEA*

ROUTE	DOSING INTERVAL	MAXIMUM # OF DOSES
Subcutaneous	Every 4 hours	4

DOSAGES for 2 mg/ml supply. Dose range of 0.5-2 mg

0.5 mg = 0.25 ml	1 mg = 0.5 ml	1.5 mg = 0.75 ml	2 mg = 1 ml

HALOPERIDOL (HALDOL)

Drug Class	**High-Potency First-Generation Antipsychotic**
Description	Haloperidol exhibits high affinity for dopamine D2 receptors and exhibits weak anticholinergic activity; its antiemetic effect has been attributed to dopamine blockade in the chemoreceptor trigger zone.
Onset and Duration	**ONSET:** Subcutaneous – 10-20 min for peak concentrations with full effect in 30-45 min. **DURATION OF ACTION:** prolonged when given SC and can last 3-9 days.
Required Assessments	History and physical assessment; **AND** Complete set of vitals; **AND** Palliative Performance Scale; **AND** Edmonton Symptom Assessment System; **AND** Do Not Resuscitate – Goals of care.
Indications	4. Stated palliative goals of care **AND** 5. Increased agitation or suspected new or increased hallucinations **OR** nausea and vomiting **AND** 6. Consultation with Palliative Care Physician
Contraindications	**1. In all instances –** Known allergy or sensitivity to Haloperidol **When administering for hallucinations and agitation** **2.** Known Parkinson's or Lewy Body Dementia **3.** Neuroleptic Malignant Syndrome
Adverse Reaction	***Common side effects:*** Haloperidol may cause QTc prolongation and sudden death from fatal Torsade's de pointes arrhythmia, specifically those with underlying electrolyte or cardiac abnormalities – more common with IV admin. The use of haloperidol has been associated with the chronic, potentially irreversible movement disorder, tardive dyskinesia (TD). Less common side effects: tachycardia, heart blocks, rashes, hypoglycemia, indigestion, anorexia, nausea/vomiting, anemia, may lower seizure threshold, bronchospasm or laryngospasm.
Supply	5 mg/ml supplied in 1 ml ampules
Notable Drug Interactions	Aripiprazole – Additive QTc prolongation CNS Depressants – additive sedative effects when used with benzodiazepines.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE** can include EPS such as akathisia, dystonic reactions or parkinsonian effects, seizures, hypotension (rarely hypertension), hypokalemia, altered temperature regulation, arrhythmias, respiratory depression and coma. NMS can occur at therapeutic or toxic doses. Neuroleptic Malignant Syndrome (NMS) can occur at therapeutic or toxic doses. **MANAGEMENT:** treat NMS by cooling patient and monitoring hyperthermia, treat hypotension with IV fluids
Clinical Considerations	Dimenhydrinate is rarely used in the palliative care population as it can cause delirium, increase drowsiness, and does not target the appropriate receptors to control the nausea in most patients – use only when Haloperidol is contraindicated.

ADMINISTRATION FOR *NAUSEA/VOMITING*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Subcutaneous (SC)	4 hours	3

DOSAGES for 5mg/ml supply

0.5 mg = 0.1 ml

ADMINISTRATION FOR *HALLUCINATIONS AND AGITATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES

Subcutaneous (SC)	1 hour	2
DOSAGES for 5 mg/ml supply		
1.5 mg = 0.3 ml		

IPATROPIUM BROMIDE (ATROVENT)

Drug Class	**Bronchodilator (SAMA – SHORT ACTING MUSCARINIC ANTAGONIST)**
Description	Comes as a pressurized inhalation solution in a metered dose that causes an anticholinergic (parasympatholytic) effect. It inhibits vagally mediated reflexes by antagonizing the action of acetylcholine at the muscarinic receptors in the lung tissue resulting in relaxation of smooth muscle tissue.
Onset and Duration	**ONSET:** 1-5 minutes with peak effect between 1-2 hours **DURATION OF ACTION:** 20mcg doses last about 2 hours after peak effect reached and 40mcg doses up to 6 hours in duration.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of increased dyspnea, sputum productions, sputum purulence, and change in sputum colour from baseline.
Indications	Indicated in bronchoconstriction and bronchospasm associated with COPD. 1. Respiratory Distress AND 2. Suspected exacerbation of COPD
Contraindications	Allergy or sensitivity to Ipratropium Bromide
Adverse Reaction	Anticholinergic effects may cause worsening of narrow-angle glaucoma and urinary retention. Rarely is paradoxical bronchospasm seen. ***Common side effect:*** coughing, rhinitis, headache, blurred vision, palpitations (arrhythmia), nausea, dry mouth, UTI, myalgia
Supply	20mcg/metered dose
Notable Drug Interactions	Few negative drug interactions exist. May have synergistic anticholinergic effect when taken with anticholinergics.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** Minor anticholinergic effects are most common. In rare large overdose settings, anticholinergic toxicity may present. **MANAGEMENT:** Should signs of serious toxicity appear, cholinesterase inhibitors may be considered.
Clinical Considerations	Use a valved holding chamber or spacer when administering for greatest effect. **MANDATORY PATCH POINT** to the Primary Care Physician or On-Call Community Paramedic Physician for consultation prior to administration of treatment. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. Consider requesting a point-of-care order during the mandatory patch point, if required.

ADMINISTRATION FOR *COPD EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Inhalation (aerosol)	4 puffs 4x per day + 2 puffs q4hrs as needed	16 puffs/24hrs + 12 PRN/24hrs

DOSAGES for supply 20mcg/metered dose (puff)	
4 puffs 4x per day	2 puffs every 4 hours as needed

LORAZEPAM (ATIVAN)

Drug Class	**Intermediate-Acting Benzodiazepine**
Description	Depresses the CNS and causes sedation by binding to GABA Receptors and enhancing GABA effects. GABA is the primary inhibitory neurotransmitter in the CNS. Its role is to reduce neuronal excitability.
Onset and Duration	**ONSET:** Sublingual: 5–15 min **DURATION OF ACTION:** 1-6 hours (may be prolonged in patients with renal impairment)
Required Assessments	History and physical assessment; **AND** Complete set of vitals; **AND** Palliative Performance Scale; **AND** Edmonton Symptom Assessment System; **AND** Confusion Assessment Method (CAM) for identifying delirium **AND** Do Not Resuscitate – Goals of care.
Indications	1. Stated palliative goals of care **AND** 2. Mild to moderate anxiety **AND** 3. Consultation with Palliative Care Physician
Contraindications	1. Known allergy or hypersensitivity to lorazepam. 2. Delirium 3. ≥75 y/o with advanced disease
Adverse Reaction	**CAUTION:** if administered parenteral to elderly patients, these patients have a higher risk of experiencing *respiratory depression, apnea, increased bronchial secretions, hypotension, and bradycardia.* ***Common side effects:*** *Nausea, drowsiness, dizziness, headache, muscle weakness, ataxia. Pediatric and elderly patients may have a paradoxical STIMULANT reaction.*
Supply	0.5-1 mg tablets
Notable Drug Interactions	**Interaction with other CNS Depressants** *(alcohol, anesthetics, antidepressants, antipsychotics, hypnotics, opioids, sedating antihistamines)* – Additive CNS depressant effects. Concomitant administration with *opioids* may lead to enhanced euphoria and psychological dependence.
Symptoms of Overdose and Management	**MILD OVERDOSE:** drowsiness, impaired coordination, diminished reflexes, confusion and lethargy. **MORE SERIOUS OVERDOSE:** ataxia, hypotonia, hypotension, respiratory depression and coma. ***MANAGEMENT:*** *Vital signs and fluid balance should be monitored. Ensure that an adequate airway is maintained and respiration is assisted as required. Hypotension is not generally problematic and is usually managed with boluses of normal saline.*

ADMINISTRATION FOR *MILD TO MODERATE ANXIETY*

ROUTE	DOSING INTERVAL	MAXIMIM # OF DOSES
Sublingual (SL)	2 hours	1

DOSAGES of 1.0 mg tablets

1 tablet – may crush and dissolve into water to put under tongue (make paste)

MIDAZOLAM (VERSED)

Drug Class	**Short-Acting Benzodiazepine**
Description	Depresses the CNS and causes sedation by binding to GABA Receptors and enhancing GABA effects. GABA is the primary inhibitory neurotransmitter in the CNS. Its role is to reduce neuronal excitability.
Onset and Duration	**ONSET:** Sublingual – 1-3 hours **DURATION OF ACTION:** 2-24 hours (may be prolonged in patients with renal impairment)
Required Assessments	History and physical assessment; **AND** Complete set of vitals; **AND** Palliative Performance Scale; **AND** Edmonton Symptom Assessment System; **AND** Do Not Resuscitate – Goals of care.
Indications	1. Stated palliative goals of care **AND** 2. Increasing agitation or suspected new or increased hallucinations **AND** 3. Contraindication to *HALOPERIDOL* **AND** 4. Consultation with Palliative Care Physician
Contraindications	Known allergy or hypersensitivity to Midazolam.
Adverse Reaction	**CAUTION:** If administered parenteral to elderly patients, these patients have a higher risk of experiencing *respiratory depression, apnea, increased bronchial secretions, hypotension, and bradycardia.* ***Common side effects:*** *Nausea, drowsiness, dizziness, headache, muscle weakness, ataxia. Pediatric and elderly patients may have a paradoxical STIMULANT reaction.*
Supply	5 mg/ml supplied as 10 mg/2 ml vials
Notable Drug Interactions	**Interaction with other CNS Depressants** *(alcohol, anesthetics, antidepressants, antipsychotics, hypnotics, opioids, sedating antihistamines)* – Additive CNS depressant effects. Concomitant administration with *opioids* may lead to enhanced euphoria and psychological dependence.
Symptoms of Overdose and Management	**MILD OVERDOSE:** drowsiness, impaired coordination, diminished reflexes, confusion and lethargy. **MORE SERIOUS OVERDOSE:** ataxia, hypotonia, hypotension, respiratory depression and coma. ***MANAGEMENT:*** *Vital signs and fluid balance should be monitored. Ensure that an adequate airway is maintained and respiration is assisted as required. Hypotension is not generally problematic and is usually managed with boluses of normal saline.*
Clinical Considerations	Haloperidol should be used as the first line agent for the treatment of agitation and hallucinations. **Midazolam can be used in patients with contraindications to Haloperidol**. **FOR SEIZURE:** A physician consultation patch is NOT REQUIRED prior to the initial dose. Protocol should be applied to seizure that has no self-terminated within 2 minutes. FOR TERMINAL BLEEDING: A physician consultation patch is NOT REQUIRED prior to the initial dose. This event can be very distressing for the patient or caregiver. Sedation is acceptable in these circumstances.

ADMINISTRATION FOR *HALLUCINATIONS OR AGITATION*

DOSAGES for 10 mg/2 ml supply. *Dose range of 0.5-10 mg*

ROUTE	DOSING INTERVAL	MAXIMUM # OF DOSES
Subcutaneous	1 hour	Maximum 2

0.5 mg = 0.1 ml	1 mg = 0.2 ml	1.5 mg = 0.3 ml	2 mg = 0.4 ml

ADMINISTRATION FOR *STATUS EPILEPTICUS*

ROUTE	DOSING INTERVAL	MAXIMUM # OF DOSES
Subcutaneous	5 min	Maximum 3

5 mg = 1.0 ml		
ADMINISTRATION FOR *TERMINAL BLEEDING*		
ROUTE	**DOSING INTERVAL**	**MAXIMUM # OF DOSES**
Subcutaneous	10 min	Maximum 3
10 mg = 2.0 ml		

PREDNISONE

Drug Class	**IMMEDIATE ACTING CORTICOSTEROID**
Description	Corticosteroids relieve inflammation by inhibiting macrophage accumulation in inflamed areas and reduce capillary permeability. They suppress the immune system. They are a synthetic analogue of hormones secreted by the adrenal cortex.
Onset and Duration	**ONSET:** within minutes and peak within 1-2 hours **DURATION OF ACTION:** varies depending on dose, elimination half life is 18-36 hours.
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA - Vital Signs: HR 60-139, normotension Ascertain ***HISTORY*** of increased dyspnea, sputum productions, sputum purulence, and change in sputum colour from baseline.
Indications	Indicated in the treatment of lower respiratory tract infections in mild-to-moderate community acquired pneumonia and uncomplicated exacerbations of chronic obstructive pulmonary disease. 1. Respiratory Distress AND 2. Suspected exacerbation of COPD
Contraindications	Allergy or sensitivity to Prednisone.
Adverse Reaction	***Common side effects:*** May cause fluid retention and electrolyte imbalance therefore should be used with caution in patients with heart failure or hypertension. Has been associated with loss of bone density and osteoporosis. Discontinuation may result in a withdrawal and secondary adrenocortical insufficiency. Symptoms include nausea, fatigue, anorexia, dyspnea, hypotension, hypoglycemia, myalgia, fever, malaise. Corticosteroid use may mask symptoms of peptic ulcer. Prolonged use of corticosteroids increases susceptibility to infections and may mask signs of infection. Prolonged use may also cause Cushing Syndrome.
Supply	50mg tablets
Notable Drug Interactions	Use of NSAIDs should be cautious to present ulcerations. Warfarin – corticosteroid use may increase anticoagulant effect.
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** difficult to observe. **MANAGEMENT:** Consult emergency department
Clinical Considerations	**MANDATORY PATCH POINT** to the Primary Care Physician for consultation prior to administration of treatment. If severe signs or symptoms are exhibited, consider activation of 911 for transport for more definitive care. If a patient is on home O2 consider flow rate titration to improve oxygenation. Consider requesting a point-of-care order during the mandatory patch point, if required.

ADMINISTRATION FOR *COPD EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
Oral	At time of need	1 per day

DOSAGES for 50mg tablet supply

1 tablet – may crush and dissolve into water to put under tongue (make paste)

SCOPOLAMINE (HYOSCINE HYDROBROMIDE)

Drug Class	**Antimuscarinic**
Description	Scopolamine is a naturally occurring alkaloid of the belladonna (Deadly Nightshade) plant. Like atropine, it is an antimuscarinic agent antagonizing the action of acetylcholine at muscarinic receptors. The anticholinergic properties of scopolamine and atropine differ in that scopolamine has more pronounced sedative, antisecretory and antiemetic activity while atropine has stronger effects on the heart, intestine and bronchial muscle and a more prolonged duration of action.
Onset and Duration	**ONSET:** 15-20 minutes **DURATION OF ACTION:** 4-6 hours
Required Assessments	History and physical assessment; **AND** Complete set of vitals; **AND** Palliative Performance Scale; **AND** Edmonton Symptom Assessment System; **AND** Do Not Resuscitate – Goals of care.
Indications	1. Stated palliative goals of care **AND** 2. Congested/loud/rattling breathing in patients near their end of life
Contraindications	Known allergy or hypersensitivity to scopolamine or to any component of the product.
Adverse Reaction	***Common side effects:*** Dry mouth and drowsiness, may cause delirium if patient is awake. ***Rare side effects***: blurred vision, mydriasis, hallucinations or delirium (elderly more susceptible), rashes
Supply	**0.4mg/1ml**
Notable Drug Interactions	**Mild interactions may include** increased effects of scopolamine when used with dimenhydrinate, donepezil, levodopa and galantimine
Symptoms of Overdose and Management	**SYMPTOMS OF OVERDOSE:** like anticholinergic toxicity - mydriasis, decreased gastrointestinal motility flushed/hot/dry skin, drowsiness, confusion and acute toxic psychosis, tachycardia, dry membranes **MORE SERIOUS OVERDOSE:** seizures, coma, respiratory depression; hyperthermia, hypertension ***MANAGEMENT:*** Treatment generally involves symptomatic and supportive care, including maintenance of fluid and electrolyte balance.
Clinical Considerations	Patient repositioning and gentle turning of the head to the side can be done instead of medication. However suction of the oropharynx is not appropriate as it will likely cause discomfort and a gag reflex.

ADMINISTRATION *FOR TERMINAL CONGESTED BREATHING*

ROUTE	INTERVAL	# OF DOSES
Subcutaneous	Every 4 hours	4

DOSAGES for 0.4 mg/ml supply
0.4 mg = 1 ml

EQUIVILANT DOSE CHART

Please note that equivalencies are approximate; use this chart as a guide only. PO = Oral, SC = Subcutaneous

ORAL ROUTES	Morphine 10mg PO = Hydromorphone 2 mg PO 5:1
ORAL TO SUBCUTANEOUS ROUTES	Hydromorphone 10mg PO = Hydromorphone 5mg SC 2:1
SUBCUTANEOUS EQUIANALGESIA:	Morphine 10mg SC = Hydromorphone 2mg SC 5:1
FROM TRANSDERMAL FENTANYL TO SUBCUTANEOUS HYDROMORPHONE	Fentanyl 25mcg patch (over 72hrs) = approx. Hydromorphone PO 12-26 mg in 24hr Hydromorphone 12-26 mg PO in 24hrs = Hydromorphone 6 mg SC in 24hrs

BREAK THROUGH PAIN

Breakthrough pain (BTP) refers to transient exacerbation of pain that occurs in patients with otherwise baseline persistent pain that is well controlled. When baseline pain is not well controlled, all attempts should be made to first control it before concluding that BTP is out of control.

BTP can present clinically in different ways. BTP can be neuropathic, nociceptive/somatic, visceral or incident pain. Incident pain is a subtype of BTP and is elicited by any movement and can be difficult to control.

Management of Breakthrough Pain

Use short acting opioid formulations. Generally, the same opioid that is used for the regular pain regimen is used for break through pain.

10% of the total daily dose of the regular regimen **q 4hr** to a max of 3 breakthrough doses in a 24 hour period.

If the BTP is ineffective, consider titrating the dose at 5% increments to a max of 20% of the total daily dose.

Example:

- If a patient is on 4mg of Hydromorphone PO q4 hours, they take approximately 24mg per day (6 doses in a 24 hour period = 4mg x 6 = 24mg).
- The paramedic will want to start by administering a break through dose of 2.0-2.5mg (10% of 24mg or 24mg x 0.1) in addition to the normal dosing regimen when breakthrough pain occurs
- They will administer this up to 3 times in a 24 hour period.
- If this is not effective, they would then start by adding 5% more, or another approx. 1mg (24mg x 0.05= 1.2mg) to the BTP dose, for a total of 3.0-3.5mg.
- Continue titrating the dose up to 20% of the total daily dose if required.

ACETAMINOPHEN

Drug Class	Analgesia
Description	It works peripherally to block pain impulse generation; may also inhibit prostaglandin synthesis in CNS.
Onset	1 hour
Required Assessments	Assessment for appropriate **CONDITIONS** of use: • Over the age of 18 years • Unaltered LOA
Indications	Pain
Contraindications	• Allergy or sensitivity to Acetaminophen • Acetaminophen use within previous 4 hours • Hx of liver disease • Active vomiting • Unable to tolerate oral medication • Suspected ischemic chest pain
Adverse Reaction	May include: Angioedema. Disorientation. Dizziness. Pruritic maculopapular rash. Rash. Hyperammonemia. Stevens-Johnson syndrome. Toxic epidermal necrolysis. Urticaria. Gastrointestinal hemorrhage. Laryngeal edema. Agranulocytosis. Leukopenia. Neutropenia. Pancytopenia. Thrombocytopenia. Thrombocytopenic purpura. Hepatotoxicity. Liver failure. Nephrotoxicity. Pneumonitis. Anaphylactoid.
Supply	960-1,000 mg
Notable Drug Interactions	Chronic concurrent use with NSAIDs, including ASA, may increase the risk of adverse renal reactions. Diflunisal increased acetaminophen blood levels and may increase the risk of hepatoxicity with chronic concurrent use. Chronic high dose acetaminophen (>2 g/ day) may increase the risk of bleeding with warfarin. Hepatotoxicity may be additive with other hepatotoxic substances, including alcohol
Symptoms of Overdose and Management	Symptoms: Loss of appetite, nausea, vomiting, or pain in the upper right quadrant of abdomen. Antidote: Acetylcysteine.
Clinical Considerations	Consider: patching to primary care physician if clinical stability or appropriateness of the directive for treatment. Co-administer Acetaminophen and ibuprofen when appropriate. Uncomplicated headache conforming to the patient's usual pattern should be considered for acetaminophen only. Febrile patients may be considered for acetaminophen only.

ADMINISTRATION FOR PAIN

ROUTE	INTERVAL	MAXIMUM # OF DOSES
PO	N/A	1
Max single doses		
3 days		

IBUPROFEN

Drug Class	Analgesia
Description	Non Steroidal anti-inflammatory (NSAID)
Onset	30-60 minutes
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: - Age 18 or greater - Unaltered LOA
Indications	Pain
Contraindications	- Allergy or sensitivity to Ibuprofen - NSAID use within previous 6 hours - Patient on anticoagulation therapy - Current active bleeding - Hx of peptic ulcer disease or GI bleed - Pregnant - If asthmatic, no prior use of ASA or other NSAIDs - CVA or TIA in the previous 24 hours - Known renal impairment - Active vomiting - Unable to tolerate oral medication - Suspected ischemic chest pain
Adverse Reaction	May include: Headache, drowsiness, dizziness, lured vision, tinnitus, amblyopia, nausea, vomiting, constipation, GI bleeding, edema, arrhythmias, dyspepsia, renal failure, hematuria, cystitis, rash, blood dyscrasias, prolonged bleeding time.
Supply	400 mg
Notable Drug Interactions	Concurrent use with ASA may decrease effectiveness. Additive adverse GI side effects with ASA, other NSAIDS, potassium supplements, glucocorticoids or alcohol. Chronic use with acetaminophen may increase the risk of adverse renal reactions. May decrease the effectiveness of diuretics or antihypertensive. May increase the hypoglycemic effects of insulin or oral hypoglycemic agents. Increased risk of bleeding with cefamandole, cefotetan, cefperazone, valproic acid, plicamycin, thrombolytic agents or anticoagulants.
Symptoms of Overdose and Management	The most common symptoms are GI irritation and CNS depression. Management of NSAID overdose is symptomatic and supportive. There is no specific antidote.
Clinical Considerations	Consider: patching to primary care physician if clinical stability or appropriateness of the directive for treatment. Co-administer Acetaminophen and ibuprofen when appropriate. Uncomplicated headache conforming to the patient's usual pattern should be considered for acetaminophen only. Febrile patients may be considered for acetaminophen only.

ADMINISTRATION FOR PAIN

ROUTE	INTERVAL	MAXIMUM # OF DOSES
PO	N/A	1
Max single dose		
3 Days		

ONDANSETRON

Drug Class	Antiemetic
Description	Serotonin antagonists (5-HT3 antagonists)
Onset	Approx. 15 to 30 mins
Required Assessments	Assessment for appropriate CONDITIONS of use: - Age 18 or greater - 25 kg or greater - Unaltered LOA
Indications	Nausea OR Vomiting
Contraindications	- Allergy or sensitivity to Ondansetron - Prolonged QT syndrome (known to patient) - Apomorphine use
Adverse Reaction	May include Headache, dizziness, weakness, diarrhea, constipation, dry mouth, abdominal pain, motor control and coordination.
Supply	4 mg
Notable Drug Interactions	There is a risk of serotonin syndrome when taking ondansetron in conjunction with other serotonergic medications.
Symptoms of Overdose and Management	There is no known antidote to ondansetron, and supportive measures are used for overdose.
Clinical Considerations	If a patient has received Ondansetron and has no relief of their nausea and vomiting symptoms after 30 minutes, Dimenhydrinate may be considered (or vice versa).

ADMINISTRATION FOR *Nausea/Vomiting*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
PO	N/A	1
Max single dose		
4 Mg		

DIMENHYDRINATE

Drug Class	Antiemetic, Antihistamine
Description	H1 Antihistaminic (First Generation)
Onset	30 minutes
Required Assessments	Assessment for appropriate CONDITIONS of use: - Age 65 or greater - 25 kg or greater - Unaltered LOA
Indications	Nausea OR Vomiting
Contraindications	- Allergy or sensitivity to Dimenhydrinate - Overdose on antihistamine or anticholinergics or tricyclic antidepressants - Co-administration of Diphenhydramine
Adverse Reaction	Symptoms may include Drowsiness, dizziness, headache, blurred vision, tinnitus, palpitations, hypotension, dry mouth, anorexia, constipation, urinary frequency, dysuria, photosensitivity, pain at IM site
Supply	50 mg/1 ml
Notable Drug Interactions	Additive CNS depression with other antihistamines, alcohol, opioids and sedatives/hypnotics. Additive anticholinergic properties with tricyclic antidepressants, quinidine, disopyramide. MAO inhibitors intensify and prolong the anticholinergic effects of antihistamines
Symptoms of Overdose and Management	**Anti-Cholinergic overdose** symptoms include, tachycardia, erythema, hyperthermia, dry mucous membranes, mydriasis, confusion, delirium, unconsciousness, vision disturbances, tremors and urinary retention **Management –** emergent hospitalization for supportive care and treatment
Clinical Considerations	Prior to IV administration, dilute Dimenhydrinate (concentration of 50 mg/1 ml) 1:9 with Normal Saline. If administered IM do not dilute. If a patient has received Ondansetron and has no relief of their nausea and vomiting symptoms after 30 minutes, Dimenhydrinate may be considered (or vice versa).

ADMINISTRATION FOR *Nausea/Vomiting*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
IV/IM	N/A	1

Dose	
>25kg to <50kg – 25mg	≥50kg – 50mg

SALBUTAMOL

Drug Class	Bronchodilator – Beta 2 Adrenergic Receptor Agonist
Description	Salbutamol (Albuterol [USAN]) is a short-acting, selective beta2-adrenergic receptor agonist used in the treatment of asthma, COPD and other induced bronchoconstriction etiologies.
Onset	5-15 minutes aerosol inhalation <5 minutes nebulized solution
Required Assessments	- Auscultation - Vitals Assessments including SPO2, BP, HR, RR, temperature - Work of Breathing - Word Dyspnea
Indications	Salbutamol is indicated for (i) the symptomatic relief and prevention of bronchospasm due to bronchial asthma, chronic bronchitis, reversible obstructive airway disease, and other chronic bronchopulmonary disorders in which bronchospasm is a complicating factor, and/or (ii) the acute prophylaxis against exercise-induced bronchospasm and other stimuli known to induce bronchospasm.
Contraindications	Allergy or sensitivity
Adverse Reaction	Lactic acidosis has been reported in association with high therapeutic doses as well as overdoses of short-acting beta-agonist therapy, therefore monitoring for elevated serum lactate and consequent metabolic acidosis (particularly if there is persistence or worsening of tachypnea despite resolution of other signs of bronchospasm such as wheezing) may be indicated in the setting of overdose. Hypokalemia may occur following overdose with salbutamol. Serum potassium levels should be monitored.
Supply	Solution 2.5mg-5mg, Aerosol – Metered – 100mcg
Notable Drug Interactions	NSAID - Increased risk of hypertension Anti-Hypertensives - may decrease the antihypertensive activities and therefore raise BP Anticholinergic, Antiemetic, Anticonvulsant, Antiarrhythmic - The risk or severity of QTc prolongation can be increased Nitroglycerin - may decrease the antihypertensive activities and therefore raise BP
Symptoms of Overdose and Management	- Tremors - Increased heart rate → tachycardia - Palpitations - Headache - Nervousness and insomnia
Clinical Considerations	Nebulized solution is contraindicated in FREI screen positive patients or in the setting of known febrile, respiratory outbreak as declared by local medical officer of health. When administering Salbutamol MDI, 100mcg dose should be administered after every four breaths. An MDI spacer device or aero chamber should be utilized to maximize inhalation efficacy.

ADMINISTRATION FOR *COPD EXACERBATION*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
MDI	5-15 mins	2400mcg

PROLIA

Drug Class	Monoclonal Antibody (mAb)
Description	Prolia is a novel, fully human IgG2 monoclonal antibody specific to receptor activator of nuclear factor kappa-B ligand (RANKL), suppresses bone resorption via inhibiting RANK-mediated activation of osteoclasts. It is the first and currently the only RANKL inhibitor approved to prevent osteoclast-mediated bone loss.
Onset	Onset of action 3 days (80% reduction in bone resorption markers ≤1 week). Time to peak plasma concentration 10 days.
Required Assessments	Received written/verbal order from the patients Primary Care Provider. Consider blood work to assess: 1. Serum Calcium 2. Vitamin D Levels 3. Kidney Function If any concerns regarding the clinical stability of the patient, or appropriateness of the directive for treatment, contact the Primary Care Physician for consultation prior to administration of treatment.
Indications	**Received written/verbal order from the patients Primary Care Provider.** Prolia is indicated as a treatment for osteoporosis in menopausal women or men and glucocorticoid-induced osteoporosis in men and women at high risk of fracture. It is also used to increase bone mass in men at high risk for fractures receiving androgen deprivation therapy for non metastatic prostate cancer or women at high risk for fractures receiving adjuvant aromatase inhibitor therapy for breast cancer.
Contraindications	Allergy or hypersensitivity to Prolia.
Adverse Reaction	**Minimum 15min observation period post administration for adverse reaction onset.** The most common adverse reactions (>5% and more common than placebo) in women with postmenopausal osteoporosis are back pain, pain in extremity, musculoskeletal pain, hypercholesterolemia, and cystitis. The most common adverse reactions (>5% and more common than placebo) in men with osteoporosis are back pain, arthralgia, and nasopharyngitis. Pancreatitis has been reported with Prolia®.
Supply	Solution (60mg/ml) – Prefilled syringe
Notable Drug Interactions	Corticosteroids and Glucocorticoids - The risk or severity of adverse effects can be increased. Specific Antibiotics - such as Cephalosporins and Mycins - The risk or severity of adverse effects can be increased. Calcimimetic - The risk or severity of adverse effects can be increased. Chemotherapy and Immunosuppressant agents, such as cyclophosphamide and methotrexate - The risk or severity of adverse effects can be increased.
Symptoms of Overdose and Management	No data available due to novelty of medication. Prolia has been administered in clinical studies using doses up to 180 mg every 4 weeks (cumulative doses up to 1,080 mg over 6 months), and no additional adverse reactions were observed.
Clinical Considerations	Prolia is administered as a single subcutaneous injection every 6 months. The injection can be administered in the upper arm, upper thigh, or abdomen. It can be given any time with or without food. Before prescribing Prolia, health care professionals should assess their patients' kidney function. For patients with advanced chronic kidney disease, particularly those on dialysis, health care professionals should consider the risk of severe hypocalcemia with Prolia in the context of other available treatments for osteoporosis.

PROLIA INJECTION

ROUTE	INTERVAL	MAXIMUM # OF DOSES
SC	q 6 months	1

Mandatory 15 minute post administration observation period for adverse reaction.

SHINGRIX

Drug Class	Viral Vaccine
Description	Shingrix is recommended to prevent shingles and related complications in immunocompetent adults 50 years and older. Shingrix works by exposing you to a small dose of inactive virus, which causes the body to develop immunity to the disease. This vaccine will not treat an active infection that has already developed in the body.
Onset	N/A
Required Assessments	Mandatory 15 minute post administration observation period for adverse reaction. Mandatory Primary Care Provider notification of administration required when treatment is completed.
Indications	Received written/verbal order from the patient's Primary Care Provider. Age ≥ 50 years
Contraindications	- Allergy or sensitivity to Shingrix - First does less than 2 months prior
Adverse Reaction	Some people receiving Shingrix had nervous system problems within 42 days of receiving this vaccine, but the risk of this side effect is very low. **Common Shingrix side effects include**: headache, muscle pain, feeling tired, stomach pain, nausea, vomiting, diarrhea, fever, shivering, pain, redness, or swelling where the shot was given.
Supply	0.5 ml (reconstituted vaccine)
Notable Drug Interactions	Some products that may interact with this vaccine are: drugs that weaken the immune system (including cyclosporine, tacrolimus, cancer chemotherapy, corticosteroids such as prednisone).
Symptoms of Overdose and Management	N/A
Clinical Considerations	Shingrix is a vaccine indicated for prevention of herpes zoster (HZ) (shingles). Shingrix is not indicated for prevention of primary varicella infection (chickenpox). Shingrix is administered in two doses (0.5 ml each) for maximum protection, with a gap of 2 to 6 months between doses.

SHINGLES VACCIENE MEDICATION ADMINISTRATION

ROUTE	INTERVAL	MAXIMUM # OF DOSES
IM	Repeat q 2-6 months	1

Mandatory 15 minute post administration observation period for adverse reaction.
Mandatory Primary Care Provider notification of administration required when treatment is completed.

CO-AMOXICLAV

Drug Class	Antibiotic + Beta Lactamase Inhibitor
Description	Clavulanic acid is a beta lactamase inhibitor used to enhance the effectiveness of beta lactam antibiotics. When combined with Amoxicillin, Clavulanic Acid works to enhance the efficacy of amoxicillin. The drug combination is known as Amoxiclav.
Onset	~30 mins with time to peak serum levels ~90 mins
Conditions or Required Assessments	1. >18 YEARS 2. > 40 KG 3. Physician order is obtained **(COPD Exacerbation Medical Directive)** 4. Symptomatic with indwelling catheter or positive culture or suspected UTI **(UTI Medical Directive)**
Indications	Urinary Tract Infection Medical Directive – Known or suspected urinary tract infection COPD Exacerbation Medical Directive – Respiratory Distress and Suspected Exacerbation
Contraindications	Hypersensitivity or allergy to amoxicillin, clavulanic acid, penicillin or other beta-lactam antibacterial drugs
Adverse Reaction	>10%: Gastrointestinal: Diarrhea <10% Dermatologic: Rash, Urticaria <10% Genitourinary: Vaginitis <1% Cholestatic jaundice, flatulence, headache, hepatic insufficiency, hepatitis, hepatotoxicity Anaphylactic/hypersensitivity reactions
Supply	Single Tablet (500mg) Amoxicillin with (125mg) Clavulanic Acid
Notable Drug Interactions	Dichlorphenamide: Penicillins may enhance the hypokalemic effect Tetracyclines: May diminish the therapeutic effect of Penicillins Vitamin K Antagonists (i.e. warfarin): Penicillins may enhance the anticoagulant effect Allopurinol: May enhance the potential for allergic or hypersensitivity reactions to Amoxicillin
Symptoms of Overdose and Management	Overdose can cause nausea, vomiting, stomach pain, diarrhea, skin rash, drowsiness, hyperactivity, and decreased urination.
Clinical Considerations	A community paramedic must practice antibiotic stewardship and ensure that asymptomatic bacteria is not over treated with antibiotics when no symptoms are present. A community paramedic will exercise a high degree of suspicion when considering possible urinary tract infection and relay pertinent history (e.g. indwelling catheter, recurring UTI etc.) and assessment findings to the primary care provider for consideration for possible treatment options. Urinary tract infections (UTIs) are among the most common causes of sepsis presenting in hospitals. UTIs have a wide variety of presentations. Some are simple UTIs that can be managed with outpatient antibiotics and carry a reassuring clinical course with an almost universally good outcome. On the other end of the spectrum, florid urosepsis in a comorbid patient can be fatal. UTIs can also be complicated by several risk factors leading to treatment failure, repeat infections, or significant morbidity and mortality with a poor outcome. It is vitally important to determine if the presenting episode results from these risk factors and whether the episode is likely to resolve with first-line antibiotics.

ADMINISTRATION FOR *UTI* or COPD Exacerbation

ROUTE	INTERVAL	MAXIMUM # OF DOSES
PO	BID	3 day supply of BID
DOSE	500/125mg	

EPINEPHRINE

Drug Class	alpha- and beta-adrenergic agonists (sympathomimetic agents)
Description	Epinephrine (Adrenalin) is a neurotransmitter and sympathomimetic drug. It causes an adrenergic receptive mechanism on effector cells and mimics all actions of the sympathetic nervous system. Important effects of epinephrine include increased heart rate, myocardial contractility, and renin release via beta-1 receptors. Beta-2 effects produce bronchodilation via bronchial smooth muscle relaxation.
Onset	1-2 mins
Required Assessments	Assessment for appropriate ***CONDITIONS*** of use: -Age ≥ 18 years -Preform physical exam -Full set of vitals
Indications	Signs and/or symptoms of a severe allergic reaction (anaphylaxis). Age ≥ 18 years
Contraindications	Allergy or sensitivity to Epinephrine
Adverse Reaction	Fast or pounding heartbeat Nervousness, anxiety, or restlessness Sweating, pallor, or shakiness Nausea, vomiting, or trouble breathing Headache, dizziness, weakness or tremor
Supply	1mg/ml=1:1000
Notable Drug Interactions	Antiarrhythmic, diuretics, digoxin can increase the risk of irregular heart rhythm. Levothyroxine, antihistamines, tricyclic antidepressants can increase the effect of Epinephrine, which can raise the risk of side effects. Beta-blockers can make Epinephrine less effective
Symptoms of Overdose and Management	Symptoms: Large doses of epinephrine may lead to dysrhythmias, vomiting, headache, dyspnea, elevated blood pressure. Minor intravascular epinephrine toxicity usually requires supportive care until the drug is metabolized
Clinical Considerations	The community paramedic will provide notification of the adverse event to the primary care provider.

ADMINISTRATION FOR *Severe Allergic Reaction (Anaphylaxis)*

ROUTE	INTERVAL	MAXIMUM # OF DOSES
IM	Minimum 5 min	2

The Epinephrine dose may be rounded to the nearest 0.05 mg

Middlesex London Paramedic Service

Community Paramedic Symptom Relief Reference Cards