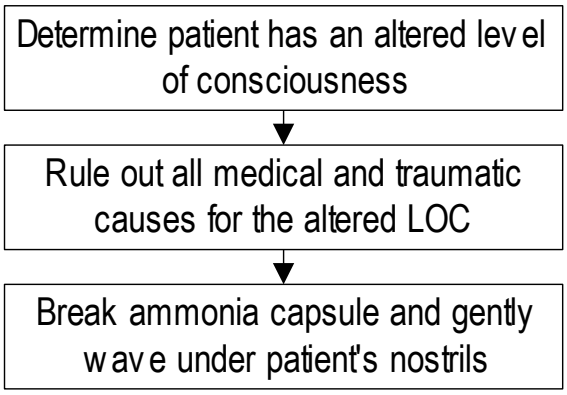
Initial: 5/10/00	**MILWAUKEE COUNTY EMS**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised:	**PRACTICAL SKILL**	Signature:
Revision:	**USE OF AMMONIA INHALANTS**	Page 1 of 1

Purpose:		**Indications:**	
To aid in the arousal of a patient with an altered level of consciousness		Patient who presents with an altered level of consciousness after other physical causes have been ruled out	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Aids in the arousal of a patient with an altered level of consciousness	May further irritate patient	Irritation of patient's airway	Patient is alert and oriented Medical cause for the altered level of consciousness has been established

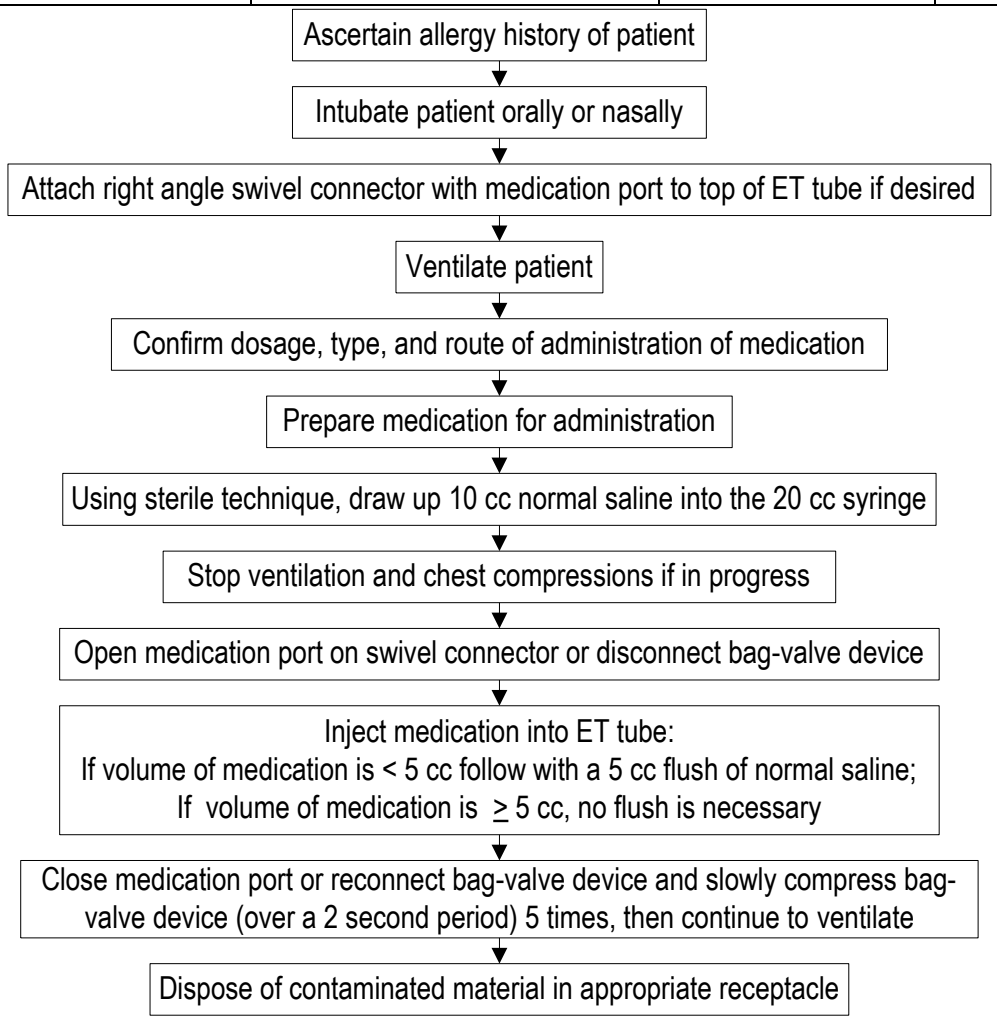


NOTES:

- Rule out all medical and traumatic causes for altered level of consciousness ***before*** using ammonia inhalants.
- DO NOT insert ammonia inhalants into any orifice or place under oxygen mask.

ENDOTRACHEAL ADMINISTRATION OF MEDICATION

Purpose:		**Indications:**	
To deliver medication to the alveoli of the lung for rapid absorption by the capillaries		Critically ill patient who is intubated but IV access is not available	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medications rapidly to the circulatory system for distribution throughout the body Can be done without IV access	ET must be in place Epinephrine and atropine dosages must be doubled Some of medication will adhere to the walls of the ET tube Not all medication may be administered via ETT Must stop CPR and ventilation to administer	Potential damage to lung tissue by the medication	Medication not approved for ET administration



NOTES:

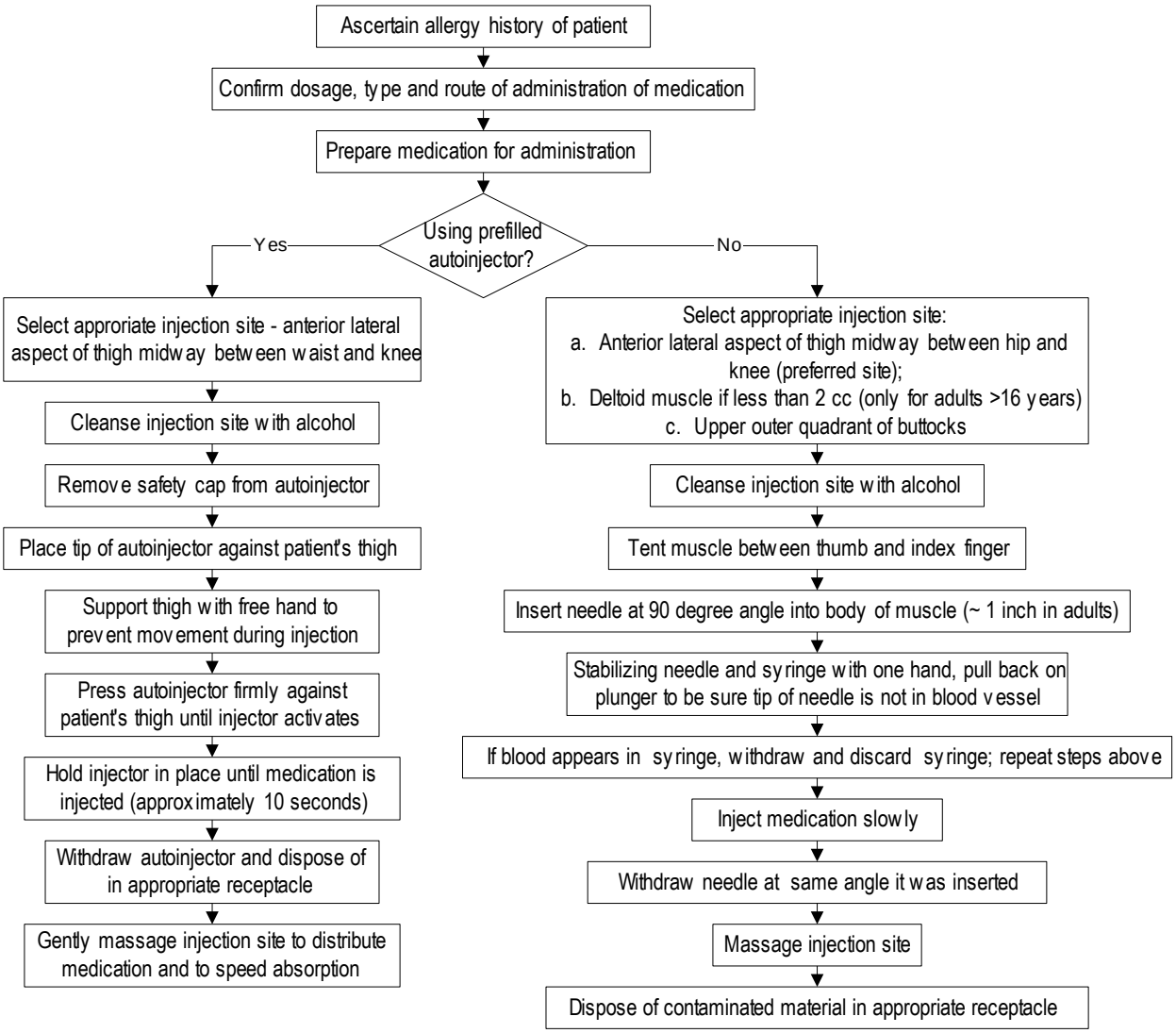
- Medications approved for ET administration:
  - Naloxone, atropine, epinephrine, lidocaine.

Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 2/27/02		Signature:
Revision: 3		Page 1 of 1

INTRAMUSCULAR ADMINISTRATION OF MEDICATIONS

Purpose:	**Indications:**
To deliver medication to the muscle tissue for absorption by blood vessels	For a patient who needs medication that may be administered via intramuscular route

Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medication slowly to the circulatory system for distribution throughout the body Effects sustained for a period of time Does not require IV access	Pain at injection site Only small volumes (2 - 5 cc) should be given by this route Cannot give tissue-irritating medication by this route	Infection Accidental IV injection if tip of needle is in vein	Hypotension Infection in area of injection

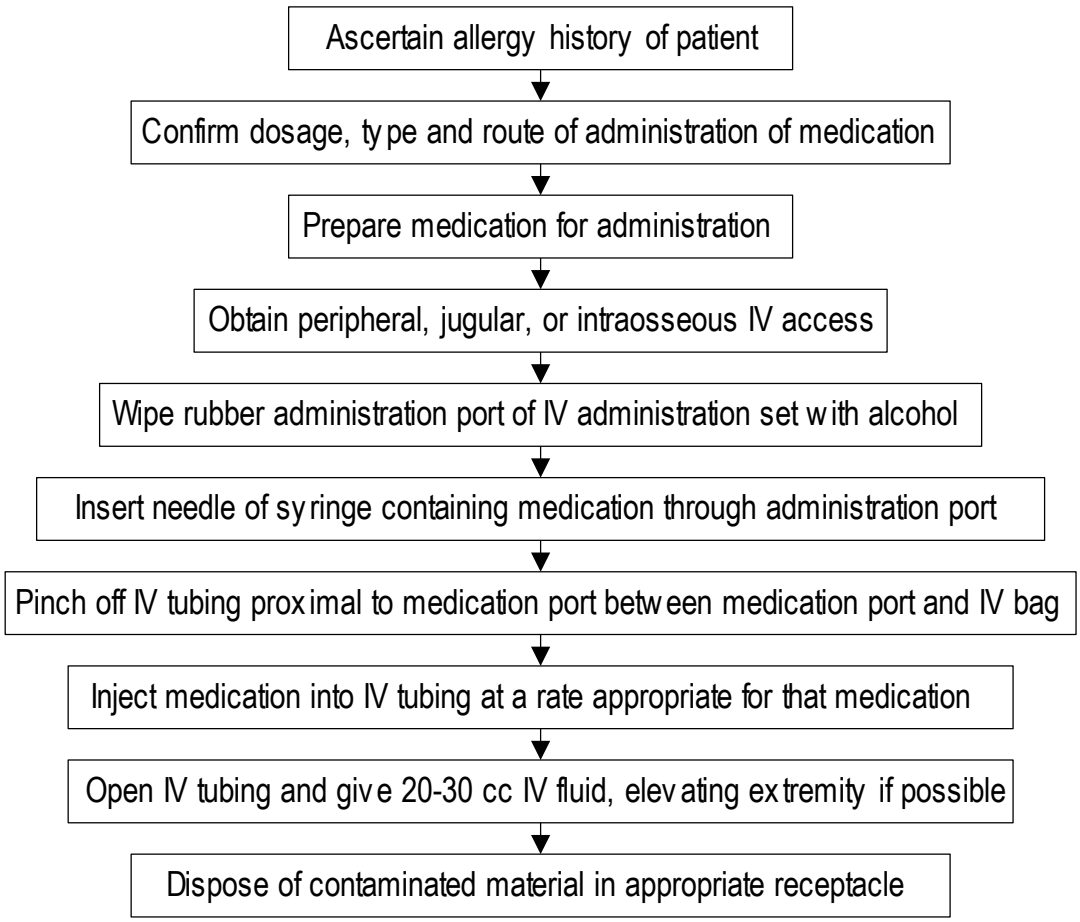


NOTES:

- The deltoid muscle should not be used as an injection site for patients less than 16 years old.
- No more than 2 cc of medication should be injected via intramuscular route.

Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 5/10/00	**INTRAVENOUS BOLUS OF MEDICATION**	Signature:
Revision: 2		Page 1 of 1

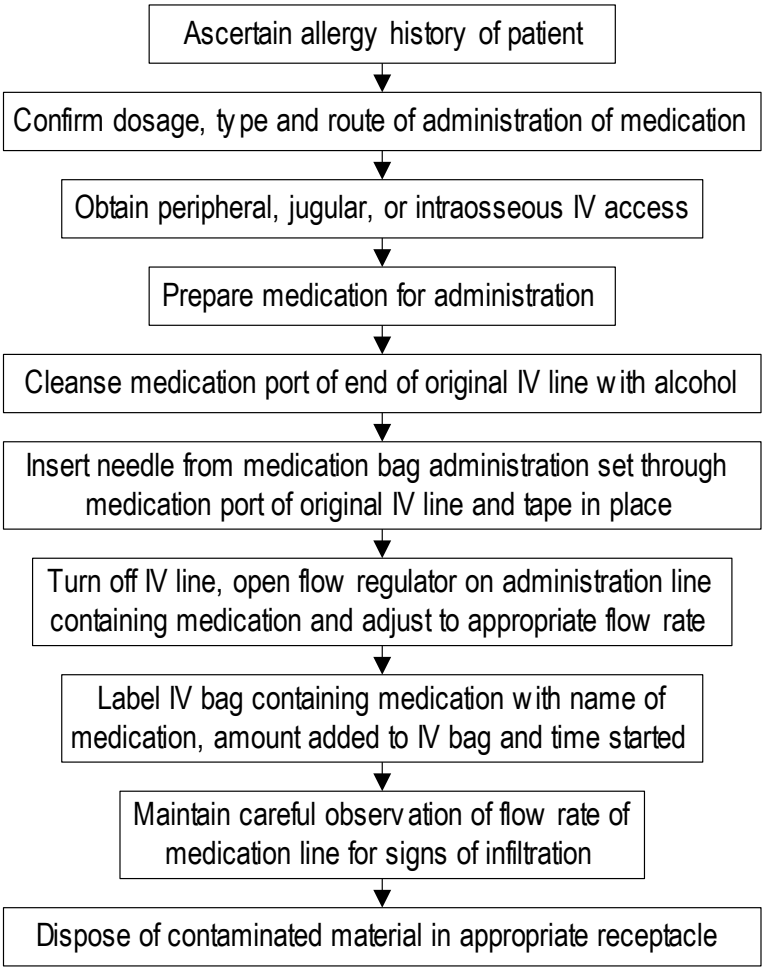
Purpose:		**Indications:**	
To deliver medication directly into the blood stream for rapid distribution to the rest of the body		Patients with IV access who need medication administration	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medication rapidly to the circulatory system for distribution throughout the body	Must have IV access	Irritation to the vein by medication injected Extravasation of medication into subQ tissue if IV infiltrates	Infiltration of IV line Injury to the venous system proximal to the injection site



Initial: 9/92	**MILWAUKEE COUNTY EMS**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 2/14/01	**PRACTICAL SKILL**	Signature:
Revision: 3	**INTRAVENOUS DRIP**	Page 1 of 1

ADMINISTRATION OF MEDICATION

Purpose:		**Indications:**	
To maintain therapeutic blood levels of a medication over a period of time		Patients with IV access who need to maintain therapeutic blood levels of a medication	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medications constantly and continuously to the circulatory system for distribution throughout the body Maintains a relatively constant blood level of medication	Must have IV access Line must be monitored to assure constant rate of administration	Vein irritation by medication injected Extravasation of medication if IV infiltrates	Infiltrated IV line Injury to the venous system proximal to the injection site

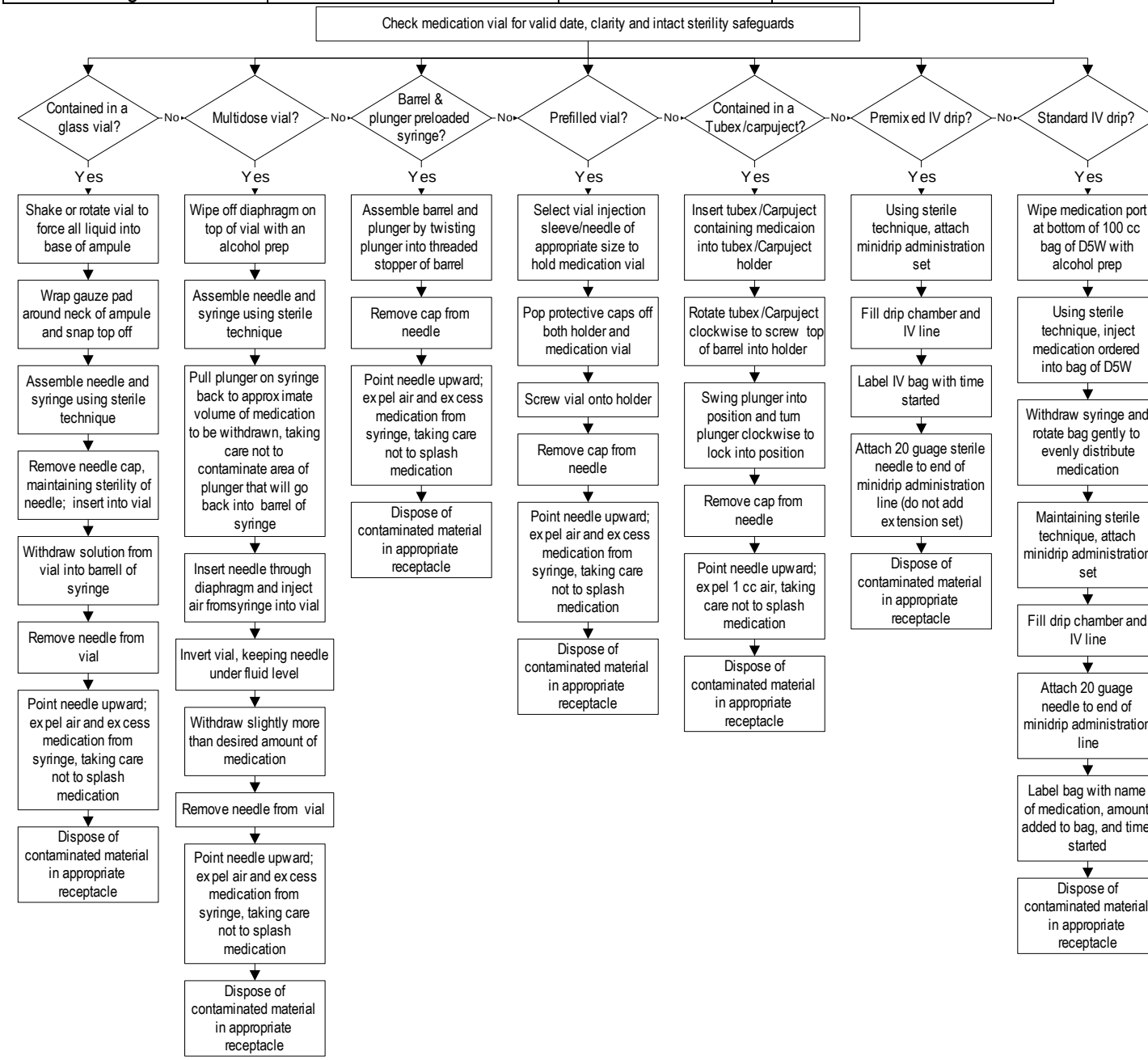


NOTES:

- Medications approved for IV drip:
  - Amiodarone, dopamine, lidocaine, sodium bicarbonate.

Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 5/10/00	**MEDICATION PREPARATION**	Signature:
Revision: 2	**FOR ADMINISTRATION**	Page 1 of 1

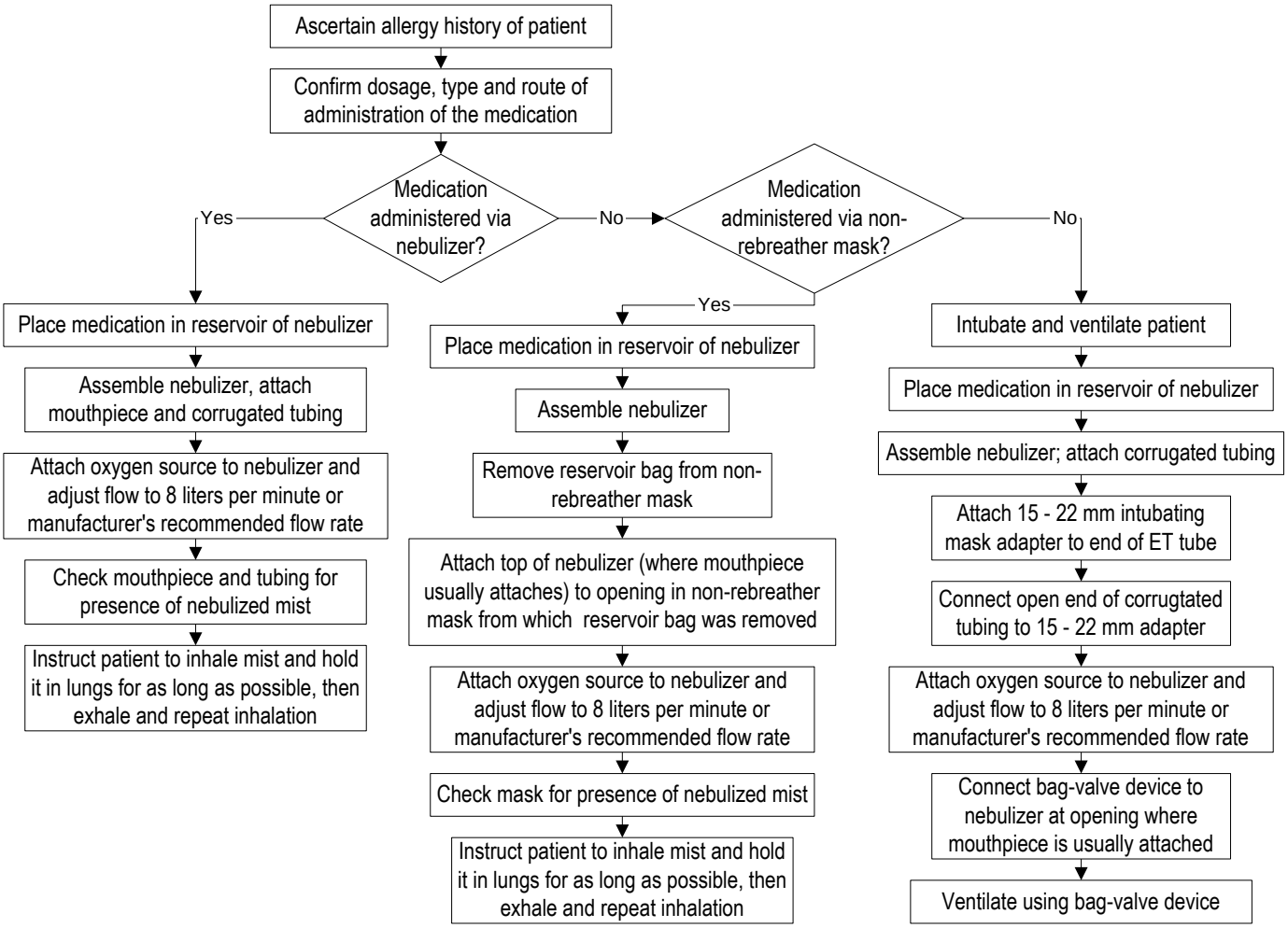
Purpose:		**Indications:**	
To prepare medication contained in a unit-dose syringe, glass vial, or multidose vial for administration		Any patient who needs medication administered	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Medication can assist in prehospital treatment and stabilization of life-threatening conditions	When given incorrectly or in the wrong dose, patient may be harmed		Known allergy to the medication



Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 5/21/08	**NEBULIZED ADMINISTRATION OF MEDICATION**	Signature:
Revision: 5		Page 1 of 1

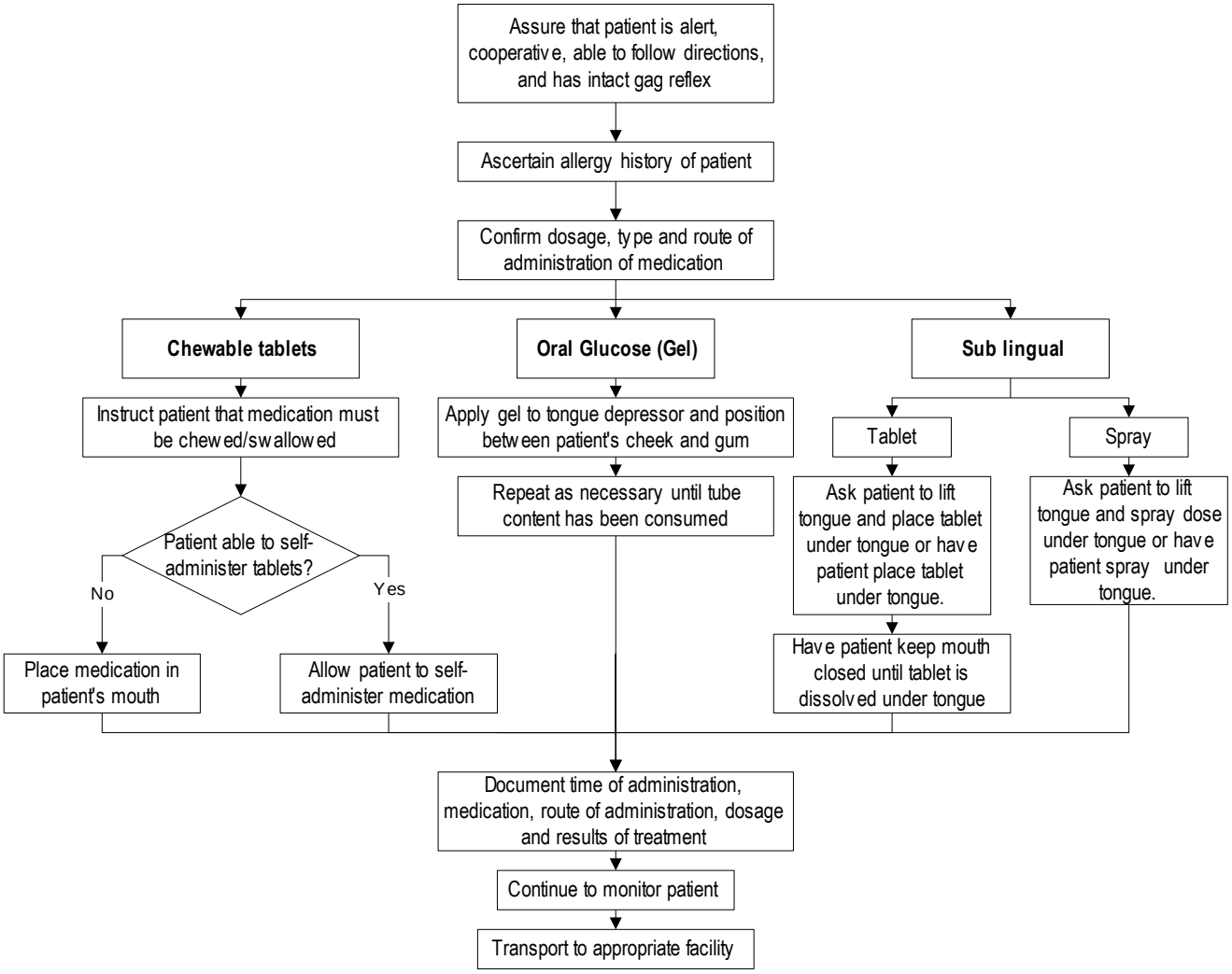
Purpose:	**Indications:**
To aerosolize a medication and deliver it into the pulmonary system for absorption by the capillaries	Patients experiencing bronchospasm

Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medications rapidly to the circulatory system in the lungs Does not require IV access	Patients in severe distress may not be able to follow directions or inhale a high enough tidal volume to receive sufficient medication to treat their condition Very few medications can be given this way	Tachyarrhythmia Ventricular ectopic beats	None

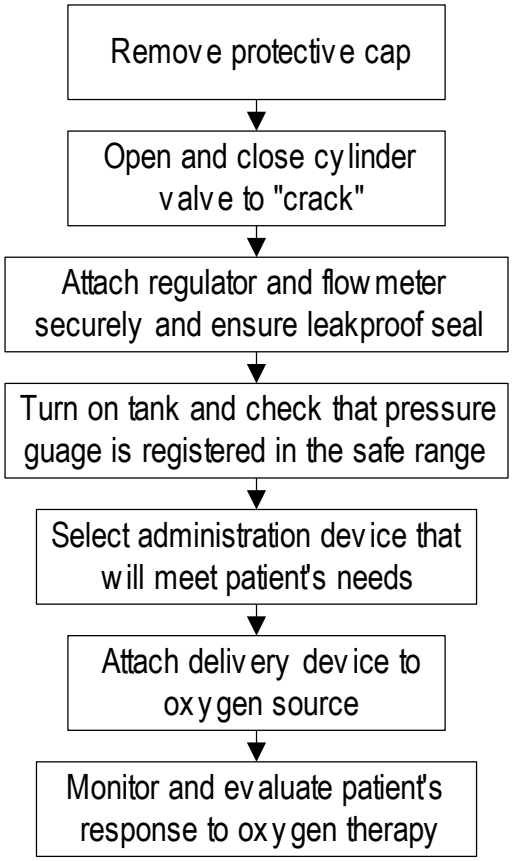


Initial: 12/6/00	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised:	**ORAL ADMINISTRATION OF MEDICATION**	Signature:
Revision:		Page 1 of 1

Purpose:		**Indications:**	
To administer medication through the digestive tract.		Patient who is alert, cooperative, and is able to protect own airway and swallow the medication.	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Can be done without IV access.	Patient may vomit prior to absorption of the therapeutic dose.	Medication may cause stomach upset and/or vomiting.	Patient uncooperative, unable to follow directions, or lack of gag reflex.



Purpose:		**Indications:**	
To increase the partial pressure of oxygen in the lungs, providing additional oxygen to the tissues of the body		Patient showing signs of hypoxia	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Increases oxygen availability to the tissue Minimizes effects of hypoxia and anaerobic metabolism on the cells	Oxygen is stored under pressure Increases risk of fire when in use	May suppresses respiratory drive of a patient with COPD	None in prehospital care

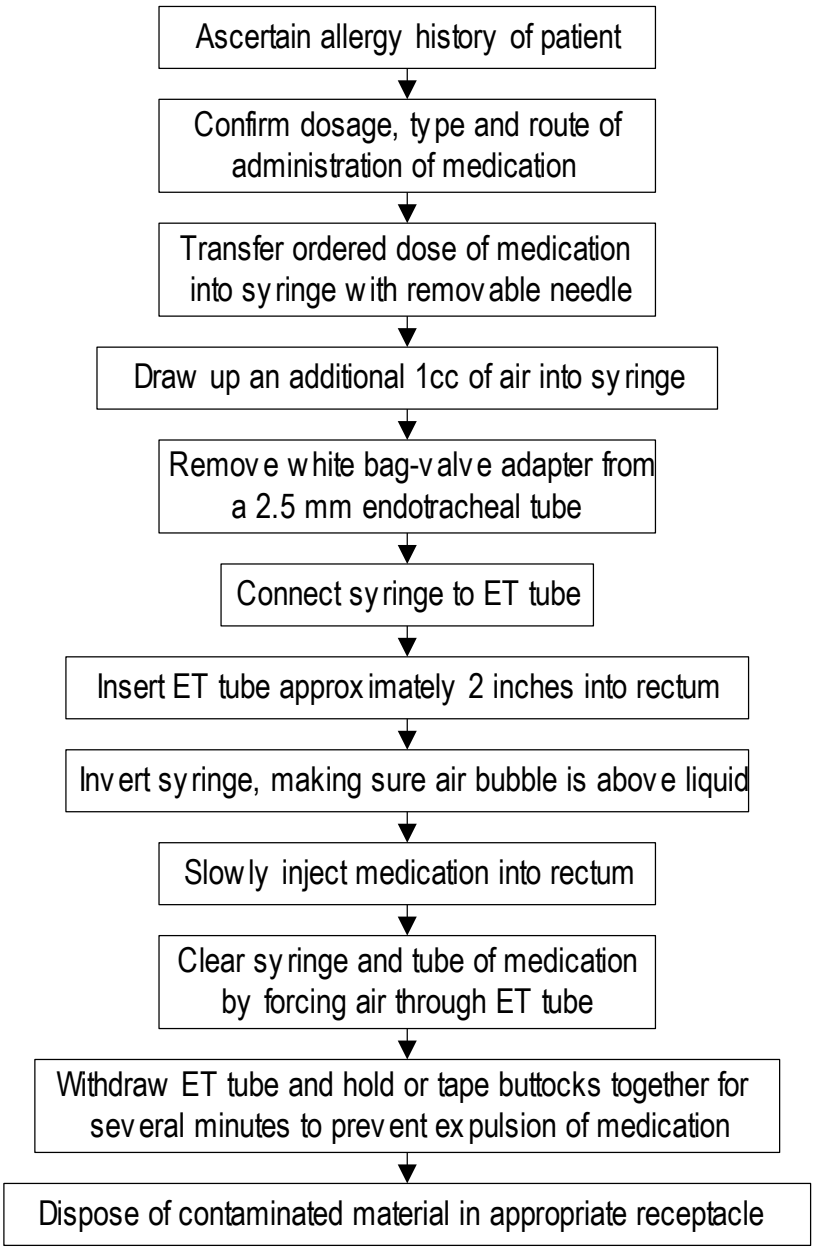


NOTES:

- The nasal cannula delivers 25% - 40% oxygen content at 1 - 6 liters/minute flow.
- The non-rebreather face mask delivers > 90% at 12 liters/minute flow.
- The bag-valve device delivers nearly 100% oxygen content when used with the oxygen reservoir attachment and maximum (15+ liters/min) flow.
- The nebulizer chamber for aerosol medications is run at 8 liters/minute or at manufacturer's recommended flow rate.

Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 5/21/08	**RECTAL ADMINISTRATION OF MEDICATION**	Signature:
Revision: 4		Page 1 of 1

Purpose:		**Indications:**	
To provide a route of administration of selected medications in patients with no IV access		Actively seizing patient with no IV access	
Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medications when no IV access is available Effects sustained over a period of time	Uncertain absorption rate Uncertainty of medication retention	Trauma to rectal mucosa	Rectal bleeding Diarrhea Any known rectal abnormality

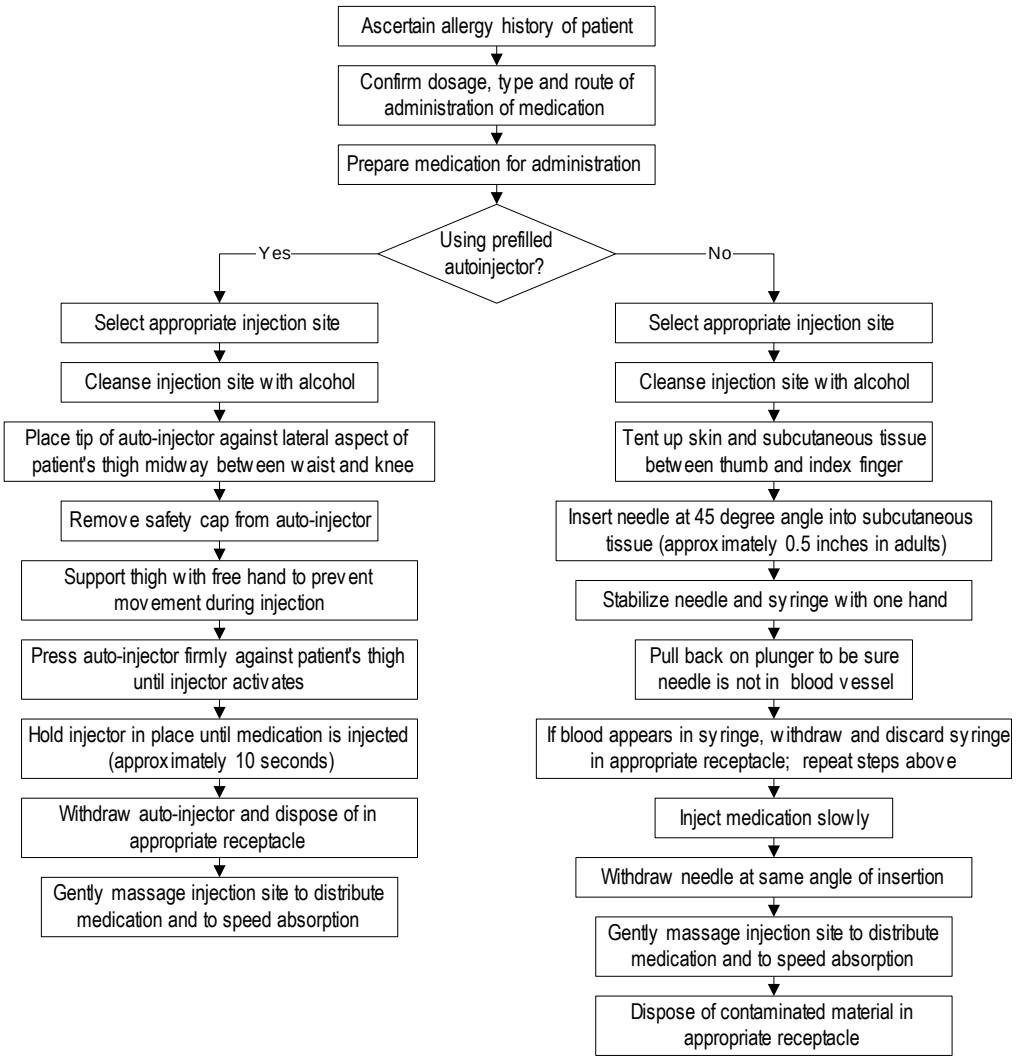


Initial: 9/92	**MILWAUKEE COUNTY EMS PRACTICAL SKILL**	Approved by: Ronald Pirrallo, MD, MHSA
Reviewed/revised: 5/10/00		Signature:
Revision: 2		Page 1 of 1

SUBCUTANEOUS ADMINISTRATION OF MEDICATION

Purpose:	**Indications:**
To deliver medication to the subcutaneous tissue for absorption by blood vessels	Anaphylaxis Severe respiratory distress due to bronchospasm

Advantages:	**Disadvantages:**	**Complications:**	**Contraindications:**
Delivers medication slowly for distribution throughout the body Effects sustained over a period of time Does not require IV access	Pain Only 0.5 ml of medication may be administered subQ Cannot give tissue-irritating medication subQ	Infection Accidental IV injection if needle tip is in vein	Infection at injection site



NOTES:

- Medication approved for subcutaneous administration: epinephrine 1:1000.
- Hypotension is a usually a contraindication for subcutaneous injections due to the lack of peripheral circulation to pick up medication. Subcutaneous injection of epinephrine 1:1000 for anaphylaxis is an exception.