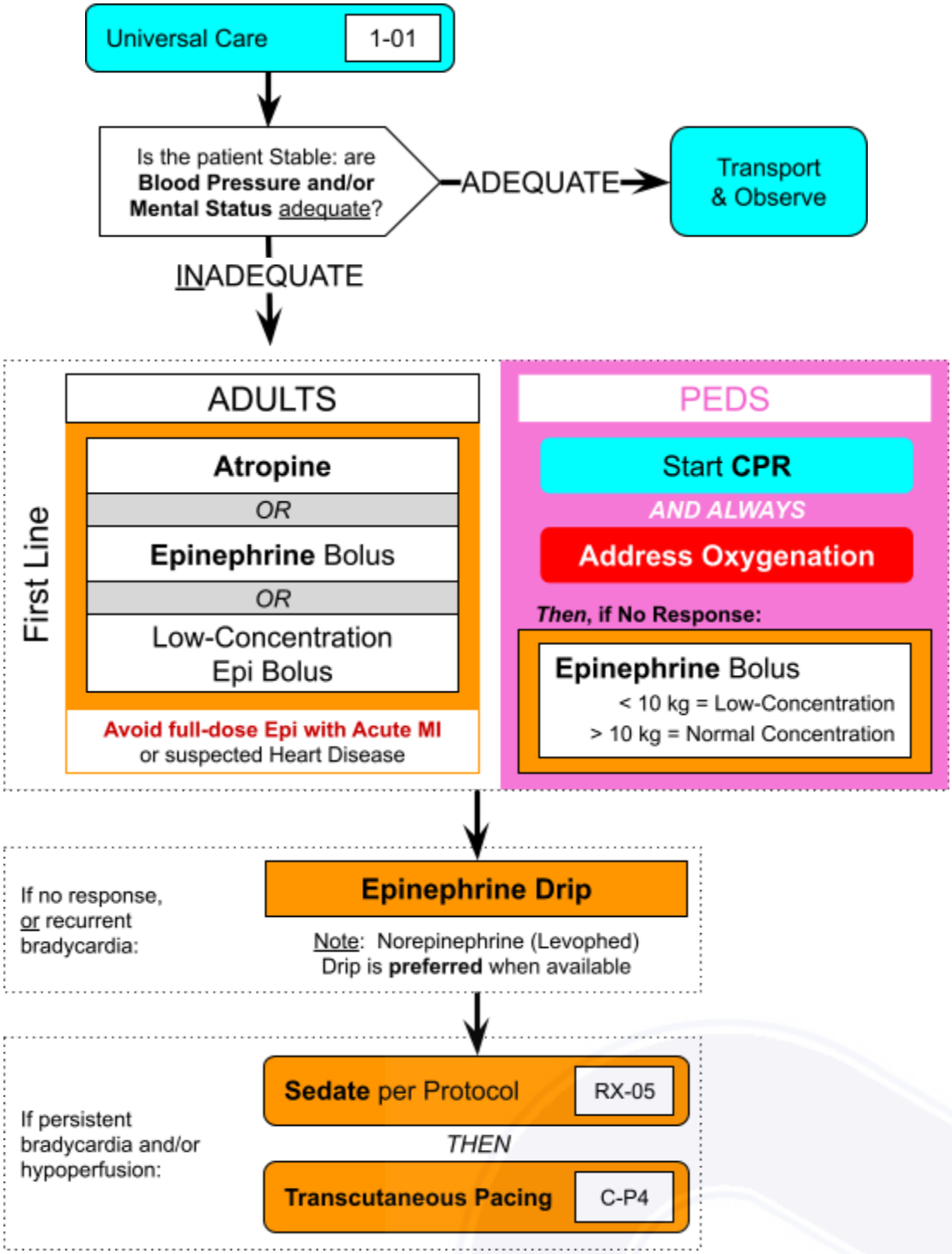
C-05 BRADYCARDIA		First Responder EMT AEMT Paramedic



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Bradycardia Dosing

Atropine or Epi Bolus

Atropine Bolus	Epinephrine Bolus	
	Normal Concentration	***Low*** *Concentration*
1 mg IV/IO	**0.1-0.2 mg** = 100-200 mcg = ***1-2 mL*** *of 1 mg/10 mL*	**0.01-0.02 mg** = 10-20 mcg = ***1-2 mL*** *of diluted epi*
Peds: 0.02 mg/kg IV/IO = **0.2 mL/kg**	Peds: 0.01 mg/kg IV/IO = **0.1 mL/kg**	Peds: 0.01 mg/kg IV/IO = **1 mL/kg**
• Repeat PRN every 3-5 min • Adults: 3 mg MAX • Peds: 2 doses MAX	• Repeat PRN every 3- 5 min • Titrate up to 0.5 mg = 5 mL	• Repeat PRN every 3- 5 min • Titrate up to 0.1 mg = 100 mcg = 10 mL
Concentration = 0.1 mg/mL = 100 mcg/mL	Concentration = 0.1 mg/mL = 100 mcg/mL	Concentration = 0.01 mg/mL = 10 mcg/mL

Epi Drip

Epinephrine Drip @ 0.1 - 1 mcg/kg/min

- Titrate to normalize BP (> 90 mmHg)
- **See *below* for dosing tables**

Alt.	**Levophed** (norepin.) 0.1 - 2 mcg/kg/min	OR	**Dopamine** 2-20 mcg/kg/min

PEDS

If possible, contact medical control prior to starting a vasopressor drip on pediatric (i.e. Broselow) patients.

MIX: Low-Conc. = 0.1 mg (1 mL of 1 mg/10 mL) diluted with 9 mL NS — Drip = 1 mg mixed into 250 mL of NS (4 mcg/mL)

Pace

If continued INADEQUATE PERFUSION:

Sedate per Protocol RX-03 *THEN* **Transcutaneous Pacing** C-P4

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250 mL Vasopressor Drip Mixing Guide:

	Epinephrine 0.1 - 1 mcg/kg/min	Norepinephrine 0.1 - 2 mcg/kg/min	Dopamine 5 - 20 mcg/kg/min
Med/Dose:	1 mg	4 mg	400 mg
Volume (NS/D5W):	250 mL	250 mL	250 mL
Concentration:	**4 mcg/mL**	**16 mcg/mL**	**1600 mcg/mL**

Drops per minute (displayed in **BOLD**) on a 60-drop set
(*drops/second ALSO displayed in italics if > 60 gtt/min*)

	Epinephrine 4 mcg/mL		**Norepinephrine (Levophed)** 16 mcg/mL		**Dopamine** 1600 mcg/mL	
Broselow Color/ Weight (kg)	START (**gtt/min**)	Max (**gtt/min**)	START (**gtt/min**)	Max (**gtt/min**)	START (**gtt/min**)	Max (**gtt/min**)
Gray (3-5)	**6**	**60**	**1.5**	**30**	**0.8**	**3**
Pink (6-7)	**11**	**105** (*1.7*)	**2.6**	**52.5**	**1.3**	**5**
Red (8-9)	**14**	**135** (*2.2*)	**3.5**	**67.5** (*1.1*)	**1.7**	**6.7**
Purple (10-11)	**17**	**165** (*2.7*)	**4**	**82** (*1.4*)	**2**	**8.2**
Yellow (12-14)	**21**	**210** (*3.5*)	**5**	**105** (*1.7*)	**2.6**	**10.5**
White (15-18)	**27**	**270** (*4.5*)	**7**	**270** (*4.5*)	**3.4**	**13.5**
Blue (19-23)	**35**	**345** (*5.8*)	**9**	**172** (*2.8*)	**4.3**	**17**
Orange (24-29)	**44**	**435** (*7.2*)	**11**	**218** (*3.6*)	**5.4**	**22**
Green (30-36)	**54**	**540** (*9*)	**14**	**270** (*4.5*)	**7**	**27**
Small Adult (50)	**75** (*1.2*)	**750** (*13*)	**19**	**375** (*6.2*)	**10**	38
Large Adult (100)	**150** (*2.5*)	**1500** (*25*)	**38**	**750** (*13*)	**19**	75 (*1.2*)

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500 mL Vasopressor Drip Mixing Guide:

	Epinephrine 0.1 - 1 mcg/kg/min	Norepinephrine 0.1 - 2 mcg/kg/min	Dopamine 5 - 20 mcg/kg/min
Med/Dose:	1 mg	4 mg	400 mg
Volume (NS/D5W):	500 mL	500 mL	500 mL
Concentration:	**2 mcg/mL**	**8 mcg/mL**	**800 mcg/mL**

Drops per minute (displayed in **BOLD**) on a 60-drop set
(*drops/second ALSO displayed in italics if > 60 gtt/min*)

	Epinephrine 2 mcg/mL		**Norepinephrine (Levophed)** 8 mcg/mL		**Dopamine** 800 mcg/mL	
Broselow Color/ Weight (kg)	START (**gtt/min**)	Max (**gtt/min**)	START (**gtt/min**)	Max (**gtt/min**)	START (**gtt/min**)	Max (**gtt/min**)
Gray (3-5)	**12**	**120** (*2*)	**3**	**60**	**1.5**	**6**
Pink (6-7)	**21**	**210** (*3.5*)	**5**	**105** (*1.8*)	**2.5**	**10**
Red (8-9)	**27**	**270** (*4.5*)	**7**	**135** (*2.3*)	**3.5**	**13**
Purple (10-11)	**33**	**330** (*5.5*)	**8**	**165** (*2.6*)	**4**	**16**
Yellow (12-14)	**42**	**420** (*7*)	**11**	**210** (*3.5*)	**5**	**21**
White (15-18)	**54**	**540** (*9*)	**14**	**270** (*4.5*)	**7**	**27**
Blue (19-23)	**69** (*1.1*)	**690** (*11.5*)	**17**	**345** (*5.8*)	**9**	**34**
Orange (24-29)	**87** (*1.4*)	**870** (*14.5*)	**22**	**435** (*7.3*)	**11**	**43**
Green (30-36)	**108** (*1.8*)	**1080** (*18*)	**27**	**540** (*9*)	**14**	**54**
Small Adult (50)	**150** (*2.5*)	**1500** (*26*)	**37**	**750** (*13*)	**19**	75 (*1.2*)
Large Adult (100)	**300** (*5*)	**3000** (*50*)	**75** (***1.2***)	**1500** (*25*)	**38**	150 (*2.5*)

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NOTES:

- Pediatrics:
  - Any HR <60 in an ill child should be considered abnormal
  - **Bradycardia in children is most likely due to hypoxia.**
  - Oxygenation should be addressed ASAP and adequate ventilations should be ensured with appropriate intervention.
  - If HR < 60 with poor perfusion, CPR should be started while airway, oxygenation and ventilation are addressed.
- **Epinephrine** should preferably be used as first-line treatment of bradycardia for most patients, unless otherwise noted in these guidelines.
- **Atropine** may be considered for all patients, and is encouraged in patients with known or suspected coronary artery disease.
  - Atropine blocks the vagal nerves effect on the AV node. This should increase the conduction rate *through* the AV node.
  - For cardiac rhythms that originate below the AV node, atropine will have no effect. This includes many blocks and primary ventricular rhythms. These rhythms should, however, respond to epinephrine.
  - There is not a significant downside to atropine, just that it may not work for a lot of patients, and attempting repeat doses should not delay meds that can improve the bradycardia.
  - For this reason, these guidelines elect to focus on epinephrine for first-line use in most bradycardic patients.
- With a **wide complex bradycardia,** consider hyperkalemia. Treatment is with Bicarb and calcium if available.
- ALWAYS attempt to increase heart rate with medication bolus(es) or drip prior to transcutaneous pacing. ALWAYS sedate a patient who is awake, is or becomes moderately responsive after initiation of pacing.

QI Review Parameters:

1. {PENDING}