

MEDICAL CONTROL GUIDELINE: COLOR CODE DRUG DOSES



PRINCIPLES:

1. Correct dosing of medications based on weight in kilograms is a safety concern for delivery of medications to children and adults in the prehospital setting.
2. To optimize safety in dosing medications for children and adults, a standard formulary has been created. This **Color Code Drug Doses** medical control guideline pre-calculates all doses based on kilogram weight for children and an adult dose including maximum dose is delineated.
3. EMS provider agencies shall procure medications and stock approved Assessment and ALS Units in accordance with the drug formulation specified in this medical control guideline.
4. The Color Code Drug Doses and the Treatment Protocols shall be used to determine drug doses.

GUIDELINES:

1. EMS providers shall utilize a length-based resuscitation tape (i.e., Broselow™) to determine weight in kilograms and color code of children less than or equal to 14 years of age.
2. EMS providers shall use this guideline to determine dose of medication for children 3 to 36 kilograms. Documentation of dose will be in mgs and in mLs.
3. EMS providers contacting the base hospital shall report and document the appropriate color code and weight in kilograms utilizing a length-based resuscitation tape (i.e., Broselow™).
4. Base hospital personnel shall use this guideline to order dose of medication for children 3 to 36 kilograms; all doses will be given in mg and mLs.
5. Adult dosing will be used for children who are measured to be longer than the length-based resuscitation tape.

DRUG FORMULATIONS:

MEDICATION	FORMULATION	DOSAGE	Maximum Single Dose
Adenosine	3mg/mL	0.1mg/kg Repeat dose 0.2mg/kg	12mg
Albuterol	2.5mg/3mL	2.5mg <1 year; 5mg 1 year or older	5mg
Amiodarone	50mg/mL	5mg/kg	300mg
Atropine	0.1mg/mL	0.02mg/kg	0.5mg
Calcium Chloride	100mg/mL	20mg/kg	1gm
Dextrose 10%	0.1gm/mL	5mL/kg*	250mL

Administer 1mL/kg then reassess, if patient still with altered level of consciousness, continue 1mL/kg doses until maximum of 5mL/kg; for patients >24 kg, administer 125mL D10 and reassess, if patient still symptomatic then continue D10 infusion to a maximum dose of 5mL/kg.

Diphenhydramine	50mg/mL	1mg/kg	50mg
DuoDote™ (Pralidoxime Chloride)	Auto injector	1 DuoDote™	3 DuoDotes™
Epinephrine (Push Dose) 0.1mg/mL IV	0.01mg/mL	0.1mL/kg every 1-5 mins	10mcg (1 mL)

Mix 9mL of normal saline with 1mL of epinephrine 0.1mg/mL (IV epi) in a 10mL syringe to create epinephrine 0.01mg/mL, administer 0.1mL/kg (up to 1 mL at a time) every 1-5 mins to maintain adequate SBP.

Epinephrine 0.1mg/mL IV	0.1mg/mL	0.01mg/kg	1mg
Epinephrine 1mg/mL IM	1mg/mL	0.01mg/kg	0.5mg
Epinephrine 1mg/mL Nebulized (NEB)	1mg/mL	2.5mg <1 year; 5mg 1 year or older	5mg (5mL)
Fentanyl IV/IM	50mcg/mL	1mcg/kg	50mcg
Fentanyl IN	50mcg/mL	1.5mcg/kg	50mcg
Glucagon	1mg/mL	0.5 mg <1 year; 1mg 1 year or older	1mg
Glucopaste (4 years or older)	15gm	15gm	15gm
Ketorolac slow IV/IO push	15mg/mL	0.5mg/kg	15mg
Ketorolac IM (Adult)	15mg/mL	1mg/kg	30mg
Ketorolac IM (Pediatric)	15mg/mL	0.5mg/kg	15mg
Lidocaine 2% (IO ONLY)	20mg/mL	0.5 mg/kg	40mg
Midazolam IV/IM/IO	5mg/mL	0.1mg/kg	5mg
Midazolam IN	5mg/mL	0.2mg/kg	5mg
Morphine Sulfate IV/IM/IO	4mg/mL	0.1mg/kg	4mg
Naloxone	1mg/mL	0.1mg/kg	2mg

MEDICATION	FORMULATION	DOSAGE	Maximum Single Dose
Normal Saline	0.9% Na Cl	20mL/kg	1L
Nitroglycerin SL (adults only)	0.4mg	0.4mg	1.2mg
Ondansetron ODT/IV/IM	4mg tab or (4 years or older ODT only) 2mg/mL IV/IM (adults only)	4mg	4mg
Sodium Bicarbonate IV (dilute 1:1 with NS if <1year)	1mEq/mL	1mEq/kg	50mEq

3 Kg	Length 47 – 59.5 cm			Less than 3 months			
	Normal Vital Signs:	Heart Rate: 100-180		Respirations: 30-60		Systolic BP: >60	
	Cardioversion:	3 joules		6 joules		6 joules	
	Defibrillation:	6 joules		12 joules		12 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	0.3mg	0.1mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL	
	Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	3mcg	0.06mL	
	Amiodarone	15mg	0.3mL	Fentanyl IN	4.5mcg	0.09mL	
	Atropine	0.06mg	0.6mL	Glucagon IM	0.5mg	0.5mL	
	Calcium Chloride	60mg	0.6mL	Lidocaine 2% IO	1.5mg	0.08mL	
	Dextrose 10% slow IV	15mL	15mL	Midazolam IV/IM/IO	0.3mg	0.06mL	
	Diphenhydramine IV/IM	3mg	0.06mL	Midazolam IN	0.6mg	0.12mL	
	Duodote™	1 dose	NA	Morphine IV/IM/IO	0.3mg	0.08mL	
	Epinephrine Push Dose	3mcg	0.3mL	Naloxone IV/IM/IN	0.3mg	0.3mL	
	Epinephrine 0.1mg/mL IV	0.03mg	0.3mL	Normal Saline IV Bolus	60mL	60mL	
	Epinephrine 1mg/mL IM	0.03mg	0.03mL	Sodium Bicarbonate*	3mEq	3mL	
4 Kg	Cardioversion:	4 joules		8 joules		8 joules	
	Defibrillation:	8 joules		16 joules		16 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	0.4mg	0.13mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL
		Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	4mcg	0.08mL
		Amiodarone	20mg	0.4mL	Fentanyl IM	6mcg	0.12mL
		Atropine	0.08mg	0.8mL	Glucagon IM	0.5mg	0.5mL
		Calcium Chloride	80mg	0.8mL	Lidocaine 2% IO	2mg	0.1mL
		Dextrose 10% slow IV	20mL	20mL	Midazolam IV/IM/IO	0.4mg	0.08mL
		Diphenhydramine IV/IM	4mg	0.08mL	Midazolam IN	0.8mg	0.16mL
		Duodote™	1 dose	NA	Morphine IV/IM/IO	0.4mg	0.1mL
		Epinephrine Push Dose	4mcg	0.4mL	Naloxone IV/IM/IN	0.4mg	0.4mL
	Epinephrine 0.1mg/mL IV	0.04mg	0.4mL	Normal Saline IV Bolus	80mL	80mL	
	Epinephrine 1mg/mL IM	0.04mg	0.04mL	Sodium Bicarbonate*	4mEq	4mL	
5 Kg	Cardioversion:	5 joules		10 joules		10 joules	
	Defibrillation:	10 joules		20 joules		20 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	0.5mg	0.17mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL
		Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	5mcg	0.1mL
		Amiodarone	25mg	0.5mL	Fentanyl IM	7.5mcg	0.15mL
		Atropine	0.1mg	1mL	Glucagon IM	0.5mg	0.5mL
		Calcium Chloride	100mg	1mL	Lidocaine 2% IO	2.5mg	0.12mL
		Dextrose 10% slow IV	25mL	25mL	Midazolam IV/IM/IO	0.5mg	0.1mL
		Diphenhydramine IV/IM	5mg	0.1mL	Midazolam IN	1mg	0.2mL
		Duodote™	1 dose	NA	Morphine IV/IM/IO	0.5mg	0.12mL
		Epinephrine Push Dose	5mcg	0.5mL	Naloxone IV/IM/IN	0.5mg	0.5mL
	Epinephrine 0.1mg/mL IV	0.05mg	0.5mL	Normal Saline IV Bolus	100mL	100mL	
	Epinephrine 1mg/mL IM	0.05mg	0.05mL	Sodium Bicarbonate*	5mEq	5mL	

*dilute 1:1 with NS

6 Kg	Length 59.5 – 62 cm			3 – 4 months		
	Normal Vital Signs:	Heart Rate: 100-160	Respirations: 25-40	Systolic BP: >70		
	Cardioversion:	6 joules	12 joules	12 joules		
	Defibrillation:	12 joules	24 joules	24 joules		
	Medication	Dose	mLs	Medication	Dose	mLs
Adenosine	0.6mg	0.2mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL	
Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	6mcg	0.12mL	
Amiodarone	30mg	0.6mL	Fentanyl IN	9mcg	0.18mL	
Atropine	0.12mg	1.2mL	Glucagon IM	0.5mg	0.5mL	
Calcium Chloride	120mg	1.2mL	Lidocaine 2% IO	3mg	0.15mL	
Dextrose 10% slow IV	30mL	30mL	Midazolam IV/IM/IO	0.6mg	0.12mL	
Diphenhydramine IV/IM	6mg	0.12mL	Midazolam IN	1.2mg	0.24mL	
Duodote™	1 dose	NA	Morphine IV/IM/IO	0.6mg	0.15mL	
Epinephrine Push Dose	6mcg	0.6mL	Naloxone IV/IM/IN	0.6mg	0.6mL	
Epinephrine 0.1mg/mL IV	0.06mg	0.6mL	Normal Saline IV Bolus	120mL	120mL	
Epinephrine 1mg/mL IM	0.06mg	0.06mL	Sodium Bicarbonate*	6mEq	6mL	

*dilute 1:1 with NS

7 Kg	Length 62 – 66 cm			5 – 6 months		
	Cardioversion:	7 joules	14 joules	14 joules		
	Defibrillation:	14 joules	28 joules	28 joules		
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	0.7mg	0.23mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL
Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	7mcg	0.14mL	
Amiodarone	35mg	0.7mL	Fentanyl IN	10.5mcg	0.21mL	
Atropine	0.14mg	1.4mL	Glucagon IM	0.5mg	0.5mL	
Calcium Chloride	140mg	1.4mL	Lidocaine 2% IO	3.5mg	0.18mL	
Dextrose 10% slow IV	35mL	35mL	Midazolam IV/IM/IO	0.7mg	0.14mL	
Diphenhydramine IV/IM	7mg	0.14mL	Midazolam IN	1.4mg	0.28mL	
Duodote™	1 dose	NA	Morphine IV/IM/IO	0.7mg	0.18mL	
Epinephrine Push Dose	7mcg	0.7mL	Naloxone IV/IM/IN	0.7mg	0.7mL	
Epinephrine 0.1mg/mL IV	0.07mg	0.7mL	Normal Saline IV Bolus	140mL	140mL	
Epinephrine 1mg/mL IM	0.07mg	0.07mL	Sodium Bicarbonate*	7mEq	7mL	

*dilute 1:1 with NS

8 Kg	Length 66 – 69.5 cm			7 - 8 months			RED
	Normal Vital Signs:		Heart Rate: 100-160	Respirations: 20-40	Systolic BP: >70		
	Cardioversion:		8 joules	16 joules	16 joules		
	Defibrillation:		16 joules	32 joules	32 joules		
	Medication	Dose	mLs	Medication	Dose	mLs	
Adenosine	0.8mg	0.27mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL		
Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	8mcg	0.16mL		
Amiodarone	40mg	0.8mL	Fentanyl IN	12mcg	0.24mL		
Atropine	0.16mg	1.6mL	Glucagon IM	0.5mg	0.5mL		
Calcium Chloride	160mg	1.6mL	Lidocaine 2% IO	4mg	0.2mL		
Dextrose 10% slow IV	40mL	40mL	Midazolam IV/IM/IO	0.8mg	0.16mL		
Diphenhydramine IV/IM	8mg	0.16mL	Midazolam IN	1.6mg	0.32mL		
Duodote™	1 dose	NA	Morphine IV/IM/IO	0.8mg	0.2mL		
Epinephrine Push Dose	8mcg	0.8mL	Naloxone IV/IM/IN	0.8mg	0.8mL		
Epinephrine 0.1mg/mL IV	0.08mg	0.8mL	Normal Saline IV Bolus	160mL	160mL		
Epinephrine 1mg/mL IM	0.08mg	0.08mL	Sodium Bicarbonate*	8mEq	8mL		

*dilute 1:1 with NS

9 Kg	Length 69 – 73 cm			9 – 10 months			RED
	Cardioversion:		9 joules	18 joules	18 joules		
	Defibrillation:		18 joules	36 joules	36 joules		
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	0.9mg	0.3mL	Epinephrine 1mg/mL NEB	2.5mg	2.5mL	
Albuterol NEB	2.5mg	3mL	Fentanyl IV/IM	9mcg	0.18mL		
Amiodarone	45mg	0.9mL	Fentanyl IN	13.5mcg	0.27mL		
Atropine	0.18mg	1.8mL	Glucagon IM	0.5mg	0.5mL		
Calcium Chloride	180mg	1.8mL	Lidocaine 2% IO	4.5mg	0.22mL		
Dextrose 10% slow IV	45mL	45mL	Midazolam IV/IM/IO	0.9mg	0.18mL		
Diphenhydramine IV/IM	9mg	0.18mL	Midazolam IN	1.8mg	0.36mL		
Duodote™	1 dose	NA	Morphine IV/IM/IO	0.9mg	0.22mL		
Epinephrine Push Dose	9mcg	0.9mL	Naloxone IV/IM/IN	0.9mg	0.9mL		
Epinephrine 0.1mg/mL IV	0.09mg	0.9mL	Normal Saline IV Bolus	180mL	180mL		
Epinephrine 1mg/mL IM	0.09mg	0.09mL	Sodium Bicarbonate*	9mEq	9mL		

*dilute 1:1 with NS

10 Kg	Length 73 – 78 cm			11 – 14 months		
	Normal Vital Signs:	Heart Rate: 90-140		Respirations: 24-40		Systolic BP: >70
	Cardioversion:	10 joules		20 joules		20 joules
	Defibrillation:	20 joules		40 joules		40 joules
	Medication	Dose	mLs	Medication	Dose	mLs
Adenosine	1mg	0.33mL	Epinephrine 1mg/mL NEB	5mg	5mL	
Albuterol NEB	5mg	6mL	Fentanyl IV/IM	10mcg	0.2mL	
Amiodarone	50mg	1mL	Fentanyl IN	15mcg	0.3mL	
Atropine	0.2mg	2mL	Glucagon IM	1mg	1mL	
Calcium Chloride	200mg	2mL	Lidocaine 2% IO	5mg	0.25mL	
Dextrose 10% slow IV	50mL	50mL	Midazolam IV/IM/IO	1mg	0.2mL	
Diphenhydramine IV/IM	10mg	0.2mL	Midazolam IN	2mg	0.4mL	
Duodote™	1 dose	NA	Morphine IV/IM/IO	1mg	0.25mL	
Epinephrine Push Dose	10mcg	1mL	Naloxone IV/IM/IN	1mg	1mL	
Epinephrine 0.1mg/mL IV	0.1mg	1mL	Normal Saline IV Bolus	200mL	200mL	
Epinephrine 1mg/mL IM	0.1mg	0.1mL	Sodium Bicarbonate*	10mEq	10mL	

PURPLE

*dilute 1:1 with NS

11 Kg	Length 78 – 83 cm			15 – 18 months		
	Cardioversion:	11 joules		22 joules		22 joules
	Defibrillation:	22 joules		44 joules		44 joules
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	1.1mg	0.37mL	Epinephrine 1mg/mL NEB	5mg	5mL
Albuterol NEB	5mg	6mL	Fentanyl IV/IM	11mcg	0.22mL	
Amiodarone	55mg	1.1mL	Fentanyl IN	16.5mcg	0.33mL	
Atropine	0.22mg	2.2mL	Glucagon IM	1mg	1mL	
Calcium Chloride	220mg	2.2mL	Lidocaine 2% IO	5.5mg	0.28mL	
Dextrose 10% slow IV	55mL	55mL	Midazolam IV/IM/IO	1.1mg	0.22mL	
Diphenhydramine IV/IM	11mg	0.22mL	Midazolam IN	2.2mg	0.44mL	
Duodote™	1 dose	NA	Morphine IV/IM/IO	1.1mg	0.28mL	
Epinephrine Push Dose	10mcg	1mL	Naloxone IV/IM/IN	1.1mg	1.1mL	
Epinephrine 0.1mg/mL IV	0.11mg	1.1mL	Normal Saline IV Bolus	220mL	220mL	
Epinephrine 1mg/mL IM	0.11mg	0.11mL	Sodium Bicarbonate	11mEq	11mL	

PURPLE

12 Kg	Length 83 – 94.5 cm			19 -35 months		
	Normal Vital Signs:		Heart Rate: 90-140	Respirations: 20-30	Systolic BP: >70	
	Cardioversion:		12 joules	24 joules	24 joules	
	Defibrillation:		24 joules	48 joules	48 joules	
	Medication	Dose	mLs	Medication	Dose	mLs
Adenosine	1.2mg	0.4mL	Epinephrine 1mg/mL NEB	5mg	5mL	
Albuterol NEB	5mg	6mL	Fentanyl IV/IM	12mcg	0.24mL	
Amiodarone	60mg	1.2mL	Fentanyl IN	18mcg	0.36mL	
Atropine	0.24mg	2.4mL	Glucagon IM	1mg	1mL	
Calcium Chloride	240mg	2.4mL	Lidocaine 2% IO	6mg	0.3mL	
Dextrose 10% slow IV	60mL	60mL	Midazolam IV/IM/IO	1.2mg	0.24mL	
Diphenhydramine IV/IM	12mg	0.24mL	Midazolam IN	2.4mg	0.48mL	
Duodote™	1 dose	NA	Morphine IV/IM/IO	1.2mg	0.3mL	
Epinephrine Push Dose	10mcg	1mL	Naloxone IV/IM/IN	1.2mg	1.2mL	
Epinephrine 0.1mg/mL IV	0.12mg	1.2mL	Normal Saline IV Bolus	240mL	240mL	
Epinephrine 1mg/mL IM	0.12mg	0.12mL	Sodium Bicarbonate	12mEq	12mL	
13 Kg	Cardioversion:		13 joules	26 joules	26 joules	
	Defibrillation:		26 joules	52 joules	52 joules	
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	1.3mg	0.43mL	Epinephrine 1mg/mL NEB	5mg	5mL
	Albuterol NEB	5mg	6mL	Fentanyl IV/IM	13mcg	0.26mL
	Amiodarone	65mg	1.3mL	Fentanyl IN	19.5mcg	0.39mL
	Atropine	0.26mg	2.6mL	Glucagon IM	1mg	1mL
	Calcium Chloride	260mg	2.6mL	Lidocaine 2% IO	6.5mg	0.32mL
	Dextrose 10% slow IV	65mL	65mL	Midazolam IV/IM/IO	1.3mg	0.26mL
	Diphenhydramine IV/IM	13mg	0.26mL	Midazolam IN	2.6mg	0.52mL
	Duodote™	1 dose	NA	Morphine IV/IM/IO	1.3mg	0.32mL
	Epinephrine Push Dose	10mcg	1mL	Naloxone IV/IM/IN	1.3mg	1.3mL
	Epinephrine 0.1mg/mL IV	0.13mg	1.3mL	Normal Saline IV Bolus	260mL	260mL
Epinephrine 1mg/mL IM	0.13mg	0.13mL	Sodium Bicarbonate	13mEq	13mL	
14 Kg	Cardioversion:		14 joules	28 joules	28 joules	
	Defibrillation:		28 joules	56 joules	56 joules	
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	1.4mg	0.47mL	Epinephrine 1mg/mL NEB	5mg	5mL
	Albuterol NEB	5mg	6mL	Fentanyl IV/IM	14mcg	0.28mL
	Amiodarone	70mg	1.4mL	Fentanyl IN	21mcg	0.42mL
	Atropine	0.28mg	2.8mL	Glucagon IM	1mg	1mL
	Calcium Chloride	280mg	2.8mL	Lidocaine 2% IO	7mg	0.35mL
	Dextrose 10% slow IV	70mL	70mL	Midazolam IV/IM/IO	1.4mg	0.28mL
	Diphenhydramine IV/IM	14mg	0.28mL	Midazolam IN	2.8mg	0.56mL
	Duodote™	1 dose	NA	Morphine IV/IM/IO	1.4mg	0.35mL
	Epinephrine Push Dose	10mcg	1mL	Naloxone IV/IM/IN	1.4mg	1.4mL
	Epinephrine 0.1mg/mL IV	0.14mg	1.4mL	Normal Saline IV Bolus	280mL	280mL
Epinephrine 1mg/mL IM	0.14mg	0.14mL	Sodium Bicarbonate	14mEq	14mL	

YELLOW

15 Kg	Length 94.5 – 107 cm			3 – 4 years			WHITE
	Normal Vital Signs:		Heart Rate: 80-130	Respirations: 20-30		Systolic BP: >75	
	Cardioversion:		15 joules	30 joules		30 joules	
	Defibrillation:		30 joules	60 joules		60 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	1.5mg	0.5mL	Fentanyl IN	22.5mcg	0.45mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	75mg	1.5mL	Glucopaste*	15gm	1 dose	
	Atropine	0.3mg	3mL	Ketorolac slow IV/IO*	7.5mg	0.5mL	
	Calcium Chloride	300mg	3mL	Ketorolac IM*	7.5mg	0.5mL	
	Dextrose 10% slow IV	75mL	75mL	Lidocaine 2% IO	7.5mg	0.38mL	
	Diphenhydramine IV/IM	15mg	0.3mL	Midazolam IV/IM/IO	1.5mg	0.3mL	
	Duodote™	1 dose	NA	Midazolam IN	3mg	0.6mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	1.5mg	0.38mL	
	Epinephrine 0.1mg/mL IV	0.15mg	1.5mL	Naloxone IV/IM/IN	1.5mg	1.5mL	
Epinephrine 1mg/mL IM	0.15mg	0.15mL	Normal Saline IV Bolus	300mL	300mL		
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT*	4mg	1 tablet		
Fentanyl IV/IM	15mcg	0.3mL	Sodium Bicarbonate	15mEq	15mL		

*4 years or older

16 Kg	Length 94.5 – 107 cm			3 – 4 years			WHITE
	Normal Vital Signs:		Heart Rate: 80-130	Respirations: 20-30		Systolic BP: >75	
	Cardioversion:		16 joules	32 joules		32 joules	
	Defibrillation:		32 joules	64 joules		64 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	1.6mg	0.53mL	Fentanyl IN	24mcg	0.48mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	80mg	1.6mL	Glucopaste*	15gm	1 dose	
	Atropine	0.32mg	3.2mL	Ketorolac slow IV/IO*	8mg	0.53mL	
	Calcium Chloride	320mg	3.2mL	Ketorolac IM*	8mg	0.53mL	
	Dextrose 10% slow IV	80mL	80mL	Lidocaine 2% IO	8mg	0.4mL	
	Diphenhydramine IV/IM	16mg	0.32mL	Midazolam IV/IM/IO	1.6mg	0.32mL	
	Duodote™	1 dose	NA	Midazolam IN	3.2mg	0.64mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	1.6mg	0.4mL	
	Epinephrine 0.1mg/mL IV	0.16mg	1.6mL	Naloxone IV/IM/IN	1.6mg	1.6mL	
Epinephrine 1mg/mL IM	0.16mg	0.16mL	Normal Saline IV Bolus	320mL	320mL		
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT*	4mg	1 tablet		
Fentanyl IV/IM	16mcg	0.32mL	Sodium Bicarbonate	16mEq	16mL		

*4 years or older

17 Kg	Length 94.5 – 107 cm			3 – 4 years			WHITE
	Normal Vital Signs:		Heart Rate: 80-130	Respirations: 20-30		Systolic BP: >75	
	Cardioversion:		17 joules	34 joules		34 joules	
	Defibrillation:		34 joules	68 joules		68 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	1.7mg	0.57mL	Fentanyl IN	25.5mcg	0.51mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	85mg	1.7mL	Glucopaste*	15gm	1 dose	
	Atropine	0.34mg	3.4mL	Ketorolac slow IV/IO*	8.5mg	0.57mL	
	Calcium Chloride	340mg	3.4mL	Ketorolac IM*	8.5mg	0.57mL	
	Dextrose 10% slow IV	85mL	85mL	Lidocaine 2% IO	8.5mg	0.42mL	
	Diphenhydramine IV/IM	17mg	0.34mL	Midazolam IV/IM/IO	1.7mg	0.34mL	
	Duodote™	1 dose	NA	Midazolam IN	3.4mg	0.68mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	1.7mg	0.43mL	
	Epinephrine 0.1mg/mL IV	0.17mg	1.7mL	Naloxone IV/IM/IN	1.7mg	1.7mL	
Epinephrine 1mg/mL IM	0.17mg	0.17mL	Normal Saline IV Bolus	340mL	340mL		
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT*	4mg	1 tablet		
Fentanyl IV/IM	17mcg	0.34mL	Sodium Bicarbonate	17mEq	17mL		

*4 years or older

18 Kg	Length 94.5 – 107 cm			3 – 4 years			WHITE
	Normal Vital Signs:		Heart Rate: 80-130	Respirations: 20-30		Systolic BP: >75	
	Cardioversion:		18 joules	36 joules		36 joules	
	Defibrillation:		36 joules	72 joules		72 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	1.8mg	0.6mL	Fentanyl IN	27mcg	0.54mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	90mg	1.8mL	Glucopaste*	15gm	1 dose	
	Atropine	0.36mg	3.6mL	Ketorolac slow IV/IO*	9mg	0.6mL	
	Calcium Chloride	360mg	3.6mL	Ketorolac IM*	9mg	0.6mL	
	Dextrose 10% slow IV	90mL	90mL	Lidocaine 2% IO	9mg	0.45mL	
	Diphenhydramine IV/IM	18mg	0.36mL	Midazolam IV/IM/IO	1.8mg	0.36mL	
	Duodote™	1 dose	NA	Midazolam IN	3.6mg	0.72mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	1.8mg	0.45mL	
	Epinephrine 0.1mg/mL IV	0.18mg	1.8mL	Naloxone IV/IM/IN	1.8mg	1.8mL	
Epinephrine 1mg/mL IM	0.18mg	0.18mL	Normal Saline IV Bolus	360mL	360mL		
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT*	4mg	1 tablet		
Fentanyl IV/IM	18mcg	0.36mL	Sodium Bicarbonate	18mEq	18mL		

*4 years or older

19 Kg	Length 107 – 119.5 cm			5 – 6 years			
	Normal Vital Signs:	Heart Rate: 70-120		Respirations: 15-30		Systolic BP: >80	
	Cardioversion:	19 joules		38 joules		38 joules	
	Defibrillation:	38 joules		76 joules		76 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	1.9mg	0.63mL	Fentanyl IN	28.5mcg	0.57mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	95mg	1.9mL	Glucopaste	15gm	1 dose	
	Atropine	0.38mg	3.8mL	Ketorolac slow IV/IO	9.5mg	0.63mL	
	Calcium Chloride	380mg	3.8mL	Ketorolac IM	9.5mg	0.63mL	
	Dextrose 10% slow IV	95mL	95mL	Lidocaine 2% IO	9.5mg	0.48mL	
	Diphenhydramine IV/IM	19mg	0.38mL	Midazolam IV/IM/IO	1.9mg	0.38mL	
	Duodote™	1 dose	NA	Midazolam IN	3.8mg	0.76mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	1.9mg	0.48mL	
	Epinephrine 0.1mg/mL IV	0.19mg	1.9mL	Naloxone IV/IM/IN	1.9mg	1.9mL	
	Epinephrine 1mg/mL IM	0.19mg	0.19mL	Normal Saline IV Bolus	380mL	380mL	
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	19mcg	0.38mL	Sodium Bicarbonate	19mEq	19mL	
20 Kg	Cardioversion:	20 joules		40 joules		40 joules	
	Defibrillation:	40 joules		80 joules		80 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	2mg	0.67mL	Fentanyl IN	30mcg	0.6mL
		Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
		Amiodarone	100mg	2mL	Glucopaste	15gm	1 dose
		Atropine	0.4mg	4mL	Ketorolac slow IV/IO	10mg	0.67mL
		Calcium Chloride	400mg	4mL	Ketorolac IM	10mg	0.67mL
		Dextrose 10% slow IV	100mL	100mL	Lidocaine 2% IO	10mg	0.5mL
		Diphenhydramine IV/IM	20mg	0.4mL	Midazolam IV/IM/IO	2mg	0.4mL
		Duodote™	1 dose	NA	Midazolam IN	4mg	0.8mL
		Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	2mg	0.5mL
		Epinephrine 0.1mg/mL IV	0.2mg	2mL	Naloxone IV/IM/IN	2mg	2mL
		Epinephrine 1mg/mL IM	0.2mg	0.2mL	Normal Saline IV Bolus	400mL	400mL
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	20mcg	0.4mL	Sodium Bicarbonate	20mEq	20mL	
22 Kg	Cardioversion:	22 joules		44 joules		44 joules	
	Defibrillation:	44 joules		88 joules		88 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	2.2mg	0.73mL	Fentanyl IN	33mcg	0.66mL
		Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
		Amiodarone	110mg	2.2mL	Glucopaste	15gm	1 dose
		Atropine	0.44mg	4.4mL	Ketorolac slow IV/IO	11mg	0.73mL
		Calcium Chloride	440mg	4.4mL	Ketorolac IM	11mg	0.73mL
		Dextrose 10% slow IV	110mL	110mL	Lidocaine 2% IO	11mg	0.55mL
		Diphenhydramine IV/IM	22mg	0.44mL	Midazolam IV/IM/IO	2.2mg	0.44mL
		Duodote™	1 dose	NA	Midazolam IN	4.4mg	0.88mL
		Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	2.2mg	0.55mL
		Epinephrine 0.1mg/mL IV	0.22mg	2.2mL	Naloxone IV/IM/IN	2mg	2mL
		Epinephrine 1mg/mL IM	0.22mg	0.22mL	Normal Saline IV Bolus	440mL	440mL
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	22mcg	0.44mL	Sodium Bicarbonate	22mEq	22mL	

BLUE

24 Kg	Length 119 – 129 cm			7 – 9 years			
	Normal Vital Signs:	Heart Rate: 70-110		Respirations: 15-30		Systolic BP: >80	
	Cardioversion:	24 joules		48 joules		48 joules	
	Defibrillation:	48 joules		96 joules		96 joules	
	Medication	Dose	mLs	Medication	Dose	mLs	
	Adenosine	2.4mg	0.8mL	Fentanyl IN	36mcg	0.72mL	
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
	Amiodarone	120mg	2.4mL	Glucopaste	15gm	1 dose	
	Atropine	0.48mg	4.8mL	Ketorolac slow IV/IO	12mg	0.8mL	
	Calcium Chloride	480mg	4.8mL	Ketorolac IM	12mg	0.8mL	
	Dextrose 10% slow IV	120mL	120mL	Lidocaine 2% IO	12mg	0.6mL	
	Diphenhydramine IV/IM	24mg	0.48mL	Midazolam IV/IM/IO	2.4mg	0.48mL	
	Duodote™	2 doses	NA	Midazolam IN	4.8mg	0.96mL	
	Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	2.4mg	0.6mL	
	Epinephrine 0.1mg/mL IV	0.24mg	2.4mL	Naloxone IV/IM/IN	2mg	2mL	
	Epinephrine 1mg/mL IM	0.24mg	0.24mL	Normal Saline IV Bolus	480mL	480mL	
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	24mcg	0.48mL	Sodium Bicarbonate	24mEq	24mL	
26 Kg	Cardioversion:	26 joules		52 joules		52 joules	
	Defibrillation:	52 joules		104 joules		104 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	2.6mg	0.87mL	Fentanyl IN	39mcg	0.78mL
		Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
		Amiodarone	130mg	2.6mL	Glucopaste	15gm	1 dose
		Atropine	0.5mg	5mL	Ketorolac slow IV/IO	13mg	0.87mL
		Calcium Chloride	520mg	5.2mL	Ketorolac IM	13mg	0.87mL
		Dextrose 10% slow IV	130mL	130mL	Lidocaine 2% IO	13mg	0.65mL
		Diphenhydramine IV/IM	26mg	0.52mL	Midazolam IV/IM/IO	2.6mg	0.52mL
		Duodote™	2 doses	NA	Midazolam IN	5mg	1mL
		Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	2.6mg	0.65mL
		Epinephrine 0.1mg/mL IV	0.26mg	2.6mL	Naloxone IV/IM/IN	2mg	2mL
		Epinephrine 1mg/mL IM	0.26mg	0.26mL	Normal Saline IV Bolus	520mL	520mL
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	26mcg	0.52mL	Sodium Bicarbonate	26mEq	26mL	
28 Kg	Cardioversion:	28 joules		56 joules		56 joules	
	Defibrillation:	56 joules		112 joules		112 joules	
		Medication	Dose	mLs	Medication	Dose	mLs
		Adenosine	2.8mg	0.93mL	Fentanyl IN	42mcg	0.84mL
		Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
		Amiodarone	140mg	2.8mL	Glucopaste	15gm	1 dose
		Atropine	0.5mg	5mL	Ketorolac slow IV/IO	14mg	0.93mL
		Calcium Chloride	560mg	5.6mL	Ketorolac IM	14mg	0.93mL
		Dextrose 10% slow IV	140mL	140mL	Lidocaine 2% IO	14mg	0.7mL
		Diphenhydramine IV/IM	28mg	0.56mL	Midazolam IV/IM/IO	2.8mg	0.56mL
		Duodote™	2 doses	NA	Midazolam IN	5mg	1mL
		Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	2.8mg	0.7mL
		Epinephrine 0.1mg/mL IV	0.28mg	2.8mL	Naloxone IV/IM/IN	2mg	2mL
		Epinephrine 1mg/mL IM	0.28mg	0.28mL	Normal Saline IV Bolus	560mL	560mL
	Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
	Fentanyl IV/IM	28mcg	0.56mL	Sodium Bicarbonate	28mEq	28mL	

ORANGE

30 Kg	Length 129 – 141.5 cm			10 – 12 years		
	Normal Vital Signs:		Heart Rate: 60-100	Respirations: 15-20	Systolic BP: >90	
	Cardioversion:		30 joules	60 joules	60 joules	
	Defibrillation:		60 joules	120 joules	120 joules	
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	3mg	1mL	Fentanyl IN	45mcg	0.9mL
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
	Amiodarone	150mg	3mL	Glucopaste	15gm	1 dose
	Atropine	0.5mg	5mL	Ketorolac slow IV/IO	15mg	1mL
	Calcium Chloride	600mg	6mL	Ketorolac IM	15mg	1mL
Dextrose 10% slow IV	150mL	150mL	Lidocaine 2% IO	15mg	0.75mL	
Diphenhydramine IV/IM	30mg	0.6mL	Midazolam IV/IM/IO	3mg	0.6mL	
Duodote™	2 doses	NA	Midazolam IN	5mg	1mL	
Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	3mg	0.75mL	
Epinephrine 0.1mg/mL IV	0.3mg	3mL	Naloxone IV/IM/IN	2mg	2mL	
Epinephrine 1mg/mL IM	0.3mg	0.3mL	Normal Saline IV Bolus	600mL	600mL	
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
Fentanyl IV/IM	30mcg	0.6mL	Sodium Bicarbonate	30mEq	30mL	

GREEN

32 Kg	Length 129 – 141.5 cm			10 – 12 years		
	Normal Vital Signs:		Heart Rate: 60-100	Respirations: 15-20	Systolic BP: >90	
	Cardioversion:		32 joules	64 joules	64 joules	
	Defibrillation:		64 joules	128 joules	128 joules	
	Medication	Dose	mLs	Medication	Dose	mLs
	Adenosine	3.2mg	1.07mL	Fentanyl IN	48mcg	0.96mL
	Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL
	Amiodarone	160mg	3.2mL	Glucopaste	15gm	1 dose
	Atropine	0.5mg	5mL	Ketorolac slow IV/IO	15mg	1mL
	Calcium Chloride	640mg	6.4mL	Ketorolac IM	15mg	1mL
Dextrose 10% slow IV	160mL	160mL	Lidocaine 2% IO	16mg	0.8mL	
Diphenhydramine IV/IM	32mg	0.64mL	Midazolam IV/IM/IO	3.2mg	0.64mL	
Duodote™	2 doses	NA	Midazolam IN	5mg	1mL	
Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	3.2mg	0.8mL	
Epinephrine 0.1mg/mL IV	0.32mg	3.2mL	Naloxone IV/IM/IN	2mg	2mL	
Epinephrine 1mg/mL IM	0.32mg	0.32mL	Normal Saline IV Bolus	640mL	640mL	
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
Fentanyl IV/IM	32mcg	0.64mL	Sodium Bicarbonate	32mEq	32mL	

GREEN

34 Kg	Length 129 – 141.5 cm			10 – 12 years		
	Normal Vital Signs:	Heart Rate: 60-100		Respirations: 15-20		Systolic BP: >90
	Cardioversion:	34 joules		68 joules		68 joules
	Defibrillation:	68 joules		136 joules		136 joules
	Medication	Dose	mLs	Medication	Dose	mLs
Adenosine	3.4mg	1.13mL	Fentanyl IN	50mcg	1mL	
Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
Amiodarone	170mg	3.4mL	Glucopaste	15gm	1 dose	
Atropine	0.5mg	5mL	Ketorolac slow IV/IO	15mg	1mL	
Calcium Chloride	680mg	6.8mL	Ketorolac IM	15mg	1mL	
Dextrose 10% slow IV	170mL	170mL	Lidocaine 2% IO	17mg	0.85mL	
Diphenhydramine IV/IM	34mg	0.68mL	Midazolam IV/IM/IO	3.4mg	0.68mL	
Duodote™	2 doses	NA	Midazolam IN	5mg	1mL	
Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	3.4mg	0.85mL	
Epinephrine 0.1mg/mL IV	0.34mg	3.4mL	Naloxone IV/IM/IN	2mg	2mL	
Epinephrine 1mg/mL IM	0.34mg	0.34mL	Normal Saline IV Bolus	680mL	680mL	
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
Fentanyl IV/IM	34mcg	0.68mL	Sodium Bicarbonate	34mEq	34mL	

GREEN

36 Kg	Length 129 – 141.5 cm			10 – 12 years		
	Normal Vital Signs:	Heart Rate: 60-100		Respirations: 15-20		Systolic BP: >90
	Cardioversion:	36 joules		72 joules		72 joules
	Defibrillation:	72 joules		144 joules		144 joules
	Medication	Dose	mLs	Medication	Dose	mLs
Adenosine	3.6mg	1.2mL	Fentanyl IN	50mcg	1mL	
Albuterol NEB	5mg	6mL	Glucagon IM	1mg	1mL	
Amiodarone	180mg	3.6mL	Glucopaste	15gm	1 dose	
Atropine	0.5mg	5mL	Ketorolac slow IV/IO	15mg	1mL	
Calcium Chloride	720mg	7.2mL	Ketorolac IM	15mg	1mL	
Dextrose 10% slow IV	180mL	180mL	Lidocaine 2% IO	18mg	0.9mL	
Diphenhydramine IV/IM	36mg	0.72mL	Midazolam IV/IM/IO	3.6mg	0.72mL	
Duodote™	2 doses	NA	Midazolam IN	5mg	1mL	
Epinephrine Push Dose	10mcg	1mL	Morphine IV/IM/IO	3.6mg	0.9mL	
Epinephrine 0.1mg/mL IV	0.36mg	3.6mL	Naloxone IV/IM/IN	2mg	2mL	
Epinephrine 1mg/mL IM	0.36mg	0.36mL	Normal Saline IV Bolus	720mL	720mL	
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron ODT	4mg	1 tablet	
Fentanyl IV/IM	36mcg	0.72mL	Sodium Bicarbonate	36mEq	36mL	

GREEN

Longer than the Length-Based Resuscitation Tape						
Normal Vital Signs:		Heart Rate: 50-99		Respirations: 12-20		Systolic BP: >100
Cardioversion:		120 joules		150 joules		200 joules
Defibrillation:		200 joules		200 joules		200 joules
Medication	Dose	mLs	Medication	Dose	mLs	
Adenosine	6 or 12mg	2 or 4mL	Glucagon IM	1mg	1mL	
Albuterol NEB	5mg	6mL	Glucopaste	15gm	1 dose	
Amiodarone	300mg	6mL	Ketorolac slow IV/IO	15mg	1mL	
Aspirin	325mg	1 tablet	Ketorolac IM	30mg	2mL	
Atropine	0.5mg	5mL	Lidocaine 2% IO	40mg	2mL	
Calcium Chloride	1gm	10mL	Midazolam IV/IM//IN/IO ³	2-5mg	0.4-1mL	
Dextrose 10% slow IV ¹	125-	125-	Morphine IV/IM/IO ⁴	4mg	1mL	
	250mL	250mL	Naloxone IV	0.8-2mg	0.8-2mL	
Diphenhydramine IV/IM	50mg	1mL	Naloxone IM	2mg	2mL	
Duodote™	1-3 doses	NA	Naloxone IN	2-4mg	2-4mL	
Epinephrine Push Dose	10mcg	1mL	Nitroglycerin ⁵	0.4mg	1 dose	
Epinephrine 0.1mg/mL IV	1mg	10mL	Normal Saline IV Bolus	1L	1L	
Epinephrine 1mg/mL IM	0.5mg	0.5mL	Ondansetron ODT	4mg	1 tablet	
Epinephrine 1mg/mL NEB	5mg	5mL	Ondansetron IV/IM ⁶	4mg	2mL	
Fentanyl IV/IM/IN ²	50mcg	1mL	Sodium Bicarbonate	50mEq	50mL	

ADULT

BLACK

NOTES:

¹ Dextrose: **125mL IV** and reassess, if patient remains symptomatic, repeat x1 for a total of 250mL

² Fentanyl: **50mcg (1mL) slow IV push or IM/IN**, repeat every 5min prn, maximum total dose prior to Base Contact 150mcg

³ Midazolam:

Agitated Delirium / Behavioral / Psychiatric Crisis

5mg (1mL) IM/IN/IV, repeat x1 in 5 min prn, maximum total dose prior to Base contact 10mg for Agitated Delirium (Psychiatric Crisis requires Base order for any)

Cardiac Dysrhythmia - sedation prior to synchronized cardioversion / transcutaneous pacing

2mg (0.4mL) slow IV/IO push/IM/IN, may repeat ever 5 min, maximum total dose prior to Base contact 6mg

Seizure - Active

5mg (1mL) IM/IN/IV, repeat x1 in 2 min prn, maximum total dose prior to Base contact 10mg

⁴ Morphine: **4mg (1mL) slow IV/IO push or IM**, repeat every 5min prn, maximum total dose prior to Base contact 12mg

⁵ Nitroglycerin

Chest Pain – Suspected Cardiac / Chest Pain – STEMI

0.4 mg SL prn, repeat every 5min prn x2, total 3 doses, hold if SBP < 100mmHg or patient has taken sexually enhancing medication within 48 hours

Pulmonary Edema / CHF

0.4mg SL, for SBP ≥ 100mmHg; **0.8mg SL**, for SBP ≥ 150mmHg; **1.2mg SL**, for SBP ≥ 200mmHg

Repeat every 3-5 min prn x2 for persistent dyspnea, assess blood pressure prior to each administration and determine subsequent dose base on SBP as listed above. Hold if SBP

⁶ Ondansetron IV/IM – only for 15 years of age or older