REFERENCE GUIDE

AVEL eCare | EMERGENCY

Form 0001-22 CLIN.ER (Rev. 3/22)

AVEL eCare | EMERGENCY

Activation Workflow
Request Process

Push Button

State:
Town & State
Room You Are In
Purpose of Call

Camera Check or All Call

Request Patient Support

Upon Camera Activation

State:
Patient Name & Correct Spelling
Age & DOB
Chief Compliant
Local Provider Name
Primary Nurse Name

State Level of Involvement Requested

Physician Support
Manage Complete Care
Consult With Provider on Site
Second Option

Nursing Support
Nursing Documentation
Medication Questions

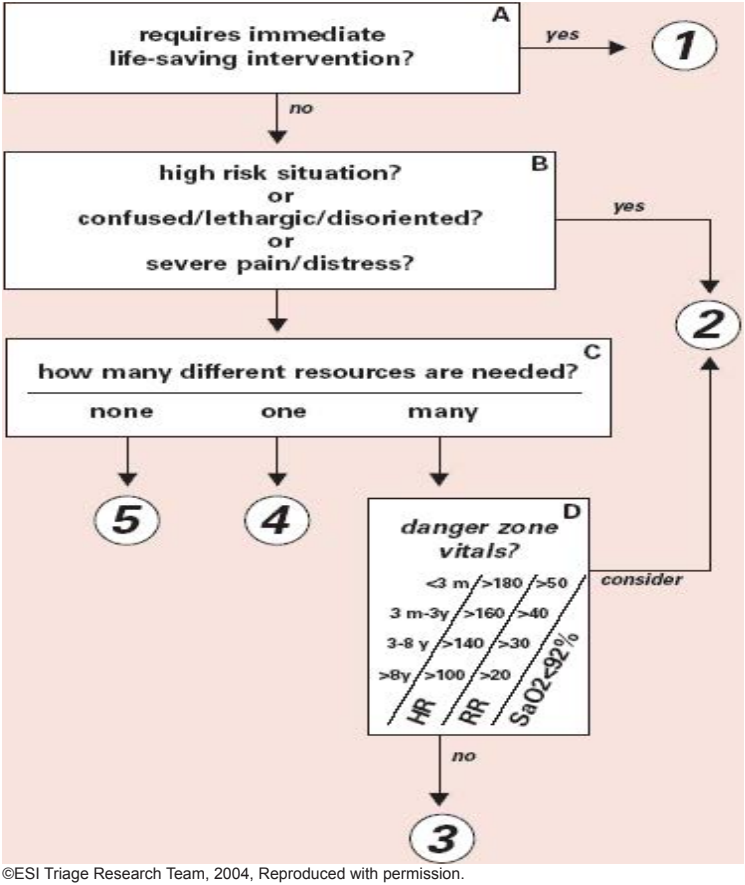
Request Transfer Support
Destination Requested
Transport Service Requested
Patient Weight for Air Transport

Avel eCare Emergency Contact Numbers

Avel eCare toll Free Phone:	**1-877-283-7237**
Direct Line	**605-606-0430**
Avel eCare Emergency Fax Numbers:	
Main Fax Number	**605-606-0431**
Avel eCare Education Email: education@avelecare.com	

This reference material was developed as a guide for the delivery of health services and is not intended to define the standard of care. This reference should be used as a guide for the delivery of service, although hospital personnel may deviate from this guide to provide appropriate individualized care and treatment for each patient.

ESI



WEIGHT CONVERSION CHART

LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG
5	2	26	12	47	21	68	31	89	40	110	50	131	60
6	3	27	12	48	22	69	31	90	41	111	50	132	60
7	3	28	13	49	22	70	32	91	41	112	51	133	60
8	4	29	13	50	23	71	32	92	42	113	51	134	61
9	4	30	14	51	23	72	33	93	42	114	52	135	61
10	5	31	14	52	24	73	33	94	43	115	52	136	62
11	5	32	15	53	24	74	34	95	43	116	53	137	62
12	5	33	15	54	25	75	34	96	44	117	53	138	63
13	6	34	15	55	25	76	35	97	44	118	54	139	63
14	6	35	16	56	25	77	35	98	45	119	54	140	64
15	7	36	16	57	26	78	35	99	45	120	55	141	64
16	7	37	17	58	26	79	36	100	45	121	55	142	65
17	8	38	17	59	27	80	36	101	46	122	55	143	65
18	8	39	18	60	27	81	37	102	46	123	56	144	65
19	9	40	18	61	28	82	37	103	47	124	56	145	66
20	9	41	19	62	28	83	38	104	47	125	57	146	66
21	10	42	19	63	29	84	38	105	48	126	57	147	67
22	10	43	20	64	29	85	39	106	48	127	58	148	67
23	10	44	20	65	30	86	39	107	49	128	58	149	68
24	11	45	20	66	30	87	40	108	49	129	59	150	68
25	11	46	21	67	30	88	40	109	50	130	59	151	69

WEIGHT CONVERSION CHART (cont'd)

LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG
152	69	173	79	194	88	215	98	236	107	257	117	278	126
153	70	174	79	195	89	216	98	237	108	258	117	279	127
154	70	175	80	196	89	217	99	238	108	259	118	280	127
155	70	176	80	197	90	218	99	239	109	260	118	281	128
156	71	177	80	198	90	219	100	240	109	261	119	282	128
157	71	178	81	199	90	220	100	241	110	262	119	283	129
158	72	179	81	200	91	221	100	242	110	263	120	284	129
159	72	180	82	201	91	222	101	243	110	264	120	285	130
160	73	181	82	202	92	223	101	244	111	265	120	286	130
161	73	182	83	203	92	224	102	245	111	266	121	287	130
162	74	183	83	204	93	225	102	246	112	267	121	288	131
163	74	184	84	205	93	226	103	247	112	268	122	289	131
164	75	185	84	206	94	227	103	248	113	269	122	290	132
165	75	186	85	207	94	228	104	249	113	270	123	291	132
166	75	187	85	208	95	229	104	250	114	271	123	292	133
167	76	188	85	209	95	230	105	251	114	272	124	293	133
168	76	189	86	210	95	231	105	252	115	273	124	294	134
169	77	190	86	211	96	232	105	253	115	274	125	295	134
170	77	191	87	212	96	233	106	254	115	275	125	296	135
171	78	192	87	213	97	234	106	255	116	276	125	297	135
172	78	193	88	214	97	235	107	256	116	277	126	298	135

TNCC 8th EDITION – TRAUMA NURSING ASSESSMENT MNEUMONIC

Prepare for patient arrival: call Trauma Code, set up equipment, don PPE

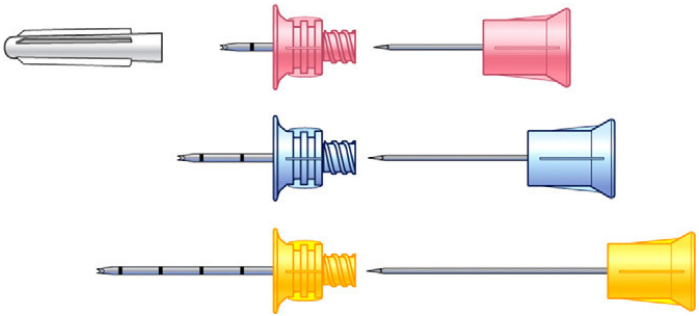
C – Circulation & Control of Hemorrhage
A – Airway & Alertness (AVPU) ~ C-spine Immobilization (Trauma)
B – Breathing & Ventilation
D – Disability (neuro status)
E – Exposure & Environmental Control
F – Full Set of Vitals & Family Presence
G – (Get) Monitoring Devices

- L – Labs
- M – Monitors
- N – Naso or Orogastric Tube
- O – Oxygenation Status (SaO2; ETCO2; ABG's)
- P – Pain Asssessment & Management

H – Head-to-Toe Assessment & History
I – Inspect Posterior Surfaces

Patient disposition –
Consider Early Transfer Reevaluation
of Pertinent Findings –
Serial Assessments

Arrow EZ-IO Teleflex



- **Pink: is 15 mm 3-39 kg**
- **Blue: is 25 mm 40 kg or greater**
- **Yellow: is 45 mm for Humerus insertion or excessive tissue**

Reference: Arrow EZ-IO Teleflex: https://www.teleflex.com/global/clinical-resources/EZ-IO_Bibliography.pdf (teleflex.com)

Sepsis Screen

Notify MD of positive Sepsis Screen if 2 or more indicators:

Temp < 96.8 or > 100.9

HR > 90

SBP < 90

SPO2 < 90%

RR > 20

MAP < 65

Lactic Acid > 2

WBC < 4000 or > 12,000

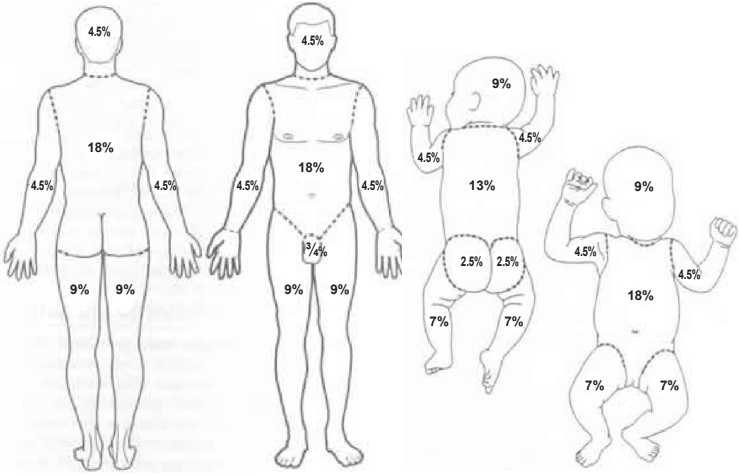
Reference: SIRS Criteria (Systemic Inflammatory Response Syndrome)

BURNS

Fluid resuscitation:

- Adults: 2-4 ml LR or NS X kg X % TBSA burn.
- Children: 3-4 ml LR or NS X kg X % TBSA burn.
- Infants and young children: 3-4 ml LR or NS X kg X % TBSA burn + maintenance rate of dextrose infusion.

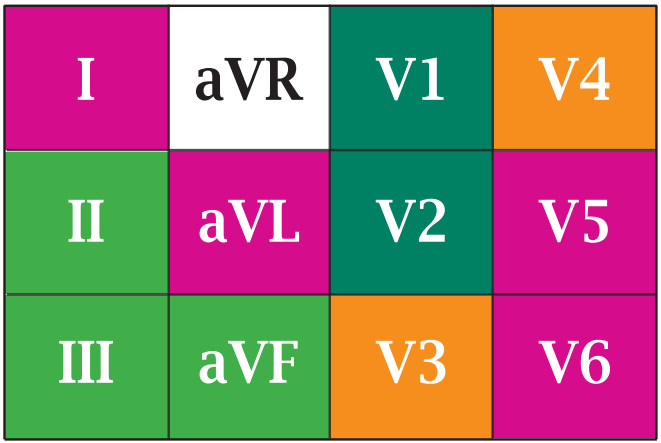
- Infuse ½ the amount in the first 8 hours from the time of the burn injury and then divide the remaining amount equally over the next 16 hours.



Reference: Parkland Burn Forumla

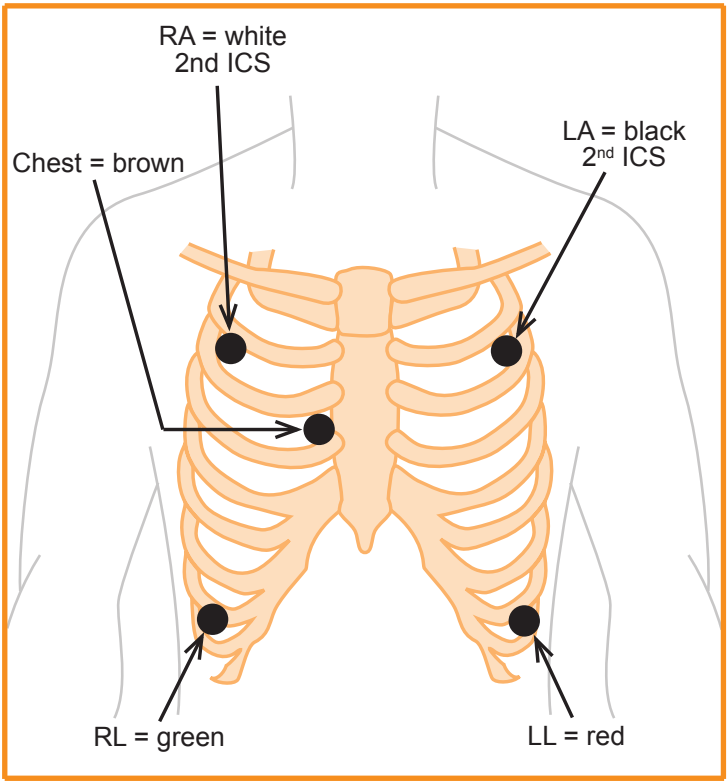
TYPES OF ACUTE MI's

Lateral	**I, aVL, V5, V6**	Circumflex, branch of LCA
Inferior	**II, III, aVF**	RCA
Septal	**V1, V2**	LCA, LAD-septal branch
Anterior	**V3, V4**	LCA, LAD



5 LEAD ECG PLACEMENT

5-Electrode System



ADULT GLASGOW COMA SCALE (GCS)

Eyes open	Spontaneous	4
	To speech	3
	To pain	2
	Never	1
Best verbal response	Oriented	5
	Confused	4
	Inappropriate words	3
	Incomprehensible sounds	2
	None	1
Best Motor response	Obeys commands	6
	Localized pain	5
Flexion to pain	Withdrawal	4
	Abnormal	3
	Extension to pain	2
	None	1
	Total	3 - 15

QUICK NIHSS STROKE SCALE

Category	Score/Description	Score
1a. Level of Consciousness	0 = Alert 1 = Sleep but arouses 2 = Can't stay awake 3 = No purposeful response	
1b. Questions "What month is it? How old are you?	0 = Both correct 1 = One correct/intubated 2 = Neither correct	
1c. Commands "Open & close your eyes". Make a fist; now open your hand"	0 = Obeys both 1 = Obeys one 2 = Obeys neither	
2. Lateral Gaze "Follow my finger from side-to-side" (Move finger horizontally from side-to-side)	0 = Normal side-to-side eye movement 1 = Partial side-to-side eye movement 2 = No side-to-side eye movement	
3. Visual Fields Have patient look at your nose. "How many fingers am I holding up?" or "Tell me when you see my fingers wiggling." Check all 4 visual quadrants (upright, lower right, upper left, lower left)	0 = Normal visual fields 1 = Blind upper **or** lower field one side 2 = Blind upper **&** lower field one side 3 = Blind in both eyes/4 fields	
4. Facial Palsy "Smile for me; raise your eyebrows; squeeze your eyes shut, now open them."	0 = Normal 1 = Mild one sided droop with smile 2 = Obvious droop at rest 3 = Upper **&** lower face weak	

QUICK NIHSS STROKE SCALE (cont'd)

Category	Score/Description	Score
5a. Arm Weakness – Lt **5b. Arm Weakness – Rt** (Patient holds arm at 90° if sitting, 45° if supine) 10 sec.	0 = No drift 1 = Drifts down, does not hit bed 2 = Drifts down to hit bed 3 = Can move but can't lift 4 = No movement UN = Untestable (amputation or joint fused – do not include this in score total)	
6a. Leg Weakness – Lt **6b. Leg Weakness – Rt** (Patient holds leg straight out if sitting, 30° if supine) 5 sec.	0 = No drift 1 = Drifts down, does not hit bed 2 = drifts down to hit bed 3 = Can move but can't lift 4 = No movement UN = Untestable (amputation or joint fused – do not include this in score total)	
7. Coordination Patient puts his finger to his nose, then to your finger. Patient heel-to-shin. Score <u>only</u> if not caused by weakness.	0 = Normal or **no movement** 1 = Clumsy in one limb 2 = Clumsy in two limbs UN = Amputation or joint fused – do not include this in score total	
8. Sensation Touch both sides of patient face, arms, legs. "Does this feel the same on both side oris it different on one side?"	0 = Normal 1 = Decreased sensation 2 = Can't feel, no pain, withdrawal	

QUICK NIHSS STROKE SCALE (cont'd)

Category	Score/Description	Score
9. Speech (content) Can the patient understand what's going on in the picture/name items/read the sentences? (Intubated patient can write. Give blind patient objects to name. Name objects, describe cookie picture.)	0 = Correct full sentences 1 = Wrong or incomplete sentences 2 = Words don't make sense 3 = Can't speak at all	
10. Dysarthria (slurring of speech) (Listen to patient read/repeat words)	0 = No slurring 1 = Slurs but you can understand 2 = Slurs and you can't understand UN - Intubated/other physical barrier – do not include this in score total	
11. Neglect Does the patient ignore one side of the body? (Use information from prior testing to identify neglect.)	0 = Sees & feels when both sides are tested at once 1 = Doesn't see **or** feel one side when tested at once 2 = Doesn't see **and** feel one side when tested at once	
	TOTAL SCORE:_____	

LVO/VAN Assessment Tool

Follow Stroke Team algorithm for guidance on when to use this tool*

Step 1: Does this patient have unilateral (one-sided) weakness?

YES - proceed with screening tool below
NO - patient is "VAN negative", screening tool is not needed

Step 2: VAN Assessment

Yes	No	Category	Description
		Vision Changes	• Field Cut • Double Vision • New Onset Vision Changes
		Aphasia	• Expressive: inability to speak or paraphrasic errors, unable to name objects, ask patient to repeat phrase, name 2 objects • Receptive: not understanding or following commands, ask patient to close their eyes or make a fist • **Note: slurred speech does not count as aphasia*
		Neglect	• Forced gaze, inability to track to one side • Unable to feel both sides at the same time • Unable to identify own arm/leg

Step 3: If patient has unilateral weakness and <u>at least one</u> of the screening items is positive, the patient is "**VAN Positive":**

LKW of 0-6 hours:

If the patient is eligible for IV alteplase, this is the priority. ***Do not delay alteplase administration for advanced imaging***

LKW of 6-24 hours:

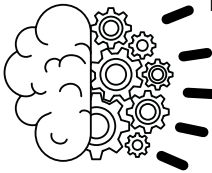
Expect orders for STAT CTA/CT perfusion studies

Prepare patient for thrombectomy if large vessel occlusion identified on imaging

Just in Time: Stroke Care

Inclusion Criteria

Sudden onset of any of the following and present for < 4.5 hours



Numbness or weakness in the face, arms or legs

Confusion with loss of ability to speak

Difficulty walking or loss of coordination

Visual complaints with visual field loss or double vision

Sudden onset of continuous vertigo

Action	Time Frame
1. Activate Stroke Team	Immediately with knowledge of patient arriving by EMS or within 5 minutes of arrival
2. Activate Avel eCare Team	Immediately with knowledge of patient arriving by EMS or within 5 minutes of arrival
3. Assess patient with NIH stroke scale. Order and Draw labs, CT, CTA, EKG	Immediately upon arrival and suspicion of stroke
4. Head CT without contrast	Completed within 20 minutes of arrival to ER
5. CT read - request STAT read	Completed within _____
6. Review appropriateness of alteplase treatment	Alteplase administered within 60 minutes of patient's arrival to ER
7. Initiate discussion with interventional Neuroradiology for thrombectomy	<24 hours

MEDICATION SECTION

ALL CONCENTRATIONS

AVEL eCare | EMERGENCY

Please confirm facility formulary prior to administration.

AVEL eCare EMERGENCY

NITROGLYCERIN (Tridil, Nitrostat)

Concentration: 50 mg in **250**cc D5W (200 mcg/cc)

DOSE (mg/hr)	DOSE (mcg/min)	RUN AT (cc/hr)
0.3	5	1.5
0.5	8	2.5
1	17	5
1.5	25	7.5
2	33	10
2.5	43	13
3	50	15
3.5	60	18
4	67	20
4.5	77	23
5	83	25
5.5	93	28
6	100	30
6.5	110	33
7	117	35
7.5	127	38
8	133	40
8.5	143	43
9	150	45
9.5	160	48
10	167	50
10.5	177	53
11	183	55
11.5	193	58
12	200	60
12.5	210	63
13	217	65
13.5	227	68
14	233	70
14.5	243	73
15	250	75
15.5	260	78
16	267	80
16.5	277	83
17	283	85
17.5	293	88
18	300	90
18.5	310	93
19	317	95
19.5	327	98
20	333	100

AVEL eCare | EMERGENCY

HEPARIN INFUSION

Concentration: 25,000 units in 250 ml D5W. (100 units/ml Heparin)

units/hr	cc/hr
500	5
550	5.5
600	6
650	6.5
700	7
750	7.5
800	8
850	8.5
900	9
950	9.5
1000	10
1200	12
1400	14
1600	16
1800	18
2000	20
2200	22
2400	24
2600	26
2800	28
3000	30

Adenosine (adenocard)

Indications: to convert paroxysmal SVT.
Contraindications: 2nd & 3rd degree HB, sick sinus syndrome, atrial flutter, atrial fibrillation, v-tach.
Adverse reactions: facial flushing, arrhythmias, chest pressure, SOB, nausea, HA, light-headedness, diaphoresis.
IV dosing: 6 mg over 1-2 seconds. Can repeat 12 mg IV rapid infusion X2 doses if no response to initial injection.

Amiodarone (Cordarone)

Indications: life threatening ventricular arrhythmias. **Contraindications:** severe bradycardia, sinus node dysfunction, pregnancy, lactation, heart block, sensitivity to Amiodarone. **Adverse reactions:** liver toxicity, cardiac arrhythmias, cardiac arrest, thyroid disorders, ophthalmic abnormalities, pulmonary toxicity, nausea, vomiting, dizziness, ataxia.
IV dosing: Cardiac Arrest dose = 300mg IV push
If VF/pulseless VT recurs, consider 2nd dose of 150mg IV push.

LOADING INFUSION:

150mg in 100cc D5W. Infuse over 10 minutes followed by 450mg in 250cc D5W.
To be run at 0.5-1 mg/min:

0.5 mg/min = 16.67 cc/hr
1 mg/min = 33.33 cc/hr

Cardizem (diltiazem)

Indications: paroxysmal SVT, atrial fibrillation, atrial flutter, essential hypertension, angina.
Contraindications: impaired hepatic or renal function, sick sinus syndrome, 2nd & 3rd degree HB, lactation, allergy to Cardizem.
Adverse reactions: dizziness, light-headedness, HA, asthenia (feeling of weakness without loss of strength), nausea, peripheral edema, hypotension, flushing, heart block, bradycardia.
IV dosing: bolus dose ordered by physician should be given over 2 minutes followed by infusion of 10 mg/hr.

DOPAMINE NOMOGRAM (Inotropin)

EMERGENCY DRIP DRUGS

Concentration: 400 mg dopamine in 250 ml 5% Dextrose in Water
1600 mcg/ml Dopamine

Dosage: 2-5 mcg/kg/minute initial infusion, increased by increments of 1-5 mcg/kg/minute
Maximal rate 20 mcg/kg/minute

Rate of Infusion:

Dopamine Dose	ml/hour								
(mcg/kg/minute)	50kg	60kg	70kg	80kg	90kg	100kg	110kg	120kg	130kg
1.0	1.9	2.25	2.6	3.0	3.4	3.8	4.1	4.5	4.9
1.5	2.8	3.4	3.9	4.5	4.1	5.6	6.2	6.8	7.3
2.0	3.8	4.5	5.3	7.0	6.8	7.5	8.3	9.0	9.8
2.5	4.7	5.6	6.6	7.5	8.4	9.4	10.3	11.3	12.2
3.0	5.6	6.8	7.9	9.0	20.1	11.3	12.4	13.5	14.6
3.5	6.6	7.9	8.2	10.5	11.8	13.1	14.4	15.8	17.1
4.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5
5.0	9.4	11.3	13.1	15.0	16.9	18.8	20.6	22.5	24.4
6.0	11.3	13.5	16.8	18.0	20.3	22.5	24.8	27.0	29.3
7.0	13.1	15.8	18.4	21.0	23.6	26.3	28.9	31.5	34.1
80	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0
9.0	16.9	20.3	23.6	27.0	30.4	33.8	37.1	40.5	43.9
10.0	18.8	22.5	26.3	30.3	33.8	37.4	41.3	45.0	48.8
11.0	20.6	24.8	28.9	33.0	37.1	41.3	45.4	49.5	53.6
12.0	22.5	27.0	31.5	36.0	40.5	45.0	49.5	54.0	58.5
13.0	24.4	29.3	34.1	30.0	43.9	48.8	53.6	58.5	63.4
14.0	26.3	31.5	36.8	42.0	47.3	52.5	57.8	63.0	68.3
15.0	38.1	33.8	39.4	45.0	50.6	56.3	61.9	67.5	73.1
16.0	30.0	36.0	42.0	48.0	54.0	60.0	66.0	72.0	78.0
17.0	31.9	38.3	44.6	51.0	57.4	63.8	70.1	76.5	82.9
18.0	33.8	40.5	57.3	54.0	60.8	67.5	74.3	81.0	87.8
19.0	35.6	42.8	49.9	57.0	64.1	71.3	78.4	86.5	92.6
20.0	37.5	45.0	52.5	60.0	67.5	75.0	82.5	90.0	97.5

Levophed Nomogram (Norepinephrine)

EMERGENCY DRIP DRUGS (MORE STABLE IN DSW)

Concentration: 4 mg Norepinephrine in 250 ml 5% Dextrose in Water
16 mcg/ml Norepinephrine

Dosage: 1-4 mcg/minute initial adult dosage, with subsequent rate adjusted to maintain low normal blood pressure. Average dosage range 2-4 mcg/minute.

Rate of Infusion:

Dose (mcg/minute)	Rate (ml/hr)	Dose (mcg/minute)	Rate (ml/hr)	Dose (mcg/minute)	Rate (ml/hr)
1.0	3.75	8.5	31.9	18.0	67.5
1.5	5.6	9.0	33.75	19.0	71.2
2.0	7.5	9.5	35.6	20.0	75.0
2.5	9.4	10.0	37.5	21.0	78.8
3.0	11.25	10.5	39.4	22.0	82.5
3.5	13.1	11.0	41.25	23.0	86.2
4.0	15.0	11.5	43.1	24.0	90.0
4.5	16.9	12.0	45	25.0	93.75
5.0	18.75	12.5	46.9	26.0	97.5
5.5	20.6	13.0	48.75	27.0	101.25
6.0	22.5	13.5	50.6	28.0	105.0
6.5	24.4	14.0	52.5	29.0	108.75
7.0	26.25	15.0	56.2	30.0	112.5
7.5	28.13	16.0	60.0		
8.0	30.0	17.0	63.8		

AVEL eCare EMERGENCY

Propofol (Diprivan)

Propofol																		
Propofol	**Weight (kg)**																	
mcg/kg/min	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**	**115**	**120**	**125**	**130**
5	1	1.5	2	2	2	2	2	2	3	3	3	3	3	3	3.5	4	4	4
10	3	3	3	4	4	4	4.5	5	5	5	6	6	6	3	3	3	3	8
15	4	4.5	5	5	6	6	7	7	8	8	9	9	9.5	10	10	11	11	12
20	5	6	7	7	8	8	9	10	10	11	11	12	13	13	14	14	15	16
25	7	7.5	8	9	10	10.5	11	12	13	13.5	14	15	16	16.5	17	18	19	19.5
30	8	9	10	11	12	13	13.5	14	15	16	17	18	19	20	21	22	22.5	23
35	9.5	10.5	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
40	11	12	13	14	16	17	18	19	20	22	23	24	25	26	28	29	30	31
45	12	13.5	15	16	18	19	20	22	23	24	26	27	28	30	31	32	34	35
50	13.5	15	16.5	18	19.5	21	22.5	24	22.5	27	28.5	30	31.5	133	34.5	36	37.5	39
55	15	16.5	18	20	21.5	23	25	26	28	30	31	33	35	36	38	40	41	43
60	16	18	20	22	23	25	27	29	31	32	34	36	38	40	41	43	45	47
65	18	18.5	21.5	23	25	27	29	31	33	35	37	39	41	43	45	47	50	51
70	19	21	23	25	27	29	31.5	34	36	38	40	42	44	46	48	50	52.5	55
75	20	22.5	25	27	29	31.5	34	36	38	40.5	43	45	47	49.5	53	54	56	58.5

Side Effects: Bradycardia, hypotension, N & V, pain at IV site, jerking, headache, HTN, fever, apnea.

Starting dose 5-10 mcg/kg/min.

May increase or decrease by 5-10 mcg/kg/min until desired level of sedation achieved.

******A sepcific line should be dedicated for administration******

******Port must be thoroughly cleansed with alcohol prior to access.******

******Always label IV tubing with date hung. Tubing is changed Q12 hrs.******

Maintenance infusion: 5-80 mcg/kg/min

(Infusion is in cc/hr)

Epinephrine Infusion

(4mg in 250ml D5W)
Concentration: 16 mcg/ml
Dose range: 1-10 mcg/min

Dose (mcg/min)	Rate (ml/hr)
1 mcg/min	3.8 ml/hr
2 mcg/min	7.5 ml/hr
3 mcg/min	11.3 ml/hr
4 mcg/min	15 ml/hr
5 mcg/min	18.8 ml/hr
6 mcg/min	22.5 ml/hr
7 mcg/min	26.3 ml/hr
8 mcg/min	30 ml/hr
9 mcg/min	33.8 ml/hr
10 mcg/min	37.5 ml/hr

Ketamine Hydrochloride

Ketamine Hydrochloride
is a dissociative anesthetic agent

Procedural sedation:
Must have policy

Procedural Sedation:
IV: 2-4 mg/kg IV over 1-2 minutes followed by 0.25 mg-0.5 mg/kg IV every 5-10 minutes PRN
IM: 2-4 mg/kg IM; may repeat in 10 minutes

Pain: Can be used for unconrolled pain in adults and pediatrics; doses same
Must have policy
IV: 0.25-0.5 mg/kg

Intubation sedation: 1 - 2 mg/kg IV or IO only intubated patients

AVEL eCare | EMERGENCY

ADULT MODERATE SEDATION DRUGS

Drug	Classification	Intitial Dose	Dynamics	Comments
Versed (Midazolam)	**Sedative**	1-4 mg Titrate in increments of 0.5-1 mg to desired effect. **Elderly/debilitated:** 0.5-1.5 mg bolus. Titrate in increments of 0.5 mg.	**Onset:** 1.5 min **Duration:** up to 2 hr	Slurred speech is good end point for sedation. Use 1/3 less if other CNS drugs including narcotics are in use. Use cautiously in elderly.
Valium (Diazepam)	**Sedative**	2.5-5 mg IV bolus. Titrate in increments of 1.5 mg to desired effect. **Elderly/debilitated:** 1.25-2.5 mg bolus. Titrate in increments of 1 mg.	**Onset:** 2-5 min **Duration:** beyond 3 hr	Pain on injection. Risk of phlebitits. See comments under Midazzolam
Flumazenil	**Benzodiazepine Antagonist**		**Onset:** 1-3 min Duration: 45 min	Obtain history of current benzodiazepine use. May induce benzodiazepine seizure. Half life of benzodiazepine may be longer than lahlf life of flumazenil resulting in residual sedation and hypoventilation. Flumazenil is not intended for routine reversal of benzodiazepine related sedation due to risks of serious adverse effects, such as seizures.
Fentanyl (Sublimaze)	**Narcotic**	50-100 mcg IV bolus. Titrate in increments of 25 mcg to desired effect.	**Onset** 2-3 min **Duration:** 30-60 min	Reduce dose when given with sedatives. Useful as adjunct for sedation. Beneficial for pain. Always monitor for respiratory depression, orthostatic circulatory depression, chest wall rigidity, N/V, constipation, urticaria.
Naloxone (Narcan)	**Narcotic Antagonist**	0.2-0.4 mg IV. May repeat after 3 min if resp rate < 12 or LOC remains depressed.	**Onset:** 3 min **Duration:** 45-60 min	History of narcotic use. Important to obtain to prevent onset of withdrawal symptoms & agitation, due to return of pain. Sympathetic stimulation may cause elevation of B/P, HR or temp.

Tranexamic Acid (TXA)

**Dosing for Trauma Infusion*

Obtain patent intravenous access to be used only for infusion of TXA

TXA must have its own dedicated IV line.

Administer medication according to "5 rights" of Medication Administration (Nursing Policy #8720.528) using the following recommended doses:

Bolus: TXA 1 gm in NS 50 ml IV over 10 minutes (@360 ml/hr), followed by
Continuous infusion: TXA 1 gm in NS 250 ml IV over 8 hours (@ 33ml/hr)

Documentation:

i. Patient tolerance, side effects, clinical improvement with initiation and titration of medication in patient notes
ii. Vital signs interventions in EMR
    1. Per criticality of patient condition with minimum q 15 minutes x 4
iii. Medication administration on eMAR

Nicardipine (Cardene)

25 mg/250 ml (0.1 mg/ml)
Continuous Infusion/ Titration
Vial size: 25 mg/10ml
MAXIMUM Dose: 15 mg/hr

Supplies Needed:

1. Syringes/Needles Alcohol swabs
2. 250 ml NS bag
3. 1x Nicardipine 25 mg vial

Mixing Instructions:

- Swab vials and bag port with alcohol swabs
- Draw 10ml (25 mg) from Nicardipine vial
- Inject Nicardipine dose into NS bag

Final Concentration:

- 0.1 mg/ml

Administration:

- Titrate as ordered or per protocol
- General guidance
    - Starting: 5 mg/hr
    - Titrate: 2.5 mg/hr every 5-15 min

NICARDIPINE DRIP

2.5 mg/hr	**25 ml/hr**
5 mg/hr	**50 ml/hr**
7.5 mg/hr	**75 ml/hr**
10 mg/hr	**100 ml/hr**
12.5 mg/hr	**125 ml/hr**
15 mg/hr	**150 ml/hr**

AIRWAY MANAGEMENT

RAPID SEQUENCE INTUBATION

1. **Prepare patient**: suction, BVM, CMAC, ECG monitor, pulse oximetry, continuous etCO2.
2. **Oxygenate:** spontaneous breathing-5-6L/NC under NRB mask. Inadequate/ineffective: BVM w 100% O2.
3. **Pre-medicate:**
   a. Atropine
      i. Pediatrics < 1 year only: 0.02 mg/kg IV (minimum dose of 0.1mg, max 0.5 mg)
      ii. Given to prevent or attenuate bradycardia.
4. **Induction:**
   a. Etomidate
      i. Maintain hemodynamic stability, attenuate elevated ICP.
      ii. Adult & Pediatric Dose: 0.3 mg/kg IV.
   b. Ketamine
      i. No hypotension, bronchodilator. May increase ICP.
      ii. Adult & Pediatric Dose: 2 mg/kg IV.
      iii. Consider as alternative in patients with sepsis, hypotension, status asthmaticus, reactive airway disease.
5. **Paralyze**
   a. Succinylcholine
      i. Depolarizing agent. Given to produce rapid onset of skeletal muscle relaxation to facilitate endotracheal intubation.
      ii. Onset of action: 30 to 60 seconds, duration of action: 3 to 10 minutes.
      iii. Adults: 1.5 mg/kg IV. If repeat dose needed, 1.5 mg/kg IV AFTER pretreatment w Atropine 0.5 mg IV to prevent arrhythmias.
   b. Pediatrics (< 10yrs): 2.0 mg/kg IV. If repeat dose needed, 2.0 mg/kg IV AFTER pretreatment with Atropine 0.5 mg IV to prevent arrhythmias.
   c. Rocuronium (Zemuron)
      i. Given if Succinylcholine contraindicated.
      ii. Non-depolarizing agent.
      iii. Onset of action within 45-60 seconds, duration of action 40-60 minutes.
      iv. Adult & Pediatric dose: 1.0 mg/kg IV.

RAPID SEQUENCE INTUBATION (cont'd)

6. **Intubate**
   a. Confirm placement: auscultate, etCO2 monitor, pCXR, oximetry.
7. **Sedation**
   a. Midazolam (Versed)
      i. Adults: 1-5 mg IV PRN.
      ii. Pediatrics: 0.03 - 0.05 mg/kg, up to 2.5 mg IV.
   b. Lorazepam (Ativan)
      i. Adults: 1-2 mg IV PRN.
      ii. Pediatrics: 0.05-0.1 mg/kg IV.
   c. Propofol
   i. Adult & Pediatrics: 0-150 mcg/kg/min infusion.
8. **Analgesics**
   a. Morphine
      i. Adults: 2-10 mg IV every 10 minutes PRN.
      ii. Pediatrics: 0.1-0.2 mg/kg IV every 2-4 hours.
   b. Fentanyl
      i. Adults: 25-100 micrograms IV every 10 minutes prn.
      ii. Pediatrics: 0.5-1 micrograms/kg IV (max dose 50 mcg/dose.)
9. **Long-acting paralysis: *To be used when sedative agents are insufficient for safe transport.***
   a. Vecuronium (Norcuron)
      i. Adult & Pediatric: 0.1 mg/kg IV. Duration of action 30-40 mins.
   b. Rocuronium (Zemuron)
      i. Adult & Pediatric: 0.6-1 mg/kg IV. Duration of action 30-50 mins.

KING AIRWAY SIZE SELECTION

Age	Weight	Length	King Airway Size
19-35 mo	12-14 kg	84.5-97.5 cm	Size 2 (90-115 cm) GREEN
3-4 yr	15-18 kg	97.5-110 cm	Size 2 (90-115 cm) GREEN
5-6 yr	19-23 kg	110-122 cm	Size 2.5 (105-130 cm) ORANGE
7-9 yr	24-29 kg	122-137 cm	Size 3 (122-155 cm) YELLOW
10-12 yr	30-36 kg	137-150 cm	Size 3 (122-155 cm) YELLOW
Small Adult (4-5 ft)		122-155 cm	Size 3 (122-155 cm) YELLOW
Adult 5-6 ft)		155-180 cm	Size 4 (155-180 cm) RED
Large Adult (< 6 ft)		>180 cm	Size 5 (> 180 cm) PURPLE

Conversions	
4 ft	122 cm
4.5 ft	137 cm
5 ft	152 cm
5.5 ft	165 cm
6 ft	183 cm

i-GEL®

Size 1.0		Neonate	2-5 kg	PINK
Size 1.5		Infant	5-21 kg	BLUE
Size 2.0	Small	Pediatric	10-25 kg	GREY
Size 2.5	Large	Pediaric	25-35 kg	WHITE
Size 3.0	Small	Adult	30-60 kg	YELLOW
Size 4.0	Medium	Adult	50-90 kg	GREEN
Size 5.0	Large	Adult	90+ kg	ORANGE

Time Out for Intubation:

1. Activate Avel eCare Emergency

2. Establish IV access, set up monitor and EtCO2

- Obtain full set of vitals

3. Ready Video Laryngoscopy. Position bed in Room

- Plug-in cables
- Turn on scope and test
- If no VL, set up bed for better team visualization

4. Preoxygenation and suction set up

- Flush rate O2 or BiPAP/CPAP

5. Back-up devices tested and available

- Direct laryngoscope tested
- Extraglottic (LMA, iGel, Kingtube) available
- Bougie at bedside

6. Obtain 2 sizes of ET tubes with appropriate stylet

- Rigid stylet if using Glidescope
- Syringe on ET tube

7. RSI medications discussed and drawn up

- Sedative: Etomidate (0.3 mg/kg) or Ketamine (1.5 mg/kg)
  - Ideal Body Weight dosing; consider lower dose if poor hemodynamics or obese
- Paralytic: Succinylcholine (1.5 mg/kg) or Rocuronium (1 mg/kg)
  - Total Body weight dosing; consider contraindications for succinylcholine

8. Tube holder and colormetric EtCO2 at bedside

9. Roles Discussed and clear

10. Current set of vitals given

Special Notes:

- **Pediatrics:** Obtain Broselow tape; consider atropine; check BVM pop-off valve
- **Out of hospital arrest:** do not worry about exchanging an EGD for ET tube
- **Think about post intubation sedation**

VENTILATION

CPAP = Spontaneous respirations, constant peep

- Start out with CPAP of 6 - allows pt to relax & get used to flow
- Settings: SPNT CPAP TV 0 Peep 5
- Goals:
  - Expiratory TV 350
  - Resp rate > 8 & < 30
  - Can go to CPAP of 8 or 10 if exp TV is not at goal and resp rate > 30
  - If TV remains < 350 now is a ventilatory problem and need to switch to BiPap

BiPap = pressure support/peep

- To start with - the bottom number = your last CPAP (PEEP) number
- Add 4 to obtain your top number
- Exp: if CPAP of 10, then start BiPap at 14/10

Need to intubate if:

- Pressure support is 18-20 (top BiPap number)
- Resp rate > 30 for 30 min
- Pt has decreased LOC, unable to protect airway

Vent tips: use VC/AC mode

- TV 400
- Rate 12
- Peep 5-8

Ventilator Management

Adult Settings	
Mode	Assist control (A/C) Most frequently used mode.
Tidal volume	6-8 ml/kg (Based on IBW) ARDS: 3-5 ml/kg.
FiO2	Start @ 100% Monitor SaO2 readings.
Rate	12-20 bpm
iTime	1 second
Sensitivity	1-4
PEEP	5-10 cm Monitor B/P, SaO2. Watch for hypotension.
Upper pressure limit	Set 10-15 cmH2O above PIP
Lower pressure limit	Set 10-15 cmH2O below PIP.

Normal Settings	
PIP	12-20 cm H2O
MAP (mPaw)	7-10 cm H2O
Plateau pressures	<50 cm H2O
etCO2	35-45
Flow rate	Adults: 48-80 L/min Neonates: 8 L/min

IBW = Ideal Body Weight

Ventilator Management (cont'd)

Pediatric Settings	
Mode	Assist control (A/C)
Tidal volume	6-8 ml/kg
FiO2	Start @ 100%
Rate	15 - 25 bpm
iTime	0.5- 1 second
Sensitivity	1-4
PEEP	3 - 5 cm H2O
Pressure support	Minimum 10 cm H2O
Upper pressure limit	10 cmH20 above PIP
Lower pressure limit	5-10 cmH2O below PIP

Neonate Settings	
Mode	Pressure
PIP	Start @ 20 cmH2O
FiO2	Start @ 100%
Rate	60 bpm
PEEP	5 cmH2O
iTime	0.5 seconds
Sensitivity	1-4

Non-Invasive Settings	
IPAP	Start @ 10 cmH2O
EPAP	Start @ 5 cmH2O
PS	IPAP minus EPAP
FiO2	Start @ 100%
Back-up respiratory rate	12-15 bpm

PEDIATRIC SECTION

PEDIATRIC APGAR SCORING

	Score 0	Score 1	Score 2
Appearance			
Pulse	No pulse	<100/min.	>100/min.
Grimace			
Activity			
Respirations	No respirations	Weak, slow	Strong cry

PEDIATRIC VITAL SIGNS AT VARIOUS AGES

Age	Weight (Kg)	Pulse	Respiratory Rate	Systolic B/P mmHg
Preemie	1-2	140	<60	50-70
Newborn	3	140	<60	60-80
3 month	5	130	24-40	80-90
6 month	7	130	24-36	80-90
1 year	10	120	22-30	80-100
3 year	15	110	20-26	80-110
5 year	18	100	20-24	80-110
6 year	20	100	20-24	80-110
8 year	25	90	18-22	80-110
12 year	40	85-90	16-22	90-120
16 year	>50	75-81	14-20	105-135

References: Behrman, Nelson Textbook of Pediatrics: 17th edition.
* From Dieckmann R, Brownstein D, Gausche-Hill M (eds): Pediatric Education for Prehospital Professionals. Sudbury, Mass, Jones & Bartlett, American Academy of Pediatrics, 2000, pp 43–45.
† From American Heart Association ECC Guidelines, 2000.

PEDIATRIC GLASGOW COMA SCALE (GCS)

Table 1. Glasgow Coma Scale Modified for Pediatric Patients[50]	
Eye Opening Response	< 1 year
4	Spontaneous
3	To shout
2	To pain
1	None
Verbal Response	0 to 2 years
5	Babbles, coos appropriately
4	Cries but is inconsolable
3	Persistent crying or screaming in pain
2	Grunts or moans to pain
1	None
Motor Response	< 1 year
6	Spontaneous
5	Localizes pain
4	Withdraws to pain
3	Abnormal flexion to pain (decerebrate)
2	Abnormal extension to pain (decorticate)
1	None

PEDIATRIC EQUIPMENT SIZES GUIDE

Age	Weight (Kg)	ET Tube *uncuffed	ET length Tip to lip	Laryngoscope Blade	Suction Catheter	NG Tube	Chest Tube
Preemie	1-2	*2.5-3.0	6 + Wt in Kg	0	5-6	5 Feeding	10
Newborn	3	*3.5	6 + Wt in Kg	1	8	8 Feeding	12
3 month	5	*3.5-4.0	6 + Wt in Kg	1	8	8 Feeding	12-14
6 month	7	*3.5-4.0	11	1	8	8	12-16
1 year	10	*4.0	11	2	8	10	16
3 year	15	*4.5	13	2	8	10	20
5 year	18	*5.0	14	2	10	12	24
6 year	20	5.5	15	2	10	12	28
8 year	25	6.0	17	2	10	14	32
12 year	40	6.5	19	3	10	14	36
16 year	>50	7.0	20-24	3	10	18	36

PEDIATRIC URINE AND FLUID ASSESSMENT GUIDELINES

Minimum Urine Output	
Infant	1-2 ml/kg/hr
Children & Adolescent	0.5-1 ml/kg/hr

Maintenance IV Fluids	
<28 days	D10
>28 days	D5 ½ NS

Maintenance Fluids	
0-10 kg	100 ml/kg
11-20 kg	1000ml for 1st 10 kg + 50 ml/kg for each kg. over 10 kg.
>21 kg	1500 ml for 1st 20 kg + 20 ml/kg for each kg. over 20 kg.

PEDIATRIC
MODERATE SEDATION DRUGS

Drug	Route	Initial Dose	Comments
Lorazepam (Ativan)	PO, IV, 1M	0.02-0.09 mg/kg/dose	**Onset:** 1-5 mins **Duration:** up to 4 hrs May repeat dose every 10-15 mins
Midazolam (Versed)	Oral: Rectal: Nasal: Sublingual: IV or IM:	0.5-0.7 mg/kg/dose 0.5-1 mg/kg/dose 0.2-0.4 mg/kg/dose 0.2 mg/kg/dose 0.035-0.15 mg/kg/dose	**Onset:** 1-5 mlns **Duration:** up to 2 hrs May repeat dose every 10-15 mlns
Diazepam (Valium)	Oral: IM or IV: Rectal:	0.2-0.5 mg/kg/dose 0.04-0.3 mg/kg/dose 0.5 mg/kg/dose	**Onset:** 2-5 mlns **Duration:** up to 8 hrs May repeat dose every 10-15 mins **Duration:** 5-15 mins Repeat dosing required for procedures > 15 mins; Consider pre-treatment with Atropine
Propofol	IV:	2-3 mg/kg/dose	**Onset:** less than 1 min **Duration:** 3-10 mins No narcotic effect
Morphine	IV:	0.025-0.05 mg/kg/dose	**Onset:** 2-5 mins **Duration:** 3-4 hrs Give injection slow IVP
Fentanyl	IV:	0.5-3 mcg/kg/dose	**Onset:** 2-5 mlns **Duration:** 30-60 mlns Rapid infusion or high dose may result in chest wall rigidity
Pentobarbital	IV:	3-6 mg/kg/dose	**Onset:** 10-15 mins **Duration:** Up to 4 hrs Maximum dosing 6 mg/kg/4 hrs

Ketamine Hydrochloride (Must have policy)
Route IV/IO
Initial Dose: 1-2 mg/kg IV/IO
Comments:
Onset: 1 minute
Duration: 5-10 min
May repeat dose every 5-10 mins

PEDIATRIC FLUIDS AND MEDICATION GUIDE

Medication	Dose	Miscellaneous
Fluid resuscitation	20 ml/kg of NS or LR	May repeat bolus 20ml/kg up to 2X prn. If shock persists, consider additional fluid bolus, inotropes, antibiotics, blood transfusion, call Medical Control.
	Seizure Medications	
Lorazepam (Ativan)	0.05-0.1 mg/kg IV	Repeat X2 prn.
Diazepam (Valium)	0.1-0.3 mg/kg IV Max dose 10mg.	Repeat X2 prn. Infuse no faster than 1 mg/min.
Fosphenytoin	20 mg/kg IV	Infuse no faster than 3 mg/kg/min.
Midazolam (Versed)	0.15 mg/kg IV	
Phenobarbital	20 mg/kg IV	
Phenytoin (Dilantin)	20 mg/kg IV Max dose 1g	Infuse no faster than 1 mg/kg/min.
Midazolam (Versed)	0.15-0.3 mg/kg IM	If no IV access.
Diazepam (Valium)	0.5 mg/kg rectal	If no IV access.
Fosphenytoin	20 mg/kg IM May add 10 mg/kg IM.	If no IV access.
	IV Infusions	
Dopamine	5-20 mcg/kg/min	
Epinephrine	0.1-1 mcg/kg/min	
Lidocaine	20-50 mcg/kg/min	1 mg/kg loading dose.
Milrinone	0.5-0.75 mcg/kg/min	50 mcg/kg loading dose.
Nitroprusside	0.1-3 mcg/kg/min	
	Resuscitation Medications	
Adenosine	0.1 mg/kg Second dose: 0.2 mg/kg	0.1 Mg/kg – Max dose 6mg. 0.2 mg/kg – Max dose 12 mg.
Amiodarone	5 mg/kg Max single dose 300mg.	Infuse over 20-60 mins unless pulseless, then rapid IV push. May repeat 2X up to 15 mg/kg.
Atropine	0.02 mg/kg Minimum dose 0.1 mg. Max single dose 0.5 mg.	May repeat X1.

PEDIATRIC FLUIDS AND MEDICATION GUIDE (cont'd)

Medication	Dose	Miscellaneous
	Resuscitation Medications (cont'd)	
Calcium Chloride 10% Calcium Gluconate	0.2 ml/kg 100 mg/kg/dose	Max dose 2g. IV every 10 minutes.
25% Dextrose 10% Dextrose	Max dose 3g. 1-2 ml/kg 4 cc/kg	May repeat X1.
Epinephrine Lidocaine	1:10,000 0.01 ml/kg every 3-5 mins 1:1,000 0.1 ml/kg (High dose/ET dose) 1 mg/kg	Max dose 1 mg IV/IO May repeat every 10 mins up to 3 mg/kg
Sodium Bicarbonate	0.5-1 mEq/kg	Given based on ABG results.
Furosemide (Lasix) Labetolol	1 mg/kg IV prn 0.2-0.5 mg/kg	PRN May be given every 10 mins. PRN
Magnesium Sulfate	25-50 mg/kg Max dose 2g.	Infuse over 10-20 mins.
Mannitol Naloxone (Narcan)	0.5 gram/kg <5 yrs or <20 kg – 0.01 mg/kg >5yr or >20kg – 2 mg	PRN
	Electrical Therapy	
Defibrillation	2 joules/kg. Repeat dose: 4 joules/kg.	
Synchronized Cardioversion	0.5-1 joules/kg. Repeat dose: 2 joules/kg.	
	Respiratory Medications	
Albuterol Aerosol (All ages)	0.5cc in 3cc NS single dose. 10-20 mg/hr continuous.	
Racemic Epinephrine Aerosol	Up to 40kg: 0.5cc in 3cc NS. Adult: 0.5-1cc in 3cc NS.	
(2.25%) Terbutaline	10 mcg/kg IV load over 10 mins. Then 0.2 mcg/kg/min IV.	Max dose 4 mcg/kg/min.

Help Sheet for Neonatal Resuscitation

ABCDE: A Airway: open the airway (sniff position)
B Breathing: establish ventilation (breath..two..three)
C Circulation: check pulse for 6 seconds x 10= rate
<60 chest compressions <100 PPV
D Drugs for resuscitation
E Epinephrine: first line of drug
0.5-1.0ml/kg for ET 0.1-0.3ml/kg for uv line

Reassess q 30 seconds after PPV, q 45-60 seconds after chest compressions, q60sec after Epinephrine given

*****MOST IMPORTANT STEP IS ESTABLISHING VENTILATIONS!!!*****

When using PPV and no chest rise: Remember :MRSOPA
M Reposition Mask
R Reposition Head/Airway
S Suction Secretions
O Open Mouth
P Increase Pressure
A Alternate Airway

Help Sheet for Neonatal Resuscitation (cont.)

When Choosing Endotracheal Tube Size:
Size estimate Goes with Weeks Gestation:
- **25 weeks:….2.5**
- **30 weeks…..3.0**
- **35 weeks…..3.5**
- **40 weeks…..4.0**

Laryngoscope Blade size
- **Miller 00: very preterm**
- **Miller 0: preterm**
- **Miller 1: Term newborns**

Tip to Lip Measurement: wgt in kg +6
How far ET should be inserted

Important numbers to Know:
If heart rate is <100: PPV
If heart rate is <60 despite PPV for 30 seconds: Initiate PPV & Chest compressions
" One and two and three and breathe"

IF signs of hypovolemia: Volume Expanders 10ml/kg : NS/LR/O neg blood

Questions to ask at every delivery: Is it term gestation?
Breathing or Crying?
Good tone?

New Recommendations October 2015: no longer intubating and tracheal suctioning newborns with meconium stained fluid even if not vigorous:
NRP provider capable of intubation should still be at delivery

Newborn Resuscitation