



REFERENCE TABLES

SPEARFISH EMERGENCY AMBULANCE SERVICE, INC.

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SUPPLEMENTAL OXYGEN: FLOW RATES AND PERCENTAGES

DEVICE	FLOW RATES	DELIVERED O ₂ %	OXYGEN CYLINDER SIZES	
Nasal Cannula	1 L/min	21 – 24 %	MED Unit & Size	
	2 L/min	25 – 28 %	On-Board/Main tank	Volume, L
	3 L/min	29 – 32 %	MED 1 - LK	6900
	4 L/min	33 – 36 %	MED 2 - LK	6900
	5 L/min	37 – 40 %	MED 3 - LK	6900
	6 L/min	41 – 44 %	MED 4 - LK	6900
Simple oxygen Face Mask	6 -10 L/min	35 – 60 %	MED 11 - S	3100
Face Mask w/ O ₂ reservoir (non-rebreather mask)	6 L/min	60 %	MED 12 - LK	6900
	7 L/min	70 %	MED 5 - D	350
	8 L/min	80 %	Portable O ₂ - D	350
	9 L/min	90 %		
	10 - 15 L/min	95 – 100 %		
Venturi Mask	4 - 8 L/min	24 – 40 %		
	10 - 12 L/min	40 – 50 %		

TEMPERATURE CONVERSION CHART

* C	* F	* C	* F	* C	* F	* C	* F
31.0	87.8	36.3	97.4	37.7	99.8	39.1	102.4
35.0	95	36.4	97.6	37.8	100	39.2	102.6
35.1	95.2	36.5	97.7	37.9	100.2	39.3	102.8
35.2	95.4	36.6	97.8	38.0	100.4	39.4	103
35.3	95.6	36.7	98	38.1	100.6	39.5	103.1
35.4	95.8	36.8	98.2	38.2	100.8	39.6	103.2
35.5	95.9	36.9	98.4	38.3	101	39.7	103.4
35.6	96	37.0	98.6	38.4	101.2	39.8	103.6
35.7	96.2	37.1	98.8	38.5	101.3	39.9	103.8
35.8	96.4	37.2	99	38.6	101.4	40.0	104
35.9	96.6	37.3	99.2	38.7	101.6	40.5	104.9
36.0	96.8	37.4	99.4	38.8	101.8	41	105.8
36.1	97	37.5	99.5	38.9	102		
36.2	97.2	37.6	99.6	39.0	102.2		

Signs and Symptoms of Hypothermia			Temperature Conversions
Mild	Moderate	Severe	
32-35* C	28-32* C	< 28* C	28* C = 82.4* F
Slurred speech	Deteriorating responsiveness	Unresponsiveness	32-29* C = 89.6 - 84.2* F
Mild un-coordination	Cyanosis	Dilated, fixed pupils	33-35* C = 91.4 - 95* F
Shivering	Edema	Ventricular dysrhythmia	36.1* C = 97* F
Decreased judgment	Muscle rigidity, no shivering,	Respiratory Arrest	37* C = 98.6* F
	Decreased respiratory rate,		38.3* C = 101* F
	Bradycardia		*F=[(*C X 9) / 5] + 32
			*C = [(*F - 32) X 5] / 9

WEIGHT CONVERSIONS – KILOGRAMS TO POUNDS

Kilograms	Pounds	Kilograms	Pounds	Kilograms	Pounds	Kilograms	Pounds
1	2	31	68	61	134	91	200
2	4	32	70	62	136	92	202
3	7	33	73	63	139	93	205
4	9	34	75	64	141	94	207
5	11	35	77	65	143	95	209
6	13	36	79	66	145	96	211
7	15	37	81	67	147	97	213
8	18	38	84	68	150	98	216
9	20	39	86	69	152	99	218
10	22	40	88	70	154	100	220
11	24	41	90	71	156	110	242
12	26	42	92	72	158	120	264
13	29	43	95	73	161	130	286
14	31	44	97	74	163	140	308
15	33	45	99	75	165	150	330
16	35	46	101	76	167	160	352
17	37	47	103	77	169	170	374
18	40	48	106	78	172	180	396
19	42	49	108	79	174	190	418
20	44	50	110	80	176	200	440
21	46	51	112	81	178	210	462
22	48	52	114	82	180	220	484
23	51	53	117	83	183	230	506
24	53	54	119	84	185	240	528
25	55	55	121	85	187	250	550
26	57	56	123	86	189	260	572
27	59	57	125	87	191	270	594
28	62	58	128	88	194	280	616
29	64	59	130	89	196	290	638
30	66	60	132	90	198	300	660

The above conversions are to the nearest whole number for medication dosages.

“3:00 am Rule” To convert lbs to Kg, divide lbs by 2 and subtract 10%

ie. $180 \text{ lbs} / 2 = 90 - 9 = 81$ (actual 81.8). 81 or 82 are close for most emergency medication calculations.

MEDICATION QUICK DOSAGE GUIDE

Level	Medication	Adult Dose	Pediatric Dose
B A P	Activated Charcoal	1 - 2 g/kg	0.5 - 1 g/kg
	Adenosine	1 st : 6 mg IV Push 2 nd : 12 mg IV Push	1 st : 0.1 mg/kg IV Push 2 nd : 0.2 mg/kg
B A P	Aspirin	324 mg (4 chewable tablets)	
	Atropine (Cardiac)	Brady: 0.5 - 1 mg IV/IO	Brady: 0.02 mg/kg IV/IO
	Atropine (poisoning)	2 - 5 mg q 15 min IV/IO	0.05 - 0.1 mg/kg q 15 min IV/IO
A P	Atrovent Nebulizer	0.5 mg	0.25 mg
A P	Benadryl	25 - 50 mg IV/IO/IM	1 mg/kg IV/IO/IM
	Calcium Chl 10%	500 - 1000 mg IV/IO slow	20 mg/kg IV/IO slow
A P	Dextrose 50% (D⁵⁰)	25 - 50 ml (25 g) IV slow	1 ml/kg IV slow (dilute w/ IV fluids)
	Diazepam	Seizure: 5 - 10 mg IV/IO/IM slow Sedation: 5 - 15 mg slow	Seizure: 0.25 mg/kg IV/IO/IM (max 10mg) Rectal: 0.5 mg/kg (max 10 mg)
A	Epinephrine 1:1=1:1000	1:1 Asthma: 0.3-0.5 mg IV/IO/IM 1:1 Allergy: 0.3-0.5 mg IV/IO/IM	1:1 Asthma: 0.01mg/kg <0.3mg IV/IO/IM 1:1 Allergy: 0.01mg/kg <0.3mg IV/IO/IM
	Epinephrine 1:1=1:1000 1:10=1:10,000	1:10 Arrest: 1mg q 3-5 1:1 Asthma/Allergy: 0.3-0.5 mg	1:10 Arrest/Brady: 0.01 mg/kg 1:10 Arrest: 0.1-0.2 mg/kg 1:10 Asthma & Allergy: 0.01mg/kg <0.3mg
	Fentanyl	12.5 - 100 mcg IV/IO/IM/IN slow	1 mcg/kg IV/IO/IM/IN slow
	Furosemide	0.5 - 1 mg/kg IV/IO slow	1 mg/kg IV/IO slow
A P	Glucagon	1 mg IV/IO/SQ/IM/IN slow	<20 kg - 0.5 mg IV/IO/SQ/IM/IN slow
	Lasix	0.5 - 1 mg/kg IV/IO slow	1 mg/kg IV/IO slow
	Lidocaine	1-1.5 mg/kg IV/IO	1 mg/kg IV/IO/IN
		2 nd 3 rd dose = ½ initial dose	2 nd 3 rd dose = ½ initial dose
	Magnesium Sulfate	Cardiac: 1-2 g IV slow (over 5-10 min) Eclampsia: 1-2 g in NS flush over 5-10 min	
	Morphine	2 - 4 mg IV/IO/IM/IN slow (up to 10 mg)	0.1 mg/kg IV/IO/IM/IN slow
A P	Narcan	0.4 - 2 mg IV/IM/IO/IN (may repeat)	0.1 mg/kg IV/IO/IM/IN (MAX 2 mg)
B A P	Nitroglycerin	0.4 mg SL q 5 min X 3 EMT may Assist	
	Rocuronium	0.6-1.0 mg/kg IV/IO Transfer ONLY	0.3-0.5 mg/kg IV/IO Transfer ONLY
	Sodium Bicarb.	1 mEq/kg IV/IO repeat ½ q 10 min	1 mEq/kg IV/IO repeat ½ q10 min
A P	Thiamine	100 mg IV/IM/IO PRIOR to D 50	
	Versed	1-2 mg IV/IO/IN q30 min PRN	0.05—1 mg/kg IV/IO/IN (MAX 4 mg) MUST have MD Order Prior to use
A P	Xopenex Neb	1.25 mg in 2.5 ml NS (may repeat X1)	0.075 mg/kg in 2.5 ml NS (may repeat X1)
A P	Zofran	4 mg IV/IO/IM/IN (may repeat X 1)	0.1 mg/kg IV/IO/IM/IN (MAX 4 mg)

Intubation & Sedation - QUICK REFERENCE GUIDE

YES	NO	Pre-event Equipment Checklist for Intubation	
		AIRWAY Assessment	Mallampati Classification (if possible)
			Mouth Opening (at least two fingers width) - Cervical mobility
		IV or IO patent	
		Cardiac Monitor / Pulse Oximeter / Automatic blood pressure cuff / End-tidal CO ₂ monitor	
		BVM with Oxygen / Suction (confirm working)	
		Endotracheal Tubes / Stylet / Laryngoscope Handle & Blades / 10 mL syringe / Tube Holder	

ADULT Intubation & Sedation Guidelines

Pre-oxygenate	Pre-oxygenate with 100% oxygen by mask. Assist ventilations as needed. Apply cricoid pressure if victim is unconscious.
Pre-medicate	Pre-medicate as appropriate ; then WAIT 3 MINUTES after drug administration { <i>Fentanyl (Induction)</i> : 2-10 mcg/kg IV/IO/IN for analgesia in awake patient <i>Versed (sedative)</i> : 0.5-4 mg IV/IO/IN for sedation & anti-anxiety in awake patient <i>Atropine</i> : 0.02 mg/kg IV – for child less than 5 y/o (minimum dose 0.1 mg) <i>Lidocaine</i> : 1 mg/kg IV (head injury)
Placement: Performance	Perform endotracheal intubation. If unable to intubate within 20 sec. – BVM for 30-60 sec. and Reattempt. Use O ₂ sats as a guide. Treat bradycardia with Atropine 0.5 mg IV push.
Placement: Primary confirmation	Perform <i>primary confirmation</i> of ET placement: By direct visualization of ET passing through vocal cords By chest rise/fall with each ventilation (bilaterally) By auscultation: epigastrium; anterior chest L and R; midaxillary line L and R.
Placement: Secondary confirmation	Perform <i>secondary confirmation</i> of ET placement: By ETCO ₂ monitoring Esophageal detector device Monitor O ₂ saturation
Placement: prevent dislodgment	Secure ET with commercial ET holder In out-of-hospital setting – immobilize cervical spine with C-Collar
Maintain Sedation for Intubated Pt.	For ADULT patients being transferred: Maintain sedation to prevent tube dislodgment; <i>Fentanyl</i> : 2-10 mcg/kg IV/IO PRN AND <i>Versed</i> or <i>Rocuronium AS NEEDED</i> <i>Versed</i> : 1-4 mg IV/IO q 15 minutes PRN or as ordered by MD <i>Rocuronium</i> : 0.6-1.0 mg/kg q 30 minutes PRN or as ordered by MD – <i>MUST USE SEDATION</i> <i>Propofol</i> : (Infusion) may increase 5-15 mcg/kg/min or as ordered by MD – <i>SEE PROTOCOL</i>

Sedative		Dosage IV Push		Onset	Duration
<i>Fentanyl</i>	<i>Induction</i> : 2 – 10 mcg/kg	<i>Sedation (titrate)</i> : 3 mcg/kg		60 seconds	30 – 60 min
<i>Versed</i>	<i>Induction</i> : 0.07–0.3 mg/kg	<i>Sedation (titrate)</i> : 0.02–0.04 mg/kg		2 minutes	1 – 2 hours
<i>Propofol</i>	Initial start @ 20-35 mcg/kg/min (may increase 5-15 mcg/kg/min)			40 seconds	3 – 5 min
Drug	Dose	Route	Duration of Paralysis	Side Effects	Comments
Rocuronium	0.6-1.2 mg/kg	IV	40+ min	Minimal cardiovascular side effects	Rapid-action onset like succinylcholine

REFERENCE TABLES / LABS / CALCULATIONS

IV FLUID RATES IN DROPS/MINUTE

DRIP SET:	10	20*	60
30 cc/hr	5	10	30
60 cc/hr	10	20	60
100 cc/hr	17	33	100
200 cc/hr	33	67	200
300 cc/hr	50	100	300
400 cc/hr	67	133	400
500 cc/hr	83	167	500
1000 cc/hr	167	333	1000

* Hospital Pump tubing=20 gtt/cc

PEDIATRIC VITAL SIGNS			
AGE	HR-Awake	HR-Sleep	Resp. Rate
Infant = <1 y/o	85—205	80—160	30—60
Toddler = 1-4 y/o	85—190	75—160	24—40
School-age = 4-9	60—140	60—90	22—34
Adolescent	60—100	50—90	12—16

Typical Systolic BP for 1-10 y/o: 90 + (age yrs X 2) mmHg

Lower systolic limit for 1-10 y/o: 70 + (age yrs X 2) mmHg

Lower range-normal systolic BP for > 10 y/o: approx. 90 mmHg

Typical MEAN AP (50th%) = 55 + (age yrs X 1.5) mmHg

COMMON LAB VALUES

HEMATOLOGY	Male	Female	ARTERIAL BLOOD GAS	
RBC	4.2 - 5.6 M/mcL	3.8 - 5.1 M/mcL	pH	7.35 - 7.45
WBC	3.8 - 11 K/mm ³		PaCO ₂	35 - 45 mmHg
Hgb	14 - 18 g/dL	11 - 16 g/dL	PaO ₂	75 - 100 mmHg
Hct	39 - 54%	34 - 47%	HCO ₃	22 - 28 mEq/L
MCV	78 - 98 fL		O ₂ Sats	96 - 100%
Neutrophils	50 - 81%		BLOOD CHEMISTRIES	
Bands	1 - 5 %		BUN	6 - 23 mg/dL
Lymphocytes	14 - 44 %		Ca ⁺⁺ (calcium)	8 - 11 mg/dL
COAGULATION			Cl ⁻ (chloride)	95 - 105 mEq/L
Platelets	140,000 - 450,000/ml		Creatinine	0.6 - 1.5 mg/dL
Plasminogen	62 - 130%		Glucose	70 - 110 mg/dL
PT	10 - 14 sec.		Mg ⁺⁺ (magnesium)	1.5 - 2.5 mg/dL
PTT	32 - 45 sec.		Phosphorus	2.2 - 4.8 mg/dL
Fibrinogen	160 - 450 mg/dL		K ⁺ (potassium)	3.5 - 5.5 mEq/L
INR	0.9 - 1.1		Na ⁺ (sodium)	135 - 148 mEq/L

DRUG DOSE CALCULATION	IV FLUIDS INFUSION FORMULA
$\frac{\text{dose ordered(mg)} \times \text{vol. of drug in pkg (mL)}}{\text{amt of drug in package (mg)}} = \text{volume to admin}$	$\frac{\text{Total amt (ml)} \times \text{drop factor}}{\text{Total time (in minutes)}} = \text{drops/minute}$

NS - IV FLUID - BURN RESUSCITATION
$\frac{(\% \text{ burn area}) \times (\text{pt. wt. in Kg})}{4} = \text{mL/hr (over 8 hrs)}$

PEDIATRIC REFERENCE CHARTS			
Apgar Score			
Sign	0	1	2
Heart Rate (bpm)	Absent	Slow (<100)	≥ 100
Respirations	Absent	Slow, irregular	Good, crying
Muscle Tone	Limp	Some flexion	Active motion
Reflex irritability	No response	Grimace	Cough, sneeze, cry
Color	Blue or pale	Pink Body w/ blue extremities	Completely pink
NEWBORN VITAL SIGNS (TERM)		ET TUBE SIZE	
Heart Rate (awake):	100 to 180 bpm	Size: for children >1 yr	$\frac{\text{Age in yrs}}{4} + 4$
Respiratory Rate:	30 to 60 breaths/min	Depth of insertion (cm)	$\frac{\text{Age in yrs}}{2} + 12$
Systolic blood pressure:	55 to 90 mm Hg	for children >2 yrs	2
Diastolic blood pressure:	26 to 55 mm Hg		
VITAL SIGNS IN CHILDREN			
Age	Awake Rate	Mean	Sleeping Rate
Newborn to 3 months	85 to 205	140	80 to 160
3 months to 2 years	100 to 190	130	75 to 160
2 to 10 years	60 to 140	80	60 to 90
> 10 years	60 to 100	75	50 to 90
PEDIATRIC TRAUMA SCORE			
Category Value			
Patient Characteristics	+ 2	+ 1	- 1
Weight (kg)	>20	10 to 20	< 10
Airway	Normal	Maintained	Unmaintained
Systolic BP (mm Hg)	> 90	50 to 90	< 50
Central Nervous System	Awake	Obtunded	Coma/decerebrate
Open Wound	None	Minor	Major/penetrating
Skeletal Trauma	None	Closed fractures	Open, multiple fractures
<i>Add the value for each patient characteristic. Highest possible total score is +12, and lowest possible score is -6.</i>			
RESPIRATORY RATE (BREATHS/MIN)		BLOOD PRESSURE	
Age	Rate	Typical Systolic BP in children 1 to 10 (50th %) 90 mm Hg + (child's age in years X 2) mm Hg Lower limits of systolic BP in children 1 to 10 (5th %) 70 mm Hg + (child's age in years X 2) mm Hg	
Infant	30 to 60		
Toddler	24 to 40		
Preschooler	22 to 34		
School-age child	18 to 30		
Adolescent	12 to 16		

DEHYDRATION ASSESSMENT			
Clinical Findings	Mild	Moderate	Severe
Heart Rate	Normal	Increased	> 130 / min.
Respiratory Rate	Normal	Increased	Tachypneic
Blood Pressure	Normal	Normal	Systolic < 80
Peripheral Pulses	Normal	Diminished	Absent
Capillary Refill	Normal	2-3 seconds	> 2 seconds
Mental Status	Alert	Irritable	Lethargic
Fontanelle	Flat	Depressed	Sunken
Turgor	Norm - slightly decreased	Decreased	Markedly decreased
Mucous membranes	Dry	Very Dry; may see tears	Parched; No tears
Temperature	Warm	Cool	Cool; clammy
Eyes	Normal	Darkened; sunken	Sunken; soft
Thirst	Increased	Intense	Intense; if conscious

DIFFERENCES BETWEEN CROUP AND EPIGLOTTITIS	
<u>Croup</u>	<u>Epiglottitis</u>
Usually caused by viral infection	Usually caused by bacterial infection
Usually occurs during late fall and early winter	No season preference
Occurs in ages 3 months - 3 years	Occurs in ages 3-7 years (can develop in adults)
Slow onset	Rapid onset
Patient will either lie down or sit up	Patient will sit upright in a tripod position
Barking cough present	No barking cough
No drooling	Pain on swallowing causing drooling
Temperature > 104* F	Temperature > 104* F

DIFFERENCES BETWEEN ASTHMA AND BRONCHIOLITIS	
<u>Asthma</u>	<u>Bronchiolitis</u>
Occurs at any age	Occurs between 6-18 months of age
Occurs in winter and spring	Can occur at any time
Response to allergy, exercise, or infection	Caused by a virus
Family history of asthma	Usually no history of asthma
Drugs reverse bronchospasm	Drugs may not always be effective