Initial Approach to SHOCK

# Definition

 Inadequate perfusion of tissues

# Possible S/S

 Low BP: if can only palpate x, then BP likely y:

 Radial 70

 Femoral 60

 Carotid 50

 altered mentation, tachy or brady, cardiac ischemia, hypoxia, poor gut perfusion/ischemia, poor U/O, cool/mottled/cyanotic skin

 lactic acidosis

 altered Mixed venous O2 sats (see ’Mixed venous Saturation’ on how to interpret)

Can also rarely have elevated BP since as pt becomes more intravascularly depleted, they vasoconstrict and increase BP to preserve core organ perfusion, until they become so hypovolemic that they cannot maintain BP and have sudden decrease; clue: this pt will have increasing BP but have cold, mottled periphery as they are so vasoconstricted

In distributive shock pt cannot vasoconstrict so will have warm skin in periphery and reduced BP, until severe shock and then changes to cool, mottled periphery

Important: **peripheral edema does NOT equal volume overload**, especially if albumin is low, see ’assessing volume status’

# Initial Treatment Considerations

 ABC’s

assess airway patency and provide Oxygen

 2 IVs and consider fluids and hydrocortisone 100 mg IV

feel periphery, consider POCUS

 initial orders, consider

***ABG or VBG (fast results; includes Hg, lytes, iCa, glucose, lactate)***

***TXM, albumin,*** CBC, lytes, iCa, Mg, PO4, urea, cr, glucose, CK, Troponin, INR, PTT, LFT, TSH/Free T3/Free T4, Beta HCG if female

Glucoscan

ECG, x-ray, toxicology

 consider differential diagnosis and definitive treatment

usually titrate pressors to MAP> 65

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| Hypovolemic Low preload | **Cardiogenic** Poor heart | **Obstructive**  R or L heart | Distributive Decreased afterload |
| Blood loss | Ischemia | Pneumothorax | Sepsis |
| Urine loss | Valvular | PEEP too high | Transfusion reaction |
| GI losses | Arrythmias | Emboli - clot, air, fat, amniotic | Anaphylaxis  Iatrogenic – drugs (see list), epidural/spinal |
| Dehydration | Cardiomyopathy | Pericarditis | Thyroid – low or high  Addisonian |
| 3 rd spacing | Contusion | Tamponade | Reperfusion |
| IVC compression | Drug induced |  | Spinal shock |

*Drugs which vasodilate: Narcotics, B Blockers, Calcium channel blockers, Nitrates*

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| **PRESSORS** | **MIXED** | **INOTROPES** |
| Phenylephrine | Ephedrine (indirect) | Dobutamine |
| Vasopressin | Norepinephrine  Epinephrine | Milrinone (PDE3I) |
|  | Dopamine |  |

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|  | **IV usual Dose** | **a 1** | **b 1** | **b 2** | **Dopamine** |
| Phenylephrine | 2-300 ug/min | ++ V>A |  |  |  |
| Norepinephrine | 1-20 ug/min | ++ V=A | + |  |  |
| Ephedrine | 5-10mg bolus,  50 mg max total | ++ | + |  |  |
| Epinephrine | 1-20 ug/min | ++ | ++ | + |  |
| Dopamine | 1-20 ug/kg/min | ++ | ++ | + | ++ |
| Dobutamine | 1-20 ug/kg/min | + | ++ | ++ |  |
| Isoproterenol | 1-20 ug/min |  | ++ | ++ |  |
| Vasopressin  Milrinone | 0.01-0.04 u/min  0.125-0.75 ug/kg/min |  |  |  |  |

(Milrinone must reduce dose in renal failure)

Receptors:

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| --- | --- |
| a 1 vasoconstrict  *a 2* *neg feedback on* a 1  b 1 inc HR and contractility  b 2 vasodil, bronchodil, uterine dil | Dopamine inc urine flow  PDE3I Inotrope, luciotrope  VD +++ A>V, esp pulm  Vasopressin periph VC, pulm VD |

If need to intubate a person in shock, try to move to the ICU prior, call for help

almost always need FLUIDS prior to intubation

start pressors/inotropes prior to intubation! because most sedatives cause vasodilation and/or negative inotropy

THINK ABOUT VENTILATE RATE and ventilation pressures

* + - If pt has metabolic acidosis, need to increase Respiratory Rate to decrease PCO2 for compensation
    - High intrathoracic pressure will prevent venous return
    - Higher PEEP usually improves saturations
    - May need to balance competing concerns

See ’Planning for intubation’