

Normal Vital Signs

Blood Pressure:

Adults: defined with 2 measurements on 2 different dates at least 2 weeks apart

Normal BP <120/<80 mmHg

PreHTN: 120-139/80-89 mmHg

HTN Stage I: 140-159/90-99 mmHg

HTN Stage II: $\geq 160/\geq 100$ mmHg

Children:

Birth (12 Hr, <1000g): 39-59/16-36 mmHg

Birth (12 hr, 3 kg): 50-70/25-45 mmHg

Neonate (96hr): 60-90/20-60 mmHg

Infant (6 mo): 87-105/53-66 mmHg

Toddler (2 yr): 95-105/53-66 mmHg

School Age (7yr): 97-112/57-71 mmHg

Adolescent (15yr): 112-128/66-80 mmHg

Heart Rate:

Adults:

Female: 55-95 bpm

Male: 50-90 bpm

Children:

Neonate: 100-180 bpm awake

80-160 bpm asleep

Infant (6mo): 100-160 bpm awake

75-160 bpm asleep

Toddler: 80-110 bpm awake

60-90 bpm asleep

Preschooler: 70-110 bpm awake

60-90 bpm asleep

School-aged child: 65-110 bpm awake

60-90 bpm asleep

Adolescent: 60-90 bpm awake

50-90 bpm asleep

Respiration Rate:

Adults:

12-18 breaths per minute

Children:

Infants: 30-60 breaths per minute

Toddlers: 24-40

Preschoolers: 22-34

School-aged children: 18-30

Adolescents: 12-16

Emergency Procedures

1. Stroke & TIA

Signs/Symptoms:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden severe headache with no known cause

Response:

- Immediately call 911 or the emergency medical services (EMS) team so an ambulance (ideally with advanced life support) can be sent.
- Check the time so you'll know when the first symptoms appeared. Immediate action can decrease the risk of loss of function/disability and sensation. Medical tx within 3-6 hrs can help prevent the most severe consequences of stroke. Evaluation within 60 minutes is ideal.
- Not all warning signs occur in every stroke. Don't ignore signs of stroke, even if they go away.
- Monitor vital signs: blood pressure (B), HR, RR, and keep the patient calm and comfortable until help arrives.

**Symptoms of TIA begin suddenly and are similar to those of stroke, but leave no residual damage. By definition, symptoms of TIA resolve within 24 hours, but typically they last less than five minutes, about one minute on average. Because the symptoms of TIA cannot be distinguished from those of acute stroke, these symptoms must be aggressively treated as soon as possible.

2. Hypoxemia

(Decreased O₂)

Signs/Symptoms:

- Shortness of breath &/or dyspnea
- Cyanosis
- Tachycardia
- Tachypnea
- Fatigue
- Mental Status Changes: confusion, agitation, memory loss, depression
- Poor nighttime sleep &/or morning headaches

Response:

- Stop activity & have patient sit & rest
- Provide supplemental oxygen (if prescribed)
- Instruct patient in deep breathing techniques
- Record PulseOx sats
- Check & record other vital signs (including lung auscultation)

3. Decreased BP/Hypotension (Systolic pressure below 100 mmHg)

Causes:

- ↓ blood volume
- ↓ cardiac output
- Valsalva maneuver
- ↓ blood flow to heart (Vm)
- Orthostatic hypotension following rapid position changes
- Pregnancy (usually not acute)
- Medications
- Heart problem (bradycardia, ischemia, heart failure, valve malfunction)
- Dehydration
- Endocrine problems (thyroid dysfunction, diabetes)
- Severe infection (septic shock)
- Allergic reaction
- Postprandial hypotension (after meal in older adults)
- Nutritional deficiencies (B-12 and folic acid)
- Neurally mediated (long time standing)
- Shock
- Stress/trauma

Signs/Symptoms:

- Dizziness or light-headedness
- Loss of consciousness/syncope
- Diaphoresis (excessive perspiration)
- Nausea
- Blurred vision
- Lack of concentration
- Fatigue
- Depression
- Thirst
- Rapid/shallow breathing

Response:

- ↑ salt intake
- Hydrate (drink water)
- Elevate the legs – perform ankle pumps (contraindicated in CHF as it would cause orthopnea)
- Lie down, to get blood back to heart (contraindicated in CHF as it would cause orthopnea)
- Contract leg muscles to pump blood back to heart
- After symptoms subside, the patient may return to sitting if there is a gradual progression to the upright position.

4. Increased BP/Hypertension

Signs/Symptoms: Usually none, but for dangerously high levels, check for headache, blurred vision, confusion, ear noise or buzzing

Response:

1. Always check vitals before doing activity. Terminate exercise: If SBP is > 220 mmHG and/or if DBP > 110 mmHG exercise is to be terminated.
2. If patient is having no additional symptoms such as angina, diaphoresis, pallor, nausea, confusion, ataxia, or dizziness continue to monitor BP every 5 minutes until SBP returns to within 10-20 mmHG of pre-exercise and notify the PCP. Do not re-initiate exercise unless approved by the physician.

****If these symptoms are present the following should be done:**

- Call 911 if angina is not relieved with Nitro or the above symptoms are persistent and BP does not decrease.
- Or --
- If the patient has significant report of symptoms that is relieved with rest, monitor vitals every 5 minutes until BP reaches 10-20 mmHG of pre-exercise values and call PCP.

5. Hyperglycemia & Hypoglycemia

a) Hyperglycemia

Treatment: Insulin should be given in a hospital
(Children 0.25 – 0.5 U/kg & Adults 10% - 20% of total daily dose.)

b) Hypoglycemia

Treatment: When a patient has severe hypoglycemia and becomes unconscious it should be treated with an emergency glucagon kit (which require a prescription). After injecting glucagon, follow with food once the person regains consciousness and is able to swallow.

	Causes	Onset	Blood Sugar	Symptoms	What Can You Do?
Hyperglycemia/ ketoacidosis	Too much food, too little insulin, illness or stress	Gradual, may progress to diabetic coma	Above 200 mg/dL <u>Acceptable range:</u> 115-200 mg/dL	Extreme thirst, frequent urination, dry skin, hunger, blurred vision, drowsiness, nausea, confusion, difficulty breathing	Test blood sugar, <u>if over 200mg/dL for several tests CALL YOUR DOCTOR</u>
Hypoglycemia/ insulin shock	Too little food, too much insulin or diabetes medicine, or extra exercise	Sudden, may progress to insulin shock	Below 70 mg/dL, <u>normal range:</u> 70-115 mg/dL	Shaking, fast heartbeat, sweating, anxious, dizziness, hunger, impaired vision, weakness, fatigue, headache, irritable, numb hands or feet	Drink a half a cup of orange juice or milk OR eat several hard candies, test blood sugar (if symptoms don't stop, call your doctor), within 30 minutes after symptoms go away eat a light snack (half a peanut butter or meat sandwich and half a glass of milk)

Treating a **conscious** diabetic patient:

- If the patient is conscious and coherent, check their blood sugar level
- If the person is behaving oddly and is suffering from hypoglycemia but is still conscious and capable of swallowing then feed them sugar (fruit, orange juice, glucose, or white sugar dissolved in juice or water). If not dial 911 and keep trying.
- If the person is unable to swallow or you are unsure if they are capable of swallowing, then try rubbing some sugar or glucose gel on their gums
- If suffering from hyperglycemia, do not feed the patient. Push water while conscious and get the patient to medical treatment promptly.

Treating an **unconscious** diabetic patient:

- If the person is unconscious dial 911 and put the patient in the recovery position. Monitor vital signs.
- If the patient is unconscious and having seizures dial 911 and follow the first aid protocol for seizures (remove anything on which the patient could injure themselves and put in the recovery position once the seizure is over)

*** NOTE: Since it is hard to tell if the person is suffering from hypoglycemia or hyperglycemia, you can give the person a small amount of sugar to see if it helps. If a small amount of sugar is given, then no harm will be caused to the person suffering from hyperglycemia!!!****

Exercising a Patient with Diabetes

- Check BS before, during, after
 - Before is < 100 → snack
 - Before is 100 – 250 → exercise without snack
 - Before: ideal is 120-160
- Snack before, during, after, ie, every 30 minutes
 - snack if hypo = 20-30 (40g) carb – 8oz OJ = 40g
- Continue to watch for hypoglycemia 4-6-12h post
- Inject a non-exercising part of the body (too prevent overly rapid action of the insulin)
- Don't start exercise, OR stop if:
 - < 80 → snack
 - > 250 (with ketones)
 - > 300 for Type I
 - > 400 for Type II
- Ideal BS before exercise = 120-160
- Ideal BS during exercise = 90-140

**Autonomic neuropathy can mask perception of hypoglycemia

6. Grand Mal (Generalized) Seizure

Signs

- Loss of consciousness, falling down, loss of bowel or bladder control, and rhythmic convulsions.
- Muscle contractions and rigidity
- Falls, Rapid pulse, Pallor, Dilated pupils
- Biting the tongue, Frothing at the mouth
- Eyes rolling back in the head

Immediate Recovery

- Gradual awakening to consciousness
- Confusion
- Long sleep (after a brief awakening)

Full Recovery

- Fully awake, Normal mental stage (in some people)
- Tiredness, Depressed mood

What to do:

- Protect the person from injury (remove harmful objects from nearby)
- Cushion their head
- Aid breathing by gently placing them in the recovery position once the seizure has finished.
- Be calmly reassuring
- Stay with the person until recovery is complete



DON'T

- Restrain the person
- Put anything in the person's mouth
- Try to move the person unless they are in danger
- Give the person anything to eat or drink until they are fully recovered
- Attempt to bring them round



Call an AMBULANCE if...

- You know it is the person's first seizure
- The seizure continues for more than 5 minutes
- One seizure follows another without the person regaining consciousness between
- The person is injured during the seizure
- You believe the person needs urgent medical attention



Details to Record

- Date and Time. How long it lasted
- What body parts are affected
- Type of movement and other symptoms
- Possible causes. Behavior after the seizure. Vital signs when stabilized

"There are many types of seizures and some have mild symptoms. Seizures fall into two main groups.

- **Focal** seizures, also called partial seizures, happen in just one part of the brain.
- **Generalized** seizures are a result of abnormal activity on both sides of the brain.

Most seizures last from 30 seconds to 2 minutes and do not cause lasting harm. However, it is a medical emergency if seizures last longer than 5 minutes or if a person has many seizures and does not wake up between them.

Seizures can have many causes, including medicines, high fevers, head injuries and certain diseases. People who have recurring seizures due to a brain disorder have epilepsy. " <http://www.nlm.nih.gov/medlineplus/seizures.html>