

NCLEX Quick Review



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1. Lab Values

Basic Metabolic Panel (BMP)

Sodium (Na): 135-145 mEq/L

- Hyponatremia - low
- Hypernatremia - high

Potassium (K): 3.5-5.3 mEq/L

- Hypokalemia - low
- Hyperkalemia - high

Calcium (Ca): 9-11 mg/dL (total)
4.5-5.6 mg/dL (ionized)

Chloride (Cl): 95-105 mEq/L

Albumin: 3.9-5.0 g/dL

ALP: 44-147 IU/L

ALT: 8-37 IU/L

AST: 10-34 IU/L

BUN: 7-20 mg/dL

CO₂: 20-29 mmol/L

Creatinine: 0.8-1.4 mg/dL **Glucose:**

70-100 mg/dL

Total bilirubin: 0.2-1.9 mg/dL **Total**

protein: 6.3-7.9 g/dL

Arterial Blood Gases (ABGs)

pH: 7.35-7.45

- <7.35 = acidosis
- >7.35 = alkalosis

PaCO₂: 35-45 mmHg

- <35 = hypocapnia; alkalosis
- >45 = hypercapnia; acidosis

HCO₃: 22-26 mEq/L

- <22 = acidosis
- >26 = alkalosis

PaO₂: 80%-100%

Oxygen saturation: >95%

Complete Blood Cell Count (CBC)

RBC: Male = 4.5-6.0 μ L
Female = 4.0-5.0 μ L

WBC: 3.5-10 $\times 10^3$ /mm³

Hgb: Male = 13.5-18.0 g/dL
Female = 12.0-16.0 g/dL

Hct: Male = 40%-54%
Female = 36%-46%

Cardiac Labs

Troponin: <0.012 mcg/L

CK-MP: 0%-6%

BNP: <100 pg/mL

Urinalysis

Color: Straw

Phosphates/urates may cause cloudiness

Turbidity: Clear

Specific gravity: 1.001-1.02

Low: sickle cell, DM, diabetes insipidus

Dipstick: pH 4.5-7.5

Protein: Negative

Positive: nephritic syndrome, renal tubular disease, pyelonephritis, and polycystic kidney disease

Sugar: Negative

Positive: diabetes and other endocrine diseases

Acetone/ketones: Negative

Positive: non-controlled diabetes, alcoholism, and starvation

Bile: Negative

Hemoglobin: Negative

Positive: bleeding, kidney/bladder irritation

Nitrite: Negative

Positive: indication of bacteria

Leukocyte esterase: Negative

Urobilinogen: Positive

Urine output: 800-2,000 mL/day (with intake of 2,000 mL)

Lipid Profile

Total cholesterol: 200 mg/dL

- Moderate risk: 200-240 mg/dL
- High risk: >240 mg/dL

High-density lipoprotein (HDL):

- 29-77 mg/dL

Low-density lipoprotein (LDL):

- 60-160 mg/dL

Triglyceride level: 10-190 mg/dL

BMI

Scores for adults 20+

Underweight: <18.5

Normal weight: 18.5-24.9

Overweight: 25.0-29.9

Obese: 30+

Scores for adults <20

Underweight: <5th percentile

Overweight risk: 85th percentile

Overweight: >95th percentile

$$\text{BMI} = \frac{\text{Weight in kilograms}}{(\text{Height in meters})^2} = \frac{(\text{Weight in pounds}) \times 703}{(\text{Height in inches})^2}$$

2. Assessments

Burns - Depth of Injury

1st degree: superficial; reddened skin but intact

2nd degree: partial thickness; loss of skin, into dermis (most painful)

3rd degree: full thickness; loss of all skin, can see fat/muscle

4th degree: full thickness + underlying tissue, can see to bone

Rules of Nines

Head and neck: 9%

Children: 18%

Anterior torso: 18%

Posterior torso: 18%

Each leg: 18%

Children: 13.5%

Each arm: 18%

Genitalia/perineum: 1%

Pain Assessment/Pain Scales

Visual Analog Scale (VAS):

- Used to determine baseline pain

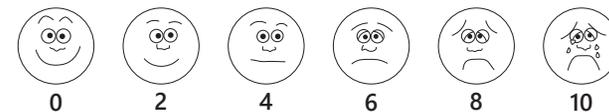
Patient Comfort Assessment Guide:

- Used to assess pain status and pain relief, and response to medications

Brief Pain Inventory:

- Used to assess pain's affect on activity

Wong-Baker FACES:



- Appropriate for children, non-English speakers, and illiterate patients or patients with cognitive impairment
- Pediatric and adult versions

CPOT:

- Used in critical care settings

PAINAD:

- Appropriate for adults with cognitive impairment

CRIES:

- Used to assess pain in neonates

Crying

Requires O₂

Increased vital sign

Expression

Sleepiness

FLACC:

- Appropriate for children up to 3 years and older children with cognitive impairment

Face

Legs

Activity

Cry

Consolability

3. Newborn

Vital Signs

Heart rate: 100-160 (average 140-160)

Respiratory: 30-60

Blood pressure: systolic 70-90 mmHg

Apgar Score

Appearance (color):

- 0: pale blue
- 1: body pink, extremities bluish
- 2: completely pink

Pulse (heart rate):

- 0: absent
- 1: slow or <100
- 2: >100

Grimace (reflex irritability):

- 0: none
- 1: grimace
- 2: vigorous crying

Activity (muscle tone):

- 0: flaccid
- 1: some extremity flexion
- 2: active motion

Respirations (muscle tone):

- 0: absent
- 1: slow and irregular
- 2: vigorous crying

Newborn Reflexes

Babinski:

The toes should hyperextend when the side or sole of the foot is stroked from heel to ball of the foot.

Blinking:

The eyes should close if a light is flashed into them.

Moro (startle):

The limbs and neck should extend symmetrically and then pull back in response to a loud noise or jolt.

Palmar grasp:

When the palm is stroked with one finger, the infant should grasp that finger.

Rooting:

When the cheek is stroked, the infant's mouth should open and the head should turn to the side that was touched.

Sucking:

The infant should suck when the mouth is touched.

Tongue extrusion:

The tongue should push out of the mouth when the tip of the tongue is touched.

Tonic neck (fencing):

With the infant lying flat and the head turned to one side, the limbs on the opposite side should flex, and the limbs on the same side should extend.

Trunk incurvation:

With the infant prone, stroking down one side of the spine should result in the pelvis turning toward the stroked side.

4. Pharmacology

Prefixes/Suffixes and Roles

Blood pressure medications

ACE inhibitors (-*pril*):

Relax blood vessels, which decreases the heart's workload

Beta-blockers (-*lol*):

Reduce blood pressure by slowing the heart rate and reducing myocardial contractility

Calcium channel blockers (-*dipine*):

Relax blood vessels, which increases blood supply and oxygen to the heart

Angiotensin blockers (-*sartan*):

Inhibit blood vessel constriction

Potassium-sparing diuretics (-*actone*):

Promote diuresis while retaining potassium in the body

Thiazide diuretics (-*thiazide*):

Promote diuresis by inhibiting the reabsorption of luminal sodium

*Cardiovascular medications***Anticoagulants (-arin):**

Prevent blood coagulation or prolong clotting time

Antilipidemics (-statin):

Reduce LDL cholesterol and cardiovascular disease

Thrombolytics (-ase):

Relax blood vessels, which increases blood supply and oxygen to the heart

*Antibiotic medications***Aminoglycosides (-mycin):**

Treat aerobic gram-negative infections

Cephalosporins (ceph- OR cef-):

Treat bacterial infections

Fluoroquinolones (-floxacin):

Treat bacterial infections as broad-spectrum antibiotics

Penicillins (-cillin):

Treat bacterial infections

Tetracyclines (-cycline):

Treat/prevent bacterial infections by slowing bacterial growth as broad-spectrum antimicrobials

Sulfonamides (sulfa-):

Treat bacterial and fungal infections

*Intestinal medications***Antiemetics (-azine):**

Treat nausea and vomiting

Proton pump inhibitors (-prazole):

Reduce gastric acid production

H2 receptor antagonists (-tidine):

Block the action of histamine in the stomach, which decreases the production of stomach acid

*Respiratory medications***Antihistamines (-ine):**

Treat allergy symptoms

Bronchodilators (-terol):

Treat asthma and its symptoms and dilate the bronchi and bronchioles, which increases airflow to the lungs

Methylxanthines (-phylline):

Treat airway obstructions and asthma symptoms and relax the smooth muscle of the bronchioles, which results in dilation of the airway

*Anti-anxiety and antidepressant medications***Benzodiazepines (-pam OR -lam):**

Treat anxiety

SSRIs (-pram OR -ine):

Treat major depressive disorders and anxiety disorders by blocking or delaying the reabsorption of serotonin

*Miscellaneous medications***Antifungals (-azole):**

Treat fungal infections

Antivirals (-vir):

Treat viral infections

Barbiturates (-barbital):

Increase the effect of GABA in the CNS, which reduces excitability and produces sedation

Corticosteroids (-sone OR -lone):

Control many different systems as anti-inflammatory drugs

Local anesthetics (-caine):

Prevent the transmission of nerve impulses or pain without causing unconsciousness

Oral hypoglycemics (-ide):

Lower blood sugar for diabetic patients

Protease inhibitors (-navir):

Treat viral infections as antiretroviral agents

Avoidances**ACE inhibitors:**

- Foods high in potassium
- Potassium supplements

Antibiotics:

- Milk
- Caffeine
- Products containing iron

Anticoagulants:

- Foods high in vitamin K
- Vitamin E supplements

Antifungals:

- Alcohol
- Milk products

Antihistamines, antidepressants, and anti-anxieties:

- Alcohol
- Grape juice

Beta-blockers, nitrates, narcotics, and NSAIDs:

- Alcohol

Bronchodilators:

- Alcohol
- Caffeine

Carbamazepine, cyclosporine, tacrolimus, HIV medications, and statins:

- Grapefruit juice

Diuretics (potassium-sparing):

- Foods high in potassium

MAO inhibitors:

- Alcohol
- Non-alcoholic beer/wine
- Caffeine
- Foods high in tyramine

Toxicity Reversal Agents**Acetaminophen:** N-Acetylcysteine**Alcohol withdrawal:** Librium**Ammonia:** Lactulose**Warfarin:** Vitamin K**Digoxin:** Digibind**Heparin:** Protamine sulfate**Iron:** Deferoxamine**Narcotics:** NaloxoneTherapeutic Drug Levels**Digoxin:** 0.5-2.0 ng/mL**Lithium:** 0.8-1.5 mEq/L**Dilantin:** 10-20 mcg/dL**Theophylline:** 10-20 mcg/dL**Warfarin:**

- IRN levels of 2-3 (A-fib, MI, CVT, PE)
- IRN levels of 2.5-3.5 (mechanical heart valves)

Eight Rights of Medication Administration

1. Right patient
2. Right medication
3. Right dose
4. Right route
5. Right time
6. Right documentation
7. Right to education
8. Right to refuse

Intravenous Infusions**Drop factor:** Number of drops in 1 mL of solution**Microdrip:** 60 gtts/mL*For small or precise infusions***Macro drip:** 10-20 gtts/mL*For large or quick infusions*

Calculating number of mL to infuse per hour

$$\frac{\text{Volume (mL)}}{\text{Time (hours)}} = \text{mL/hour}$$

Calculating IV flow rate in drops per minute

$$\frac{\text{Volume (mL)}}{\text{Time (min)}} \times \text{Drop factor} = \text{IV flow rate in drops per minute}$$

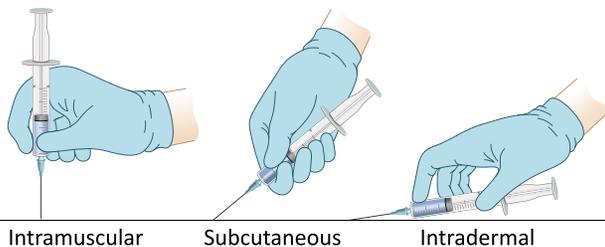
Injections

Intradermal (ID):

- Injected into the dermal layer of the skin
- Causes a bleb to form
- Given into the back or the inner forearm
- Angle of 10°-15°
- 27-30 g
- Length of 1/4-1/8 inch
- A Mantoux test for TB exposure and allergy testing requires ≤ 1 mL of fluid

Subcutaneous (SQ):

- Injected into adipose tissue
- Given into the anterior thigh, abdomen, and upper outer arm
- Angle of 45° (90° for insulin and heparin)
- 25-28 g
- Length of 5/8 inch
- 0.5-1.0 mL fluid for insulin, heparin, and enoxaparin



Intramuscular (IM):

- Injected deep into muscle
- Given into the entrogluteal, dorsogluteal, vastus lateralis, and deltoid muscle
- Angle of 90°
- 23 g
- Length of 1-1.5 inches
- You must aspirate for blood prior to an IM injection to ensure medication will not be delivered intravenously

5. Patient Positioning

Supine:

Dorsal recumbent position, or lying flat on the back



Fowler:

The supine position, with the head of the bed raised between 45° and 60°

Semi-Fowler:

The supine position, with the head of the bed raised between 30° and 60°

Lateral:

A side-lying position, lying opposite the side of the procedure

Trendelenburg:

The supine position, with the body and head positioned lower than the feet



Reverse Trendelenburg:

The supine position, with the body and head positioned higher than the feet



Lithotomy:

This is a modification of the supine position. The legs are secured in stirrups, which elevate and abduct them. The buttocks are positioned evenly with the break or the end of the table.

Prone:

Laying flat with the stomach side down



6. Psychology

Kübler-Ross Phases of Grief

Denial:

The individual does not really believe loss has occurred and talks as if nothing has changed.

Anger:

The individual is upset about the loss and may act out, exhibiting previously unfelt aggression at the lost individual. They may blame caregivers for the loss.

Bargaining:

The individual tries to change the results of the loss and avoid consequences of the loss. They may ask God to change what happened.

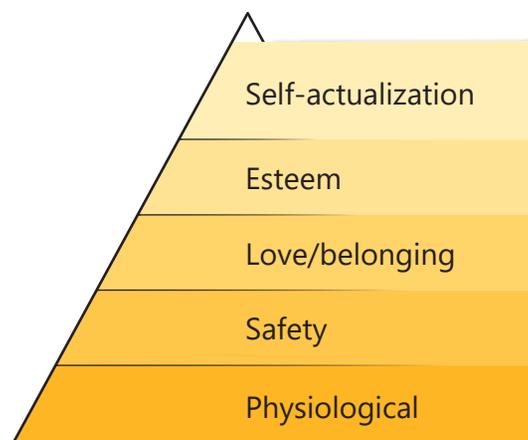
Depression:

The individual experiences a loss of interest and may feel that life is fatalistic and/or not worth living. They may withdraw from friends and family.

Acceptance:

The individual comes to terms with the loss and is able to cope and accept the consequences. They fall back into a normal pattern of daily living.

Maslow's Hierarchy of Needs



Cultural Health Considerations

Proxemics (space considerations):

- North Americans and Northern Europeans tend to want the most space
- Latin Americans, Asians, Middle Easterners, and Southern Europeans often feel comfortable standing very close to others

Eye contact:

- Direct eye contact is the cultural norm in many North American and European countries
- Latin Americans, Asians, Middle Easterners, and Southern Europeans often feel comfortable standing very close to others

Time:

- Punctuality is the cultural norm for the United States
- Latin Americans and Mexicans may consider time in relation to day/night or before/after meals rather than a clock

Complementary/folk medicine:

People from other countries may utilize alternative medical systems:

- Chinese herbal medication
- Healers
- Meditation
- Body-based therapies
- Coining/cupping

Touch:

- Restrictions in touch between males and females in some cultures
- Asian cultures may be upset if the head is touched without permission, as they believe the spirit resides in the head

Family hierarchy:

In some cultures (Mexican, Asian, and Middle Eastern), decisions are made by the males or the head of the family rather than the individuals.

7. Miscellaneous

ANA Ethical Principles

- Autonomy
- Beneficence
- Nonmaleficence
- Justice
- Veracity
- Fidelity

Levels of Disease Prevention

Primary:

Prevent initial occurrence of a health problem via immunizations, smoking cessation, fluoride supplementation of water, seat belt use, and child care seat restraints.

Secondary:

Identify diseases/conditions quickly and provide prompt intervention for the treatment and prevention of further disability via BP screenings, breast and testicular self-screening, hearing and vision screenings, mammography, and pregnancy testing.

Tertiary:

Prevent further progress of a disease or disability and allow people to achieve the maximum quality of life via support groups, counseling, diet and exercise, stress management, and supportive services.

ROME Method for ABG Questions

When the cause for ABG imbalance is respiratory in nature, CO_2 and pH will be outside the normal range. When the cause for ABG imbalance is metabolic in nature, the HCO_3 and pH will be out of range.

- Respiratory
- Opposite
- Metabolic
- Equal

In the ROME method, the "opposite" and "equal" refer to the increase or decrease in pH against the increase or decrease in CO_2 (in respiratory conditions) or HCO_3 (in metabolic conditions).

- In respiratory acidosis, $\text{CO}_2 \uparrow$ pH \downarrow (opposite)

Example: CO_2 52, HCO_3 23, pH 7.3

- In respiratory alkalosis, $\text{CO}_2 \downarrow$ pH \uparrow (opposite)

Example: CO_2 29, HCO_3 24, pH 7.5

- In metabolic acidosis, $\text{HCO}_3 \downarrow$ pH \downarrow (equal)

Example: CO_2 40, HCO_3 18, pH 7.2

- In metabolic alkalosis, $\text{HCO}_3 \uparrow$ pH \uparrow (equal)

Example: CO_2 36, HCO_3 35, pH 7.6