

Hypoglycemia

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| Treatment | <p>IV Dextrose: "Hawaii 5-0 Rule"</p> <ul style="list-style-type: none"> • 10 cc/kg bolus of D5W, 5 cc/kg bolus of D10W, 2 cc/kg bolus of D25W • Glucagon (can use if no IV access and patient unable to take PO's): 0.03 mg/kg (max 1 mg) IM, IV, or subQ. Effective for hypoglycemia caused by hyperinsulinemia. Does not work if glycogen stores are depleted or w/ glycogen storage diseases |
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Diabetes Insipidus

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| PowerPlan/Ordersets | DMICU DI orderset, Endo AMB DI Plan |
| Definition | Failure to produce or respond to antidiuretic hormone, leading to excessive free water loss and subsequent hypernatremia. |
| Etiology | <ul style="list-style-type: none"> • Central: Failure of posterior pituitary to secrete ADH • Nephrogenic: Failure of kidney to respond to ADH |
| Presentation | Polyuria, nocturia, increased thirst, polydipsia |
| Diagnostic Studies | <div> <div> <ul style="list-style-type: none"> • Chem 10, UA, serum osm, urine osm • Lab criteria <ul style="list-style-type: none"> ■ Serum Na >145 mEq/L ■ Serum osmolality > 300 mosm/kg ■ Urine osmolality < 300 mosm/kg • Urine output > 4 ml/kg/hr • Water deprivation test </div> <div> <p>The diagram illustrates the physiological pathways for ADH release. On the left, under 'Osmolality', dehydration leads to an increase in plasma osmolality, which stimulates the hypothalamus and osmo receptors to release ADH. On the right, under 'Volume', a decrease in circulatory volume and blood pressure stimulates baroreceptors in the carotid sinus and aortic arch, also leading to ADH release. The released ADH then acts on the kidney via V2 receptors to increase water reabsorption and on blood vessels via V1 receptors to cause vasoconstriction.</p> </div> </div> |
| Treatment | <p>Central Diabetes Insipidus: vasopressin IV vs PO/intranasal/SC ddAVP</p> <ul style="list-style-type: none"> • Post-op patients/ICU: vasopressin infusion at 1 milliunit/kg/hr • Titrate drip q5-10 minutes to max rate 10 milliunits/kg/hr w/ goal urine output <2 ml/kg/hr • Replace fluid deficits w/ NS to avoid hyponatremia • Check serum sodium and osm every hour • Non-operative, non-ICU patients: ddAVP either PO 0.05 mg BID or intranasal 5-30 mcg/day (3 mo-12 yr) or 10-40 mcg/day (>12 yr) and titrate to goal of daily breakthrough diuresis. <p>Nephrogenic DI:</p> <ul style="list-style-type: none"> • Low salt diet, thiazide diuretics, access to water • Can try ddAVP if only partial nephrogenic |

Syndrome of Inappropriate ADH (SIADH)

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| Definition | Inappropriate antidiuretic hormone release → hyponatremia, hypoosmolality, and inappropriately concentrated urine |
| Etiology | <p>CNS disorders: post-operative, infection, stroke, hemorrhage, trauma, Tumors (usually adults), particularly lung cancer (small cell), Drugs: carbamazepine, cyclophosphamide, others.</p> <p>Pulmonary disease: pneumonia, Surgery, HIV</p> |

SIADH continued on next page →

| Syndrome of Inappropriate ADH (SIADH) | |
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| Pathophysiology | <ul style="list-style-type: none"> ADH binds to V2R receptors in collecting tubules causing aquaporin-2 water channels to move from cytosol to luminal membrane. Leads to increased water reabsorption. Excessive/unregulated release of ADH from posterior pituitary or ectopic release (such as in lung cancer) leads to inappropriate retention of free water leading to hyponatremia. |
| Presentation | <ul style="list-style-type: none"> Decreased UOP, hyponatremia, low serum osm and high urine osm Patients typically have euvoletic hyponatremia, so do not have peripheral edema/ascites |
| Diagnostic Studies | Chem 10, UA, Serum osmolality (low) and urine osmolality (usually high), urine sodium (usually above 40 mEq/L) |
| Treatment | <ul style="list-style-type: none"> Fluid restriction is mainstay of therapy. Goal to increase serum sodium by 6-8 mEq/L/day. Risk of central pontine myelinolysis w/ rapid correction. <ul style="list-style-type: none"> Start w/ restriction to 2/3 maintenance fluids daily (1 L/m²/day) Increased solute intake Can use hypertonic saline in conjunction w/ loop diuretic for symptomatic hyponatremia (seizures, AMS) <ul style="list-style-type: none"> To calculate the necessary dose of 3% hypertonic saline: <ul style="list-style-type: none"> mEq sodium infused = [desired plasma sodium (mEq/L) – actual plasma sodium (mEq/L)] x 0.6 x weight (kg) Each mL of 3% hypertonic saline has just over 0.5 mEq of sodium Give slowly (over 3-4 hours), goal not to inc plasma Na by more than 3 mEq/L/hr Given until symptoms resolve or serum Na reaches 125 mEq/L |

