EXAM NOTES PATHOPHYSIOLOGY & PHARMACOLOGY 1	
Endo patho	*Hypothalamus -> Pituitary -> target glands* *Posterior pituitary hormones:* Antidiuretic Hormone (ADH), prolactin and oxytocin *Anterior pituitary hormones:* Growth hormone, Adrenocorticotropic hormone, thyroid stimulating hormone, luteinizing hormone ***Diabetes Insipidus*** *ADH:* increased plasma osmolarity -> increased ADH -> increased water retention by kidneys *ADH Hyposecretion* *Causes:* head trauma, tumors, infection, radiation damage *Effects:* water loss in urine, decreased reabsorption -Polyuria usually nocturia -Urine composition increased H2O dilutes other components, low SG (~1.0) -Extreme thirst, polydipsia, high risk for dehydration -Hypernatraemia, hypokalaemia, no hyper/oglycaemia, no glycosuria *Adrenal cortex hormones* -Mineralocorticoids (aldosterone): secreted from zonae glomerulosa, reabsorption of Na+, promotes K+ and H+ excretion, water retention increase BP -Sex hormones (androgens): secreted from zonae fasciculata and reticularis, regulate reproductive function -Glucocorticoids (cortisol): secreted from zonae fasciculata and reticularis, diurnal pattern – high in morning low at night. -Regulates stress response essential for survival -Regulates metabolism -Increases BGL: counteract insulin, stimulate liver glucose production, reduce glucose uptake -Promotes protein breakdown to transfer to liver for gluconeogenesis -Promotes lipolysis, mobilization of fat store -Increased gastric acid secretion -Anti inflammatory and immunosuppressive effects ***Cushings Disease/syndrome- hypercortisolism*** -Diurnal pattern disappeared *Effects:* affects control of glucose protein and fat metabol. -Increased BGL gluconeogenesis by liver -> overload of pancreatic B cells -> insulin burnout -Breakdown of protein -> muscle and bone wasting, loss of collagen makes skin thinner, bruise easily -Conversion of excess glucose into lipids -> weight gain deposition on trunk and face -> moon face, hump back, extended abdomen -Dampen immune response, delayed healing -Gastric ulcer and bleeding -Emotional disturbance -Excessive cortisol -> same effects of mineralocorticoids (aldosterone) – excess Na+, Cl-, water retention, weight gain -> increased BP -Hypersecretion into urine of H+ -> alkalosis -Hypersecretion into urine of K+ -> hypokalemia -> arrhythmias -Women also hypersecretion of adrenal glands -> menstrual cessation/irregularities and masculinization *Thyroid hormones* -Thyrotropin-release hormone (TRH) -Thyroid-stimulating hormone (TSH) Target most cells in body, stimulates basal metabolic rate BMR, promote fat mobilization, glucose catabolism, enhance effects of sympathetic nervous system, required for child development, normal functioning of CNS, CVS, GIS, musculoskeletal systems and sex maturation

	Thyroid hypersecretion- *Causes:* >Graves disease most common, autoimmune disease where autoantibodies mimic TSH -> permanently bind to and stimulate TSH receptors on thyroid gland -Hyperplasia (increased follicle cell numbers) -Hypertrophy (increased follicle cell size) -Stimulate synthesis and release of thyroid hormones -*Goitre:* enlargement of thyroid due to increased thyroid follicular cell size -Increased secretion of thyroid hormone -> hyperactivity of target tissue *Effects:* >Increased BMR: increased heat production -> sweating + heat intolerance, hyperventilation to remove increased CO2 levels, muscle breakdown -> weight loss, thin, fatigue -Protruding eyeballs (weak eye muscles) -Neural excitability-> anxiety, excessive activity, insomnia, emotional instability -Increased SNS activity- cardiac excitability-> tachycardia, ectopics, weakened myocardium *Thyroid storm:* acute life threatening thyroid hyperactive crisis, dramatic increase in metabolism *Treatment:* -Antithyroid hormones, inhibit production/conversion of hormone (20-30% effective) -Radioactive iodine (I-131) destroys part or all thyroid gland -Subtotal thyroidectomy- remove most of thyroid gland, incapable of hypersecretion ***Hypothyroidism/Thyroid hyposecretion*** *Causes:* Hashimotos thyroiditis- most common, autoimmune destruction of thyroid follicles or thyroglobulin, circulating antithyroid antibodies and infiltration of lymphocytes -Dietary iodine deficiency, reduce T3 T4 synthesis -Thyroid cancer, destroys follicle cells -Congenital, deficiency of thyroid tissue/hormone due to enzyme deficiency -Deficiency of anterior pituitary gland or hypothalamic function – decreased TRH/TSH *Adult effects:* **myxedema,** decreased metabolism, sensitive to cold, oedema to face eyes hands and feet, thickened dry skin, lethargy, mental slowness, slow speech *Child effects:* **cretinism,** all adult effects, stunted growth, abnormal proportions, mental retardation ***Goitre:*** enlargement of thyroid gland, protrudes from neck *Cause:* hyper and hypothyroidism, iodine deficiency, food, drug, nodules, cancer *Symptoms:* enlargement of throat, swallowing problems if push on oesophagus, breathing problems if push on trachea *Endemic:* whole community, iodine deficient *Sporadic:* individual, family history, diet, age, gender *Treatment:* depends on underlying cause -*Iodine deficiency:* iodine rich food, seafood, iodized salt -*Hypothyroidism:* lifelong hormone replacement therapy -*Hyperthyroidism:* drugs, surgery, radioactive iodine -*Benign nodules:* drugs, surgery, radioactive iodine -*Cancer*: thyroidectomy, radioactive iodine