Exam 5.

DM. Type I. 5-10%

Polyuria
polydipsia
polyphagea

@ any age 30↓. Poly x3. Wt loss.
Islet cell antibodies. Immunologic. environmental factors (virus)
have antibodie to insulin before Insulin Tx.
No (little) Insulin production. Insulindepended
Ketosis. when insulin absent → DKA.

DM Type II 90-95% → First line tx → Lifestyle modification
BMI 30↑ 140/80↑
HTN. ↑cholesterol.
@ any age (45↑) 30↑. Obesity heridity environment. HDL 35↓
No Islet antibodies. trig ly 250↑
Insulin resistant. Hx gestational diabetes
Mangement → Through Wt loss. exercise. baby 9lb↑
PO. antiglycemic. Short term insulin.
No ketosis. unless stress or infection → HHS.

Dx:
2↑
- BG 250↑
- 3Ps.
- Fatige wkness Vision chge. N/T. dryski. Lesion slow healing
  ↑ recurrent infection
- Sudden Wt loss

1↑
- BG Casual 200↑
- Fasting Glucose 126↑ (8h fasting)
- 2hr Glucose 200↑ w/ PO glucose Tolerance test (120 days)
- A1C. 6.5%↑ (4-6%) normal (6.5-8%) normal-Diab
  Glycosalated Hgb. target 7%↓. Compliance

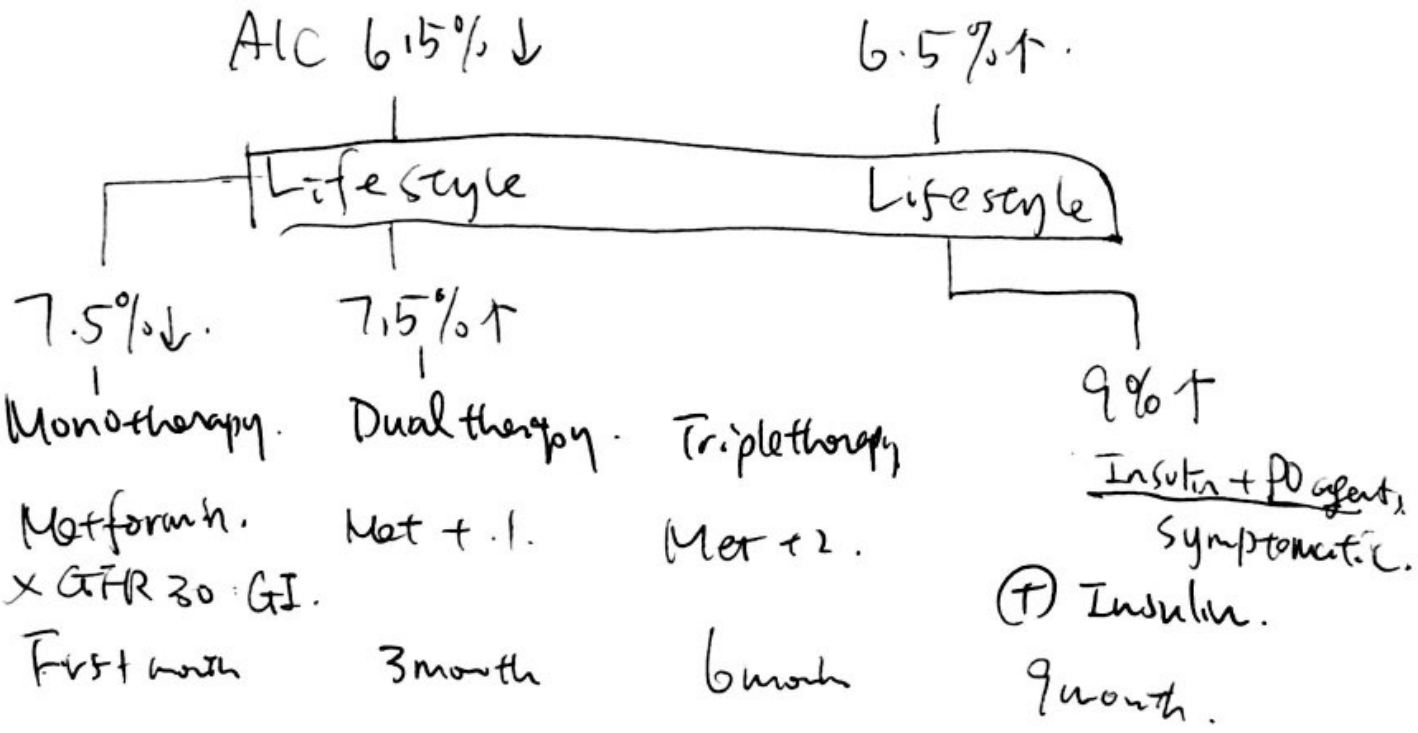
A1C. · Normal (4-6%).

Diabetic normal (6.5-8%). Target 7% ↓ - Compliance

Preprandial Capillary PG 80-130.

Peak post parandial capillary PG 180 ↓.

Glycemic Control. Algorithm



Metformin. → Not cause hypoglycemia

Moderate GI. issue.

× w/ Pt ↓ Renal function. 30 GFR ↓

Normal GFR 60.

Neutral. Cardiac. bone.

Hypoglycemia.

70↓. 40↓ - Severe

Mild. → · hunger · nervousness · palpitation · sweating · ↑HR · tremor ·

Moderate → · confusion · double vision · drowsiness · emotional change · HA
↓ coordination · ↓ concentration · Irritational & combative behavior,
lightheaded · numbness of lip & tongue · slurred speech.
(Paresthesia)

Severe → diff arousing · disoriented behavior · LOC · Seizure.

NI: check · Glucose level ·
Follow guideline rapidly absorbable carbs.
→ · 15-20g Carbs · (4-6oz fruits juice, soft drink, glucose tab/gel ·
↓ 6-10 hard candies · 1 tbsp honey).
Recheck in 15 min
↓
Repeat it if not fixed → 70↓.

If WNL · 70↑ · → Snack (Carb + protein) if meal 1 hr ↑.
Blood glucose ↑ 40 over 30 min · following 10g absorbed Carbs

If Pt unable to swallow or unconscious.
→ · IM / subQ · Glucagon · → repeat in 10 min if still b
Place Pt in lateral position Aspiration · ↓ Notify provider

Acute Care · 50% dextrose IV · → should ↑ Consciousness in 20
Once back to consciousness → Inject oral Carbs.

DKA · type I · 10% mortality

300↑ → fat breakdown, dehydration · M. acidosis · ↑Ketone

rapid onset ↑ Cortisol, glucagon, epinephrine

↓

↑ Liver produce glucose ·

↓

↓ Insulin effect ·

3 features
- hyperglycemia
- dehydration · ↓ electrolyte → "diuresis" polyuria.
- M. acidosis

lipolysis → fatty acid/glycerol ·

↓

ketone by liver

↓

Acidic · accumulation

S/S: Poly x3., marked fatigue, Blurred vision · W. keen · HA ·

Orthostatic ↓BP · Frank hypotension w/ weak · rapid pulse ·

GI → anorexia · N/V · Adb pain ·

Hallmark - Acetone breath · (fruity odor)

Hyperventilation · (Deep · No Labored,) → Kussmaul · resp ·

Alert · Lethargic · Coma

Lab. 300-1000 · → severity not only depend on glucose level ·

Ketone present ·

↓pH ↓HCO_3^- ↓PCO_2 · → reflect resp compensation → kussmaul ·

electrolyte · depend on degree of dehydration ·

↑CR · BUN · Hct

NI: Rehydration

Restoring electrolyte ·

Reserve acidosis ·

DKA Tx.

Rehydration: ↑IV fluid replacement + electrolytes for hypovolemia / hyperosmolarity
↓ reduce slow to
Fluid loss Ave. 6–10 L.
Goal: correct deficit w/in first 24h. → - prevent cerebral edem
Initial fluid 0.9% NS → rate depend on pt clinical stage
If ↑Na → 0.45% saline
When BG 200–300 ↓ → switch to D5W prevent hypoglycemia
Continuous insulin → ketone clearance
Maintain fluid volume balance → VS. lung sound. I&O.
Initial UO lags behind IV fluid intake as dehydration is correct
Monitor s/s fluid overload → older pt renal impairment CHF.

Restoring Electrolyte: K level #1. (Tends to be high).
Rehydration → ↑plasma volume → ↓ serum K level
↑UO. → ↓ K level. } hypokalem
↑Insulin. → ↑movement of K into cell. }
Continuous/Timely K replacement → avoid dysrhythmias.
Frequent (q 2–4h initially) ECG & Lab of K during first 24hrs

Reverse Acidosis: ↑Insulin. → ↓fat breakdown → ↓ketone ↓acid build up
↳ slow. Continuous. 5 unit/hr. IV.
→. Hourly blood glucose (@hr.)
→ Regular Insulin (ONLY IV insulin). → add to IV solution
Continuous IV until SubQ is resumed → Interruption → ↑ Acidosis.
↓ Not stopped even glucose level ↓ to normal.
IV ↑HCO_3^- is not necessary → Cause ↓K level.
ONLY administered when pH 6.9 ↓

HHS. - Type II - 50-70 yr ↑

600↑ → dehydration. Absent ketone.

600-1200 onset gradual → Coma. death.

Riskfactor. Same w/ DKA

Infection.
D/C. Insulin
Acute major illness
New onset Type I. - DKA
Pt stop insulin w/ gastritis → stop insulin but no eating.
Coccaine use
Psycho issue w/ eating d/o
↓ Insulin regimen
Metabolic drug @ dialysis.

Persistent ↑BG → Osmotic diuresis
↓ fluid & electrolytes.
↓
Water shift ICF → ECF
To maintain equilibrium.
↓
glycosuria, dehydration
↑Na. ↑ Osmolarity.

[Ketone
[Acidosis.
DO NOT occur in HHS.
→ different insulin levels.
→ DKA. 0. Insulin
→ HHS ↑ insulin to prevent fat breakdown.

S/S.: Hypotension
Profund dehydration (Dry mucus membrane
poor skin turgor
↑HR.
Neurologic sign [↓LOC.
Seizure
hemiparesis

Lab. 600-1200. Osmolality 320↑.
AMS. focal neurologic deficit / hallucination
→ secondary to Cerebral dehydration.
↑BUN. electrolyte,

Management.
1) Rehydration
2) Correction electrolyte
3) ↑ Insulin

Pt. typically stable. F/E balance
↓ BG and ↑ fluid IV. → No need to correct acidosis
Insulin play less role → No need.
Insulin Continuous low rate, . Replacement IV fluid w/ Dextrose when BG 250-300.

Prevention = SBGM. Management of Diabetes. ↑ Self care skills, Always.

Endocrine Dx.

Lab. – Bone. Urine. Saliva – Lab.

Stimulation test → giving hormone to stimulate target gland → capable to normal hormone production

Supression test → given meds or substance to evaluate body ability to supress excess hormone production

Posterior Pituitary → Vasopressin (ADH).

↓ ADH. → Diabetes Insipidus.

↑ ADH. → SIADH (Syndrome of Inappropriate Anti-diuretic hormone

Dx: Water deprivation test.
ADH
Serum & urine electrolyte & osmolality.
U. specific gravity

Adrenal Cortex → Cortisol.

↑ cortisol. (hyperactivity AC.) → Cushing's disease
↓ cortisol (hypoactivity AC) → Addison's disease

Dx: Dexamethasone Supression test
plasma & Salivary cortisol.
24-hr urine for cortisol. ACTH & ACTH Stimulation
CT scan MRI. → atrophy of adrenal gland → hypofunction

Adrenal Medulla. → ↑Catecholamine.

↓

↑ Sympathetic response (↑HR. BP. diaphoresis)

Dx: Plasma free metanephrine testing
Clonidine supression test
→ Pheochromocytoma

Cause of Pt's unbelieved HTN. ↗

Radioactive Iodine Uptake → T3. T4. TSH.

Measure absorption of iodine isotope → thyroid function.

↑ T3. T4. hyperthyroidism

↓ T4 → antithyroid meds. thyroiditis myxedema. or hypothyroidism.

Dx = blood test:

↑ T4 → hyperthyroidism

↓ T4 → hypothyroidism

↑ TSH → primary hypothyroidism

↓ TSH → Hyperthyroidism. OR secondary hypothyroidism.

Thyroid scan

Needle aspiration of thyroid tissue

Diabetes Insipidus · ↓ADH ·

Polyuria (abrupt onset, UO 4–30L/day)
polydipsia · nocturia · fatigue dehydration ·

Sunken eye · ↑HR ↓BP
↓skin turgor · Dry m.m.
Weak pulse ↓ cogn. fun.

Lab = ↓Uspecific gravity 1.005↓
↓ U.osmolality. 200↓ ·
↓ U · pH ·
↓ U. Na. K ·
↕ U. volume ·

Serum.. ↑ S. osmolality.
↑ S. Na, K ·
↓ S. volume ·

Tx = ADH replacement → Desmopressin.

NI: Monitor VS · UO ·
hx COD · → Vasoconstriction → Monitor · HA Confusion
Water intoxication ·

Teaching: Life-long.
Daily Wt · → Notify: 10.9 kg / 24h
Restrict fluid if HA · Confusion

SIADH · ↑ADH → ↑risk Water Intox-cation
Cerebral Pulmon edema
↓Na. Central pontine myelinol

S/S: early: HA weakness. anorexia N-cramp · Wt gain
(w/o edema → Water, but not Na. retention)
→ ↓ serum Na. → AMS. hostility. Sluggish DTR.
N/V/D. · Oliguria. → Dk yellow. Concentrated

ATI. Confusion lethargy. Cheny-Stokes respiration
Herold Impeding Crisis. → ↓Na → Seizure. coma. death
F.V. excess: ↑BP. ↑HR. bounding pulse
Crackles. distended neck vein. taut skin
Wt gain w/out edema. I. > O.

↑ U. Na.	↓. S. Na. (diluted)
↑ U. Osmolarity	↓. S. Osmolarity - 270 ↓.
↓ U. Volume.	↑ S. Volume.

Restrict fluid 500ml-1L/day. I&O. VS. P. edema AMS. Labs.

→. Tetracycline derivative (demeclocycline)
Unlabel use to correct FE Imbalance. → ↑ UO.

→ Vaso pressin antagonist (-tolvaptan, Conivaptan)
↑ Water loss W/O. Na loss

→. Furosemide.

→ IV. hypertonic NaCl. 3%-5%.

Thyroid Storm. → Sudden surge of ↑ amount of T4. To to blood
↑T4. ↓TSH. ↑ body metabolism. → ↑ metabolism.

S/S: ↑ fever (104-106F). HTN. delirium. agitation.
Vomiting. abd pain. tachydysrhythmia. CP.
dyspnea. palpitation.

Lab: ↓TSH. ↑ free T4 / T3 concentration

Tx: β-blocker
Thionamide
Iodine solution
Iodinated radiocontrast agent
Glucocorticoids.

Acetaminophen = ↓ fever

X. Aspirin.
↓
↑ thyroxine → ↑ T4.

NI: Airway patent.
Continuous ECG.

Myxedema Coma. ↓. T4. ↑TSH.

→. Untreated hypothyroidism — ATllness. surgery. chemo. opioid

S/S :. RF. ↓BP : temp. ventilation. HR. Na. BG. dysrhythmias. Coma

NI: Airway patency.
Aspiration precaution.
IV. fluid.

Addisan disease → Adrenal cortical Insufficiency

Addisonian Crisis.

Acute Adrenal Insufficiency

Damage of dysfunction of Adrenal cortex

↓ mineral corticoids / glucocorticoids.

↓

↓ aldosterone & cortisol.

Autoimmune. Idiopathic atrophy of A. gland.

Other = Surgical remove or Infection.

TB. Histoplasmosis

- Inadequat secretion ACTH from Pituitary

Corticosteroid use.

S/S: Wt loss. Craving salt. hyperpigmentation.

Fatigue / Weakness. N/V. abd pain Constipation / Diarrhea

Dizziness / orthostatic hypotension. dehydration

↓ Na ↑ K ↓ BG ↑ Ca.

↓

Hypotension. Cyanosis. fever. N/V. → shock.

Pallor. HA, abd pain. Diarrhea. Confusion restless.

→ IV. hydrocortisone, Prednisone → Adrenal corticoid replacement
Anti-Inflammatory

Fludrocortisone → Mineralocorticoid.

↑ Glucocorticoids, Cortisol.

Cushing Syndrome ⟷ Cushing disease

long course of glucocorticoid
Tx - Asthma, rheumatoid arthritis

Tumor in pituitary gland
↑ ACTH.

S/S · Wkness, fatigue, sleep disturbance, back/joint pain
ANXIETY — Irritability, depression, ↓ Libido
Buffalo hump - Central type obesity, fatty neck, Trunk, thin ext
↓ Immunity ↓ Inflammatory response.
Thin fragile skin
Bruising, Petichiae.
↑ HTN.
Gastric Ulcer, oversecretion, hydrochloric acid.
Wt gain ↑ appetite

↑ Cortisol level, w/o, Illness, stress → Cushing d/s.
Urine (24h. Urine collection) → ↑ free cortisol.

Plasma ACTH level, ↑, or d/o of A. cortex, meds → ↓ ACTH level.
XR, MRI, CT → lesion → pituitary gland, adrenal gland, lung, GI, pancreas
Tumor, adrenal atrophy

Cushing.

I&O · Daily wt. · S/S. hypovolemia .. Safety - fracture / skin

Infection prevent . ↑ physical activity. Skin care .

position change q2h · Surgical asepsis → dressing change.

Monitor WBC w/diff .

Med: Ketoconazole ↓ adrenal corticosteroid synthesis

Mitotane Destruction of adrenocortical cell.

Hydrocortisone Replacement therapy adrenocortical tissue

Tx. Chemotherapy. tumor .

Radiation therapy.

Hypophysectomy Remove of pituitary gland .

Adrenalectomy remove of adrenal gland .

Pheochromocytoma → Tumor in Adrenal medulla .

Pheochromocytoma. → Tumor → Adrenal medulla

↑ Catecholamine. Induced by trauma. pressure to tumor.

(± Pinephrine/norepinephrine) Stress. meds.

Severe HTN. w/ severe pounding HA.

↑ HR w/ palpitation

profuse sweating. Unexplain abd. pain/CP.

→ Surgical remove of tumor.

Drug: ↓ BP prevent HTN crisis.

Begin tx 10-14 day preop. w/ doxazosin
prazosin

β-blocks → ↓ HR dysrhythmia. → Can't give too early
→ ↑ HTN crisis.