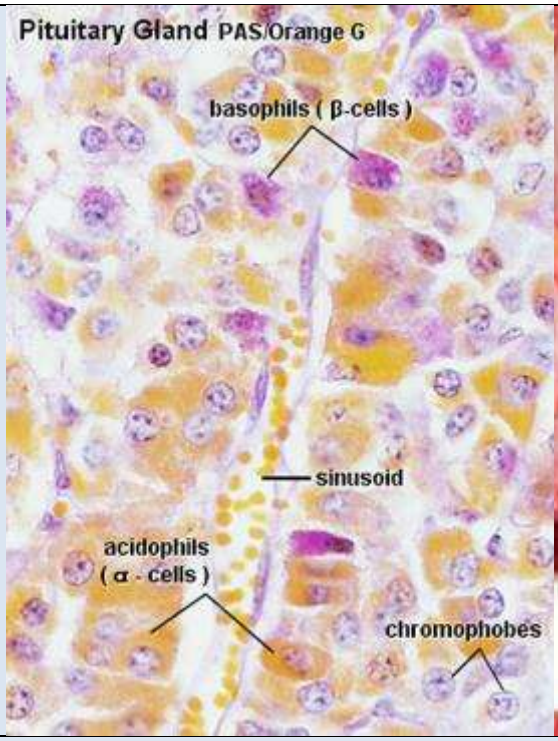
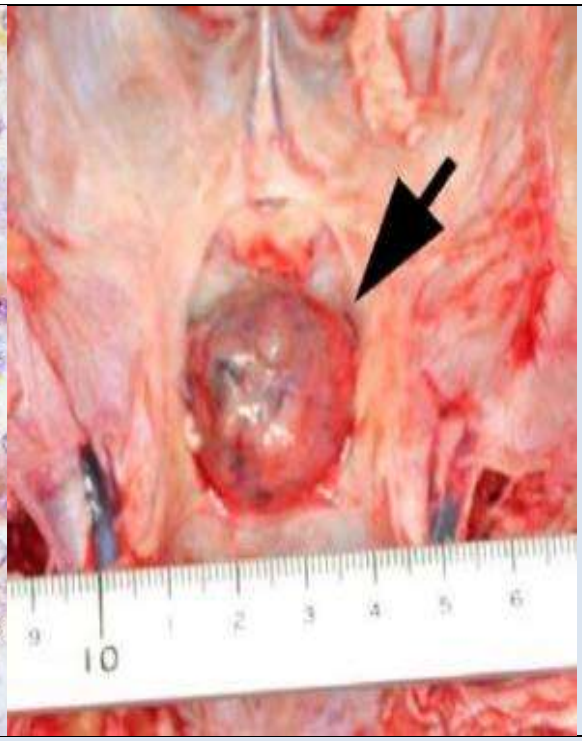




N.B.3:

Hypo-pituitarism: *Congenital deficiency of* ***anterior pituitary***

- ***Though not frequent but is relatively commoner than Hyperpituitarism.***
- The manifestations depend on:
  (1) Age (child or adult),
  (2) Whether destruction of anterior lobe or a tumour is present and
  (3) Whether the hypothalamic region is involved.

Simmonds's syndrome (includes hypopituitarism in children and adults):

1. Childhood hypopituitarism (pituitary dwarfism = infantilism)

The cause:

- *Congenital deficiency of anterior pituitary → cessation of growth*

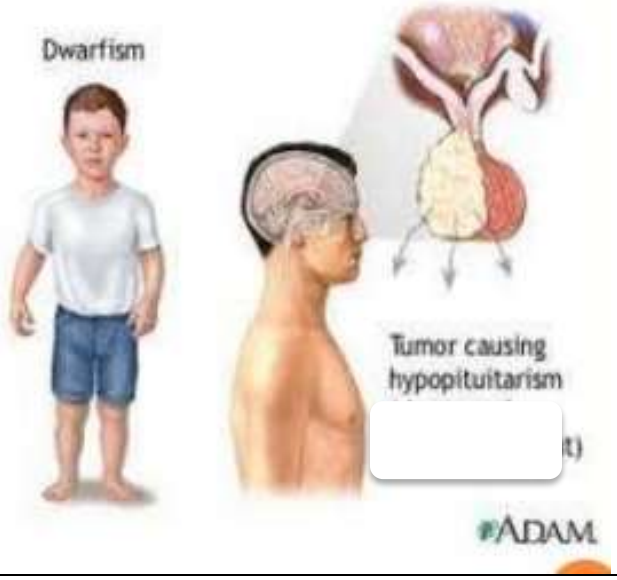
Effects :

1. ***Normal mental development.***
2. Retained bodily proportions without skeletal deformities.
3. General Microsplanchnia → small organs.



PITUITARY DWARFISM

- The **achondroplastic dwarf** has an orthopedic reason for having short limbs and a short spinal colum. The **pituitary dwarf** lacks growth hormone (an endocrine reason).



- **SYMPTOMS:**
  - ✓ GH Deficiency
  - ✓ Low blood sugar

Prevention

There is no preventing pituitary dwarfism

In some cases it may be caused by traumatic injury to the pituitary gland

Children with this disorder are smaller then others however, are just as smart and can lead long healthy lives

2. Adult hypopituitarism (Simmonds's disease = progeria = pituitary old age = premature senility in females).

Causes: Nearly complete destruction or atrophy of the anterior lobe of pituitary as in:

1. Post-partum necrosis or infarction of pituitary at puerperium (Sheehan's syndrome).
2. Surgical removal or accidental trauma.
3. Chromophobe adenoma.
4. Craniopharyngioma.
5. Diffuse fibrosis (syphilitic or tuberculous).
6. Hypofunction (and hypoplasia) and late stages of gigantism and acromegaly.
7. Idiopathic.

Effects:

1. Mental depression, weakness and loss of appetite → cachexia.
2. Gradual atrophy of external and internal genitalia.
3. Loss of sexual desire; sterility.
4. Loss of axillary and pubic hair.
5. Low metabolic rate; sensitivity to cold; low blood pressure.
6. Hypoglycaemia (a flat glucose tolerance curve).
7. Associated fibrosis or atrophy of thyroid, Parathyroids, adrenal glands, ovaries and endometrium.

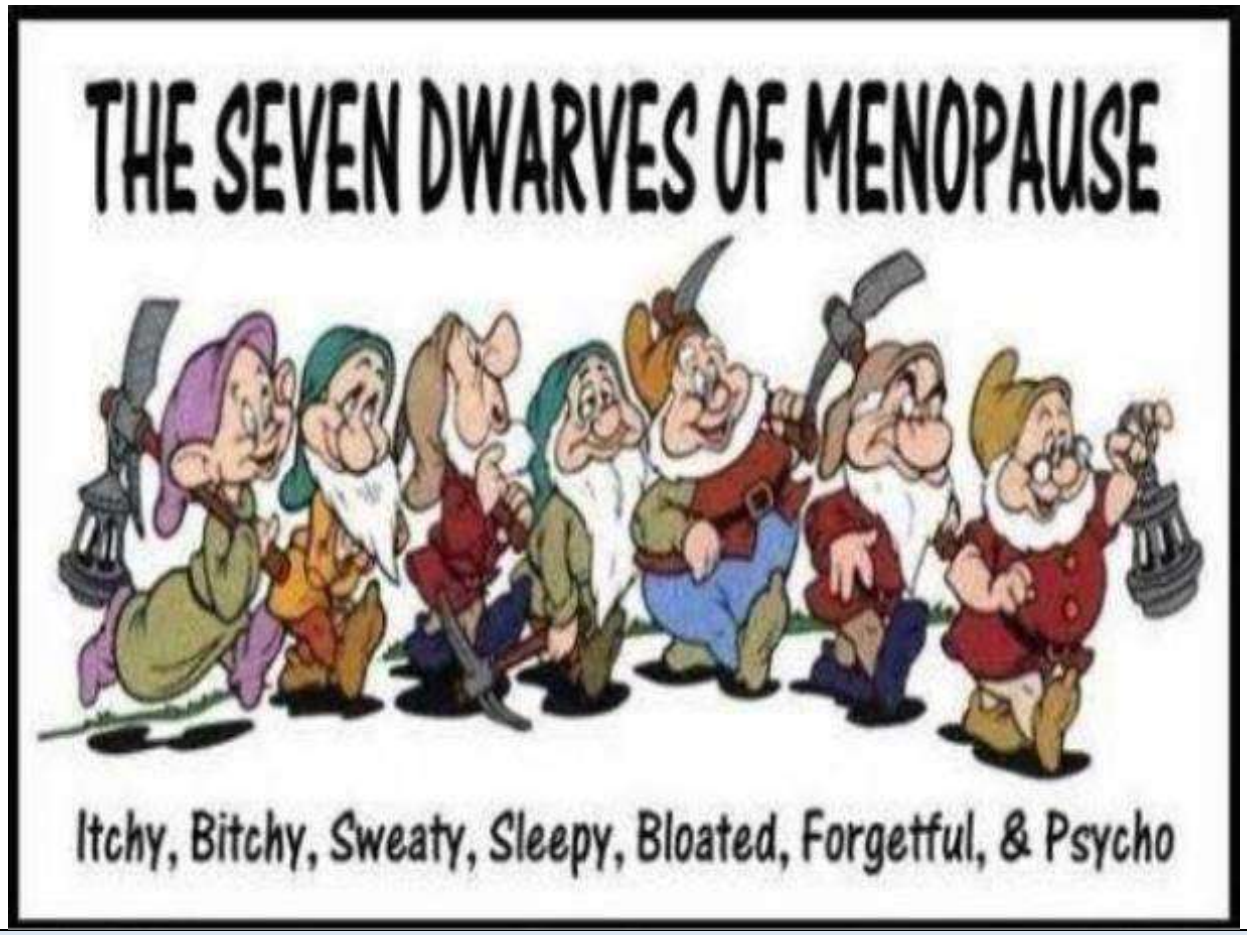
HYPOPITUITARISM

Simmonds' disease

[Panhypopituitarism]
Complete absence
of pituitary hormones
Cachexia:
most prominent feature
Follows destruction
of the pituitary
by surgery, infection,
injury, or a tumor

Sheehan's syndrome

[Post-partum
pituitary necrosis]
A complication
of delivery
Results from severe
blood loss and
hypovolemia
→ Pituitary ischemia



Other clinical types:
3. Froehlich's syndrome (dystrophia-adiposo-genitalis).

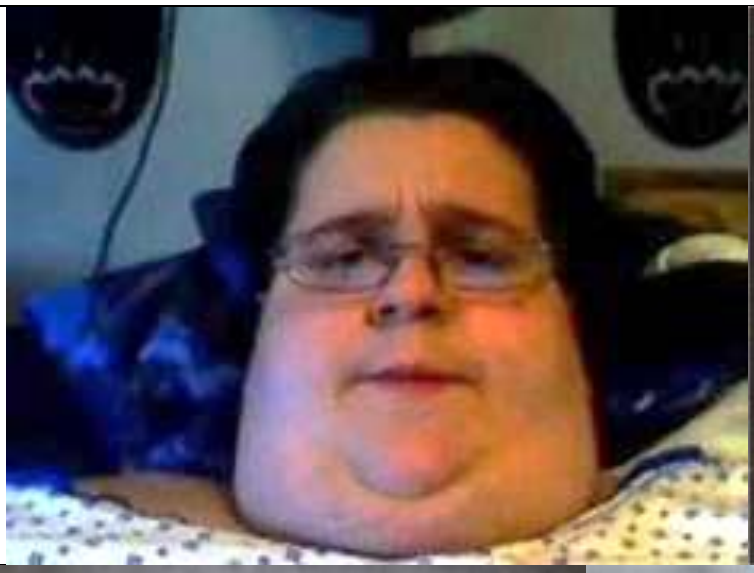
Common; in children and at puberty; there is a hypothalamic lesion as well.

Causes:

- Chromophobe cell adenoma producing pressure-atrophy of eosinophil and basophil cells; and, implicating the posterior pituitary (& hypothalamus).

Effects:

1. Sexual infantilism and external hypoplasia → **impotence and amenorrhea**.
2. Excessive **sudden adiposity** with fluctuations (in breasts, hips and abdomen).
3. Atrophy of dermal connective tissue → **hairless thinned out skin.**
4. Some mental retardation.
5. Low basal metabolic rate.

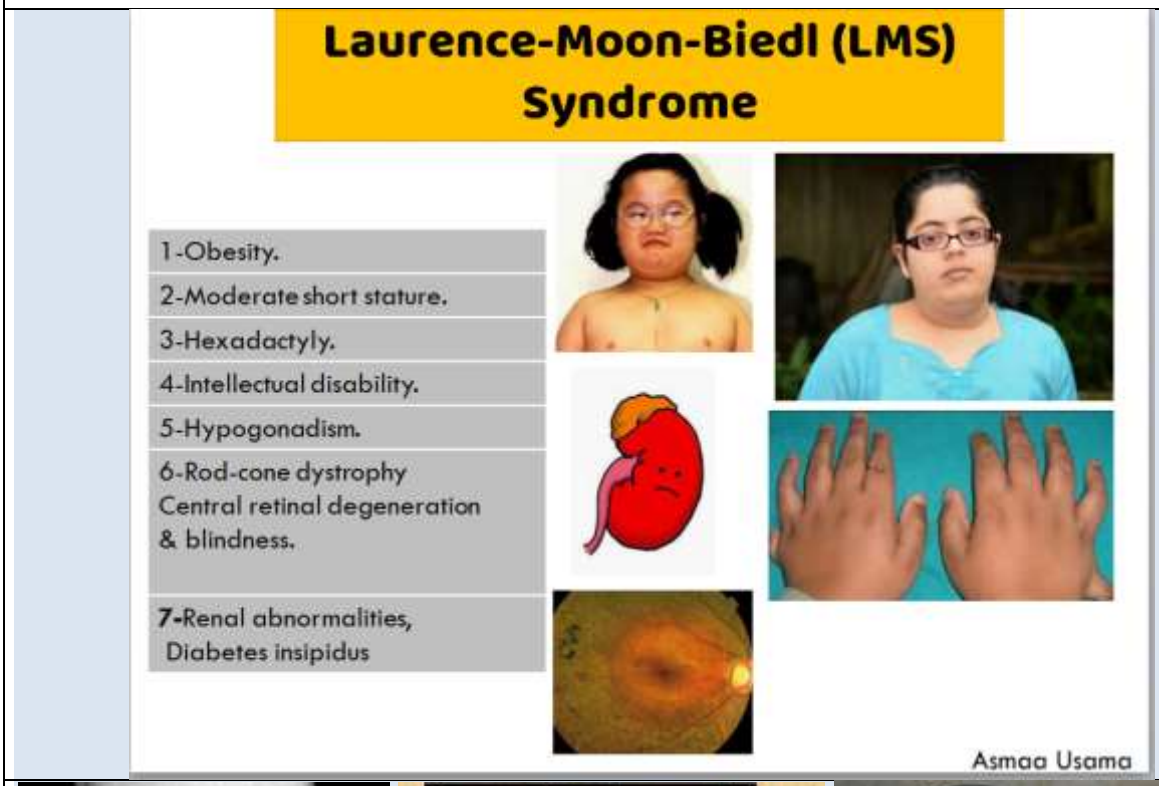


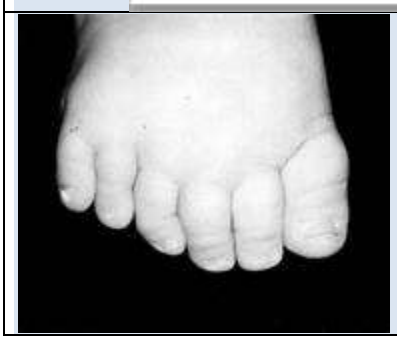
Judith M. Froehlich

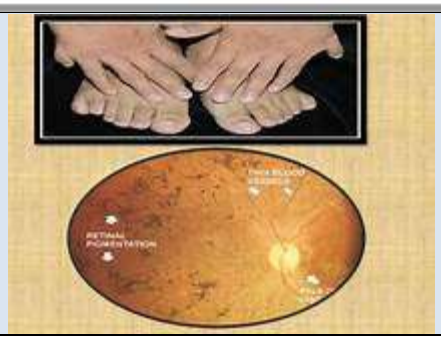
Hanna Froehlich

4. Laurence-Moon-Biedl syndrome:
A variation of Froehlich's syndrome.

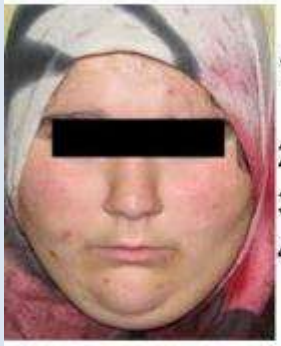
- **In addition to :**
  1. Adiposity.
  2. Genital dystrophy.
- There are:
  3. ***Poly-dactylism (six fingers and six toes).***
  4. ***Retinitis pigmentosa → partial blindness.***
  5. ***Retarded mental development.***
  6. ***A familial tendency.***



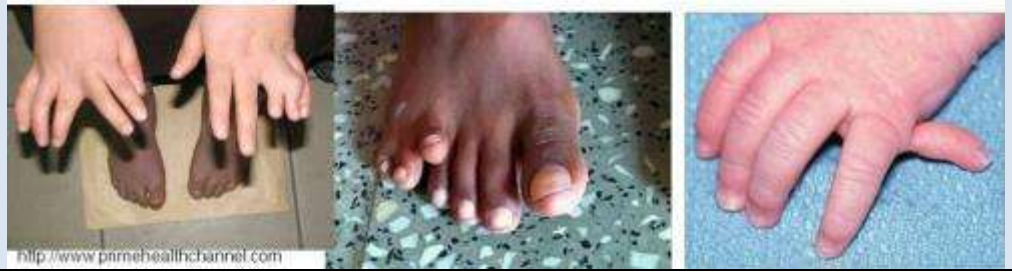




Laurence-Moon-Biedl syndrome or *Laurence-Moon-Biedl-Bardet*



1. Obesity, hypogenitalism like in patients with Babinsky-Frelych's disease.
2. Decreased mental activity or debility.
3. Pigmental retinitis.
4. Bones or inner organs abnormalities (polydactylia, syndactylia and others)



5. The Lorain Syndrome (Peter-Pan).

- ***A graceful attractive child who does not seem to grow up:***
    1. Genital hypoplasia (undeveloped sexually).
    2. Small stature but the body is of **normal proportions.**
    3. **Bright mentally.**

Pituitary Dwarfism
(Lorain-Levi syndrome)

- This is caused by severe deficiency of GH, and possibly of other hormones, in childhood.
- The individual is of small stature, height of adult is 3 ft. but is well proportioned, head is slightly larger in relation to body.
- Mental development is not affected.
- Puberty is delayed and there may be episodes of hypoglycaemia..

6. Brissaud's syndrome.

- Dwarfism + thyroid deficiency.

N.B. 4
Hypo-function of the posterior pituitary:

- This results in diabetes insipidus with
    a. Polyuria at first (dilute urine up to 10 liters/day and
    b. Sp. Gr. 1.002; with no sugar or albumin) and
    c. Polydipsia (thirst) later on.

Causes of diabetes insipidus:

1. Hypofunction of the posterior pituitary.
2. Traumatic injury of hypothalamus or interruption of its nerve-tracts (by operation).
3. Degeneration or disuse.
4. **Tumours:**
    - **Primary** (Chromophobe adenoma; craniopharyngioma).
    - **Secondaries** (from cancer of lung or breast).
5. Congenital (hereditary) or idiopathic.
6. Meningitis; encephalitis.
7. Tuberculosis; sarcoidosis.
8. Hand-Schuller-Christian disease.

A pituitary tumour may be associated with a hypothalamic syndrome:

1. Polyuria.
2. Adiposity.
3. Pathological sleep (hypersomnelence).

Types of DI:-

two types of DI- Central and nephrogenic

1. **Central DI**:-Is a lack of ADH production and is due to damage to the pituitary gland or hypothalamus where ADH is produced.

1. **Nephrogenic DI** :-Is lack of response of the kidney to the fluid-conserving action of ADH

- It also can be due to diseases of the kidney (such as **polycystic kidney disease**), certain drugs (such as lithium)

Diabetes Mellitus & Diabetes Insipidus

Differences

Sugar Diabetes	Water Diabetes
Sweet Urine	Bland/pale/insipid Urine
Insulin from Pancreas Controls glucose utilization	Vasopressin from Hypothalamus Regulates Body's water retention

Similarities

Excessive Thirst (more in Insipidus)
Dependended on hormones for control

Pee a lot

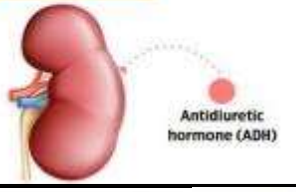
Diabetes Insipidus

Urine: Dilute (Low sodium concentration)
Serum: Concentrated (High sodium concentration)

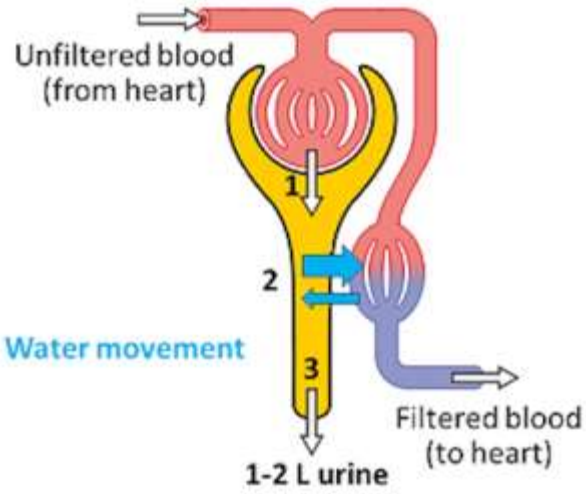
Central **Decreased secretion** of ADH

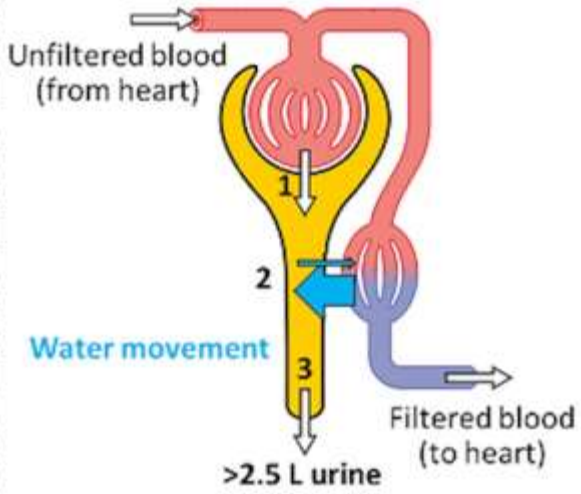
Causes
- Idiopathic
- Head trauma
- Pituitary tumor
- Neurosurgery

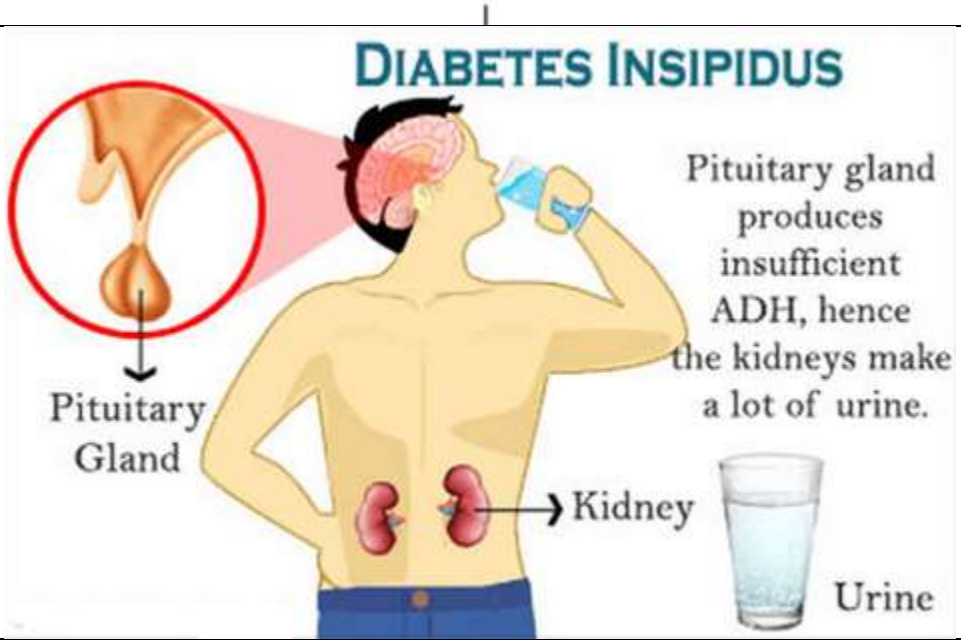
Nephrogenic **Kidney Resistance** to ADH



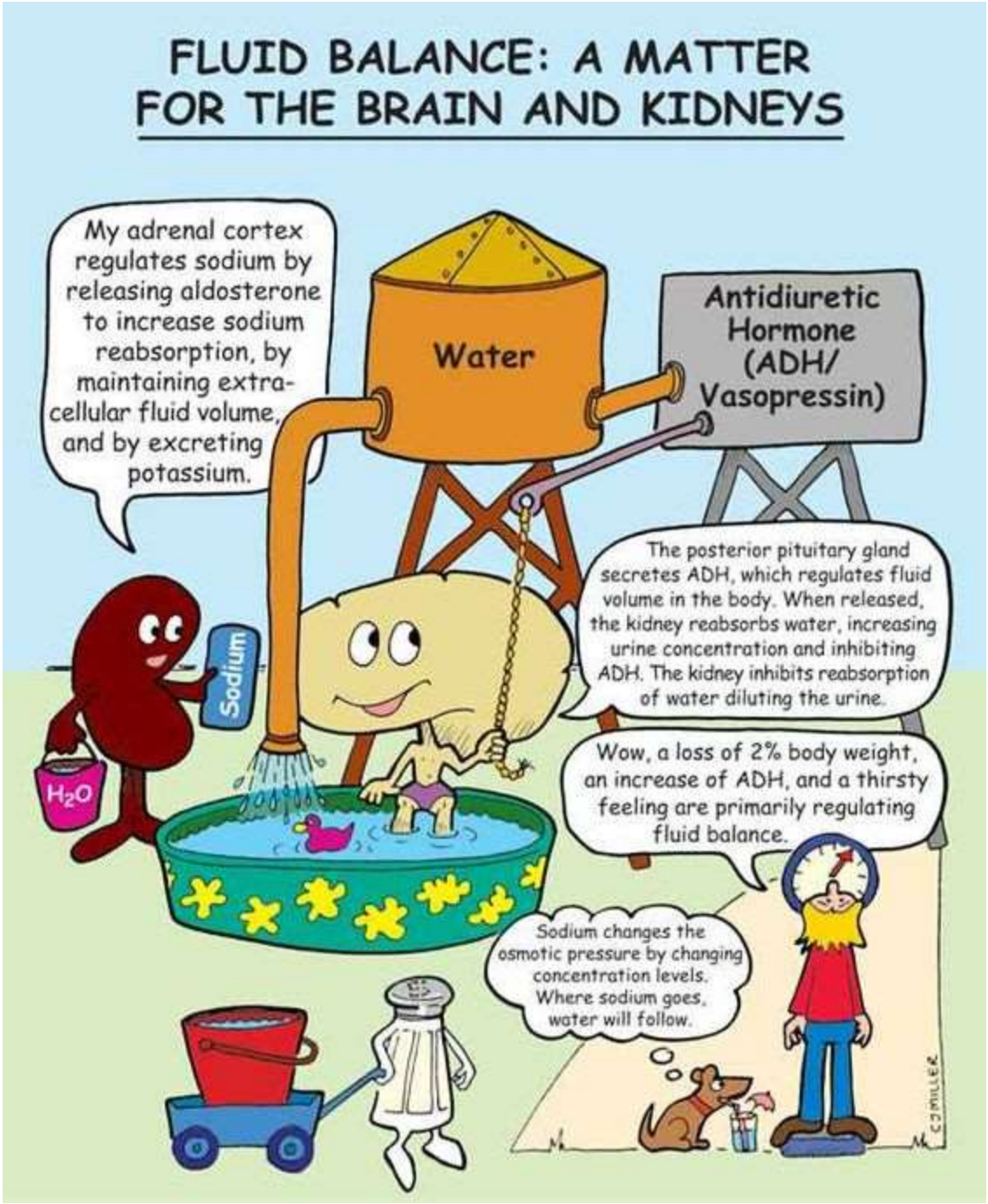
Causes
- Lithium toxicity
- Renal disease
- Hypokalemia
- Pregnancy
- Medications


Normal Conditions
Unfiltered blood
(from heart)
1
2
Water movement
3
Filtered blood
(to heart)
1-2 L urine


Polyuria
Unfiltered blood
(from heart)
1
2
Water movement
3
Filtered blood
(to heart)
>2.5 L urine


DIABETES INSIPIDUS
Pituitary gland produces insufficient ADH, hence the kidneys make a lot of urine.
Pituitary Gland
Kidney
Urine

FLUID BALANCE: A MATTER FOR THE BRAIN AND KIDNEYS



HYPERNATREMIA

"THE MODEL"
(Causes of ↑ serum sodium)

M Medications, meals
(too much sodium intake)

O Osmotic diuretics

D Diabetes insipidus

E Excessive H_2O loss

L Low H_2O intake