Serum sodium level < 134 mmol/L

Measure effective serum tonicity
(serum osmolality – serum urea level)

Hypotonicity
(< 280 mOsm/kg)

Normotonicity/
hypertonicity
(≥ 280 mOsm/kg)

True hyponatremia

A. Pseudohyponatremia
(hyperlipidemia,
hyperparaproteinemia etc.)

B. Presence of osmotically
active substances
(glucose, mannitol)

Measure urine osmolality (or specific gravity)

< 100 mOsm/kg

≥ 100 mOsm/kg

Normal
water excretion

Impaired water
excretion

Primary polydipsia
Reset osmostat syndrome

Exclude hypothyroidism
and adrenal insufficiency
(serum TSH, cortisol)

Measure urine sodium level

< 20 mmol/L

20–40 mmol/L

> 40 mmol/L

Hypovolemia, including
EABV depletion states
(e.g., heart failure, cirrhosis,
nephrotic syndrome)

2 L/d 0.9% saline
intravenously for 2 days

SIADH, reset osmostat
syndrome, renal salt
wasting

Measure change in
serum sodium level

Salt supplementation
+ water restriction to normalize
serum sodium level

≥ 5 mmol/L

< 5 mmol/L

Normal serum urate
+ reduced FE_{urate}

Hypouricemia +
unchanged FE_{urate}

Hypovolemia

SIADH or
reset osmostat
syndrome?

SIADH

Renal salt
wasting

FE_{urea} > 55%
Serum urate level
<4 mg/dl ~~< 0.24 mmol/L~~
FE_{urate} > 10%

Oral or intravenous
water-loading test

SIADH

Reset osmostat
syndrome

Fig. 1: Clinical diagnostic algorithm for hyponatremia. TSH = thyroid-stimulating hormone, EABV = effective arterial blood volume, SIADH = syndrome of inappropriate secretion of antidiuretic hormone, FE = fractional excretion.