3.2: Insensible Water Loss

What is 'insensible' water loss?

This term refers to water loss due to:

- Transepidermal diffusion: water that passes through the skin and is lost by evaporation, and
- Evaporative water loss from the respiratory tract

It is termed *insensible* as we are not aware of it.

**KEY POINT:** This is loss of pure water: there is no associated solute loss.

This solute-free water loss differs from sweating as sweat contains solutes. Insensible loss is different from sweating.

Insensible loss from the skin cannot be eliminated. Daily loss is about 400 mls in an adult.

Insensible loss from the respiratory tract is also about 400 mls/day in an unstressed adult. The water loss here is variable: it is increased if minute ventilation increases and can be decreased if inspired gas is fully humidified at a temperature of 37°C (e.g. as in a ventilated ICU patient).

The minimal insensible loss in an adult is about 800 mls/day. This is equivalent to a heat loss of about 480 kcals/day which is about 25% of basal heat production. On an average unstressed day, activity will increase insensible respiratory water losses so that the overall insensible loss is more than the minimum: an estimate of 50 mls/hr has been suggested.
for use in unstressed hospitalised patients. In clinical calculations of fluid balance, insensible losses are unmeasured and are usually accounted for by an estimate such as the one above. Metabolic water production (400 mls/day) is also unmeasured and can be considered to replace up to 50% of the insensible losses.

In simple bedside analysis of a patient's fluid balance, insensible loss is ignored as it cannot be measured. Similarly metabolic water production is ignored in a quantitative analysis of daily fluid balance. Even more significantly sweating is also ignored and volume loss with sweating can be quite large. The clinician doesn't have much choice as the volumes of these fluids cannot be routinely measured. The typical clinical practice is to calculate water input as (oral fluids + IV fluids) and water loss as (urine + other measured losses) and make a clinical estimate of the additional fluids required. The clinical estimate is based on factors such as assessment of the blood volume (BP including postural drop, pulse rate, CVP, urine flow rate, evidence of peripheral vasoconstriction based on colour and temperature) and knowledge of the pathophysiology of the disease process (such as typical expected losses e.g. in burn injury).

This is the best available approach because it is dependent mostly on clinical endpoints.