

should be avoided in cirrhotic patients in particular, who are at higher risk of nephrotoxicity due to drug accumulation. If available, palatable preparations of oral urea can also be used to manage SIAD, with comparable efficacy to AVP antagonists (vaptans); the increase in solute excretion with oral urea ingestion increases free water excretion, thus reducing the plasma Na^+ .

AVP antagonists (vaptans) are highly effective in SIAD and in hypervolemic hyponatremia due to heart failure or cirrhosis, reliably increasing plasma Na^+ concentration due to their “aquaretic” effects (augmentation of free water clearance). Most of these agents specifically antagonize the V_2 AVP receptor; tolvaptan is currently the only oral V_2 antagonist to be approved by the U.S. Food and Drug Administration. Conivaptan, the only available intravenous vaptan, is a mixed V_{1A}/V_2 antagonist, with a modest risk of hypotension due to V_{1A} receptor inhibition. Therapy with vaptans must be initiated in a hospital setting, with a liberalization of fluid restriction (>2 L/d) and close monitoring of plasma Na^+ concentration. Although approved for the management of all but hypovolemic hyponatremia and acute hyponatremia, the clinical indications are limited. Oral tolvaptan is perhaps most appropriate for the management of significant and persistent SIAD (e.g., in small-cell lung carcinoma) that has not responded to water restriction and/or oral furosemide and salt tablets. Abnormalities in liver function tests have been reported with chronic tolvaptan therapy; hence, the use of this agent should be restricted to <1 – 2 months.

Treatment of acute symptomatic hyponatremia should include hypertonic 3% saline (513 mM) to acutely increase plasma Na^+ concentration by 1 – 2 mM/h to a total of 4 – 6 mM; this modest increase is typically sufficient to alleviate severe acute symptoms, after which corrective guidelines for chronic hyponatremia are appropriate (see below). A bolus of 100 mL of hypertonic saline is more effective than an infusion, rapidly improving both serum sodium and mental status. For ongoing infusions, a number of equations have been developed to estimate the required rate of hypertonic saline, which has an Na^+ - Cl^- concentration of 513 mM.