

## Winter Kidney Stones

This article on winter kidney stones is meant to be a broader reminder of the much commoner occurrence of winter dehydration. The problem of dehydration in winter may seem backwards. Isn't dehydration a summer problem? It is, very much so; but in summer, dehydration is generally more obvious and intuitive as water is overtly lost as sweat. In winter, dehydration is typically insidious, occurring as urinary water loss partly due to drinking more coffee and alcohol, and virtual water loss due to consuming more *solutes* (i.e. salt and sugar), all while drinking less water. Coffee and alcohol are diuretics, meaning they stimulate the kidneys to waste water by forming inappropriately dilute urine, resulting in dehydration, which then results in concentrated urine after all. Excess solutes like salt and sugar redistribute body fluids, causing virtual dehydration without actual water loss as water is diverted inside your body to balance solution concentrations.

Dehydration does not cause kidney stones in itself, but dehydrated conditions are known to aggravate the incidence of kidney stones when other precipitating factors are present. The word *precipitate* is a literal fit in this case: Water has a limited capacity to hold a solute. If the amount of solute in water exceeds this limit (*saturation*), the excess precipitates out as a solid snow of crystals. Once formed, a crystal attracts more of its element and grows. Several solutes occurring in urine can potentially form crystals, or stones, in the kidneys. Dehydration increases the concentration of these solutes in urine. Decreased winter water intake and increased winter coffee, alcohol, and solute intake contribute to dehydration. This secondarily contributes to an increased incidence of kidney stones. Bulky sharp-edged crystals moving through the sensitive urinary system can cause both direct injury and exquisite pain, and are *not* easy to retrieve clinically.

Hydration is necessary for health all year round. Decreased alcohol, coffee, and solute intake, and at least a *tall glass of water three times a day* is intuitive in warm summer weather, and just as important in cold winter weather.

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