

Clinical Quality Bulletin

August 2010

“The Fatal Four” - Part 2

Dehydration

There are four major health issues that occur more frequently in persons with a Developmental Disability, often resulting in significant morbidity and mortality. They are aspiration, dehydration, constipation and seizures and are referred to as "The Fatal Four." In this new series of Clinical Quality Bulletins, we will take an in-depth look at each of the "Fatal Four." Last year, we reviewed aspiration; as we are in the middle of another hot summer season begins, we will discuss Dehydration.

It will be important to review the signs and symptoms of dehydration with caregivers and group home staff:

- 1) Dry mouth
- 2) Rapid weight loss
- 3) Sleepy, difficult to arouse
- 4) Decreased urination
- 5) Dark, concentrated urine
- 6) Few or no tears when crying
- 7) Muscle weakness
- 8) Headache
- 9) Dizziness

In severe dehydration, sunken eyes, a lack of sweating, low blood pressure and rapid heart beat can be seen. It will also be important to remind them that mild to moderate dehydration can be managed with increasing fluid intake, but severe dehydration is a medical emergency!

Dehydration may occur quickly in persons with a Developmental Disability in the heat of an Arizona summer. Other common causes of dehydration include:

- 1) Vomiting and diarrhea
- 2) Fever
- 3) Excessive sweating
- 4) Increased urination, which can be caused by
 - a) Undiagnosed or uncontrolled diabetes mellitus
 - b) Diabetes insipidus
 - c) Medications such as diuretics and blood pressure medications
- 5) Burns

Who is at higher risk for dehydration?

The Mayo Clinic website <http://www.mayoclinic.com/health/dehydration/DS00561> lists the following groups of people as being at higher risk for dehydration:

- 1) Infants and children
- 2) Older adults: the older you are, the higher the risk
- 3) Persons with chronic illnesses such as:
 - a) Uncontrolled or untreated diabetes mellitus
 - b) Kidney disease
 - c) Cystic Fibrosis
 - d) Alcoholism
- 4) Persons who live at high altitudes (8,000 to 12,000 feet)

Persons with a Developmental Disability are also at a higher risk for dehydration. The Oregon Department of Health Services Developmental Disabilities Nursing Manual (available at http://www.oregon.gov/DHS/spd/provtools/dd/nursing_manual/dehydration.shtml) lists some of the risk factors for persons with a Developmental Disability becoming dehydrated:

- 1) Immobility or physical limitations where individuals cannot access fluids independently.
- 2) Speech/communication limitations making it difficult to tell caregivers when they are thirsty.
- 3) Marginal fluid intake

Some medications can also complicate the identification of dehydration. For example, Zonegran (Zonisamide) and Topamax (Topiramate), two of the medications used to treat epilepsy can lead to decreased sweating, and high body temperatures.

Psychiatric medications may also pose a risk to patients during hot, sunny weather:

- 1) Many antipsychotic medications (major tranquilizers), such as Thorazine (Chlorpromazine), Mellaril (Thioridazine), Haldol (Haloperidol) and Risperdal (Risperidone) can cause two different issues:
 - a) These medications may decrease the body's ability to sweat.
 - b) They may also can the skin to become photosensitive. Persons taking these medications should be strongly encouraged to use sunscreen every time they are out in the sun.
- 2) Lithium (Lithium carbonate, Lithonate, Lithobid) is frequently used for the treatment of Bipolar Disorder (Manic Depression) or aggressive behavior. Persons who are treated with Lithium and become dehydrated are at a very high risk for developing **Lithium Toxicity**.

If you are trying to communicate to caregivers why Lithium toxicity is so dangerous, the following analogy may be helpful:

Think of the body's total water as a glass of water in which the Lithium is dissolved. If half the water evaporates from the glass, where does the Lithium go? Nowhere! But it is dissolved in the half the water it was dissolved in before. It's concentration in the glass is now double what it was before!

So, when dehydration occurs and the concentration of Lithium gets too high in the body's remaining water, Lithium toxicity can occur and can be life-threatening. The first signs of Lithium toxicity include:

- 1) Nausea and vomiting
- 2) Cramping
- 3) Diarrhea

Neurologic effects of Lithium toxicity are:

- 1) Tremors
- 2) Lethargy
- 3) Confusion
- 4) Ataxia

Moderate to severe Lithium toxicity may result in:

- 1) Altered Mental Status
- 2) Muscle Fasciculations
- 3) Stupor
- 4) Seizures
- 5) Coma
- 6) Hyperreflexia
- 7) Cardiovascular Collapse

Treatment for Lithium toxicity may include:

- 1) Airway protection to avoid risk of aspiration
- 2) Gastric lavage may be useful if the patient is seen within 1 hour of ingestion
- 3) Fluid Therapy
- 4) Hemodialysis

However, the best way to avoid Lithium Toxicity and Dehydration is **PREVENTION!!!!**
Encourage your patients to do the following:

- 1) Always carry a water bottle for each person in the group when going out in the sun.
- 2) Always drink when you are thirsty -don't ignore a dry mouth or other signs of dehydration.
- 3) Soda pop is not a good choice for rehydration because it contains too much sugar and not enough sodium to replace electrolytes.
- 4) Increase intake of foods with a high water content, such as fruits and vegetables.
- 5) Increase fluid intake at the first sign of illness such as a cold or the flu.

We hope that this information will be useful to you in your care of persons with a Developmental Disability. The Division thanks you for your care of our enrolled members through our contracted health plans.

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Resources:

Lee, D.C. & Gupta, A., *Lithium Toxicity*, downloaded from <http://emedicine.medscape.com/Article/815523> on 06/28/2010

Mayo Clinic staff, Dehydration, downloaded from <http://www.mayoclinic.com/health/dehydration/DS00561> on 05/27/2010

Oregon Department of Health Services, *Developmental Disabilities Nursing Manual*, downloaded from http://www.oregon.gov/DHS/spdl/provtools/dd/nursing_manual/dehydration.shtml on 10/21/2008