

Lead toxicity - a new risk factor for heart attack and stroke?

Lead is a naturally occurring element present in soil and rock - as such lead enters the water supply by a process of leaching. Lead is easily mined and smelted & because it is soft and easily shaped lead was widely used by the ancients to make implements for eating and for drinking and for piping water.

Lead poisoning was first identified in the second century BC by the Greek physician Dioscorides who recognized symptoms of impaired memory, abdominal pain, constipation, headaches, and gout. By the early 1900s chronic lead poisoning was known to be a cause of dementia, kidney failure and gout.

Public health measures instituted between 1950 and 1985, including prohibition of the use of lead pipes for water supplies and the removal of lead as an additive to paint and gasoline reduced population blood lead levels (BLL) by 70%. Currently a BLL >10 ug/dL is considered toxic however it is increasingly appreciated that there is no "safe" BLL other than zero. Population surveys in major Canadian and American urban centres indicate that 20% of adults have a BLL > 5 ug/dL.

The treatment of lead toxicity is to remove lead from the body by using chelation therapy. Chelation therapy relies on a chelating agent binding lead in the blood stream and allowing excretion of the lead in the urine. The commonest chelating agent is calcium disodium edetate (EDTA). EDTA is given by an intravenous drip over 3 hours. Typical treatments are weekly for 40 weeks. The treatment is safe and without common side-effects.

There is now strong evidence to suggest that BLL levels < 5 may be a modifiable risk for heart disease and stroke. The best evidence is twofold

- 1) Epidemiologic: the higher the BLL, the greater the risk of heart attack. [A study published in April 2018](#) indicated that 18% of all heart attacks and stroke may be caused by elevations in BLL &
- 2) Randomized Clinical Trial: [TACT published in 2013](#) showed that individuals with diabetes aged 50+ with a history of heart attack who underwent chelation therapy experienced a 43% reduction in death rate.

BCDiabetes is currently involved in [TACT2](#), a follow-up chelation study designed to further validate & replicate the original TACT study. If TACT2 shows chelation therapy to have the same powerful benefits it is likely that chelation therapy will become an

additional standard therapy for individuals with diabetes with heart disease, just like blood glucose, blood pressure and cholesterol management are now.

To be eligible for TACT2 individuals must have a history of Type 1 or Type 2 diabetes, be over the age of 50 and have had a previous heart attack. Subjects would need to come to BCDiabetes premises weekly for 40 weeks over the period of 52 weeks to receive the study treatment. Subjects will receive an honorarium of \$50 cash at every visit to help cover time & travel expenses.

For more information about TACT2 [follow this link](#), email msharbin@bcdiabetes.ca or phone 604-683-3734 ext 7013.