**Prenatal Vitamin D: a risk factor for chronic disease?**

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**Background:** Vitamin D status is implied in a variety of chronic diseases – multiple sclerosis, type 1 and 2 diabetes, various cancers, osteoporosis, psychiatric illness and cardiovascular diseases. Most work has focused on current or immediately antecedent Vitamin D status or latitude of residence (thought to be a proxy for the vitamin D chronic disease susceptibility).

**A risk factor for MS, schizophrenia, brain tumours or epilepsy?**

- **Multiple Sclerosis (MS):**
  - Vitamin D is involved in normal brain development: [18]
  - In MS patients, oligodendrocytes are reduced in brain regions, e.g. cortex (25-Hydroxyvitamin D3) [19]

- **Schizophrenia:**
  - In rats, offspring of vitamin D deficient mothers had significant impairment of latent inhibition [20-21]
  - Decrease in cortical thickness at birth
  - In rats, high dose vitamin D during gestation and early development resulted in adverse effects on brain development

- **Brain tumours and epilepsy:**
  - Excess winter births in children with osteosarcoma and ependymoma [22] (may reflect increased cancer risk associated with the high levels of 25(OH)D during winter months)
  - In rats, high dose vitamin D during gestation and early development resulted in adverse effects on brain development

**Observational studies:**

- Region of vitamin D supplementation during the first year of life is associated with reduced risk of schizophrenia in males [23].
- Vitamin D reduces the risk of schizophrenia in males [24].
- Maternal vitamin D supplementation could be an important public health measure to decrease risk for a range of chronic diseases.

**Implications:** Maternal vitamin D supplementation could be an important public health measure to decrease risk for a range of chronic diseases. However, there is sufficient evidence that high vitamin D levels may also increase disease risk that further research is required, using innovative study methods to limit recall error of an exposure that has occurred many years before disease onset.