

UND Population Health Research



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Population Health

- Population Health = “Epidemiology + Attitude.”
- *Epidemiology is the study of the distribution and determinants of disease frequency in human populations.**
- The “attitude” is that many determinants of disease can be changed.

North Dakota and Chronic Lymphocytic Leukemia

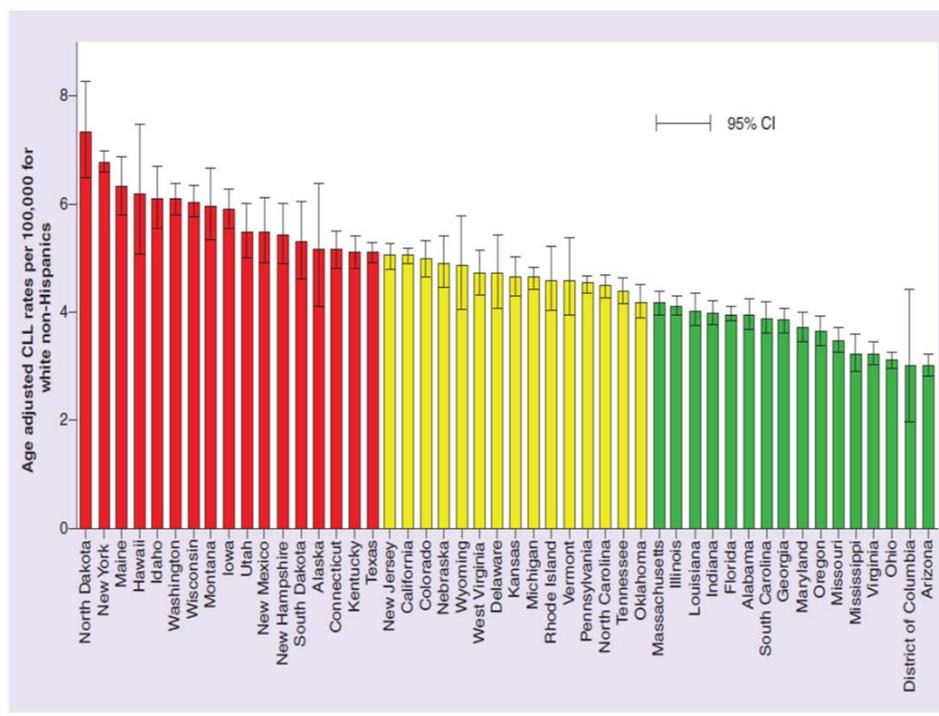


Figure 1. Age-adjusted incidence rates for chronic lymphocytic leukemia by US states 2007–2011 among white non-Hispanics. Bars are 95% CI.

- Chronic lymphocytic leukemia (CLL) is the most common leukemia in the Western world.
- Its cause is unknown.
- North Dakota has the highest rate of CLL in the U.S.
- *Why?*

Promoting Radon Awareness in North Dakota

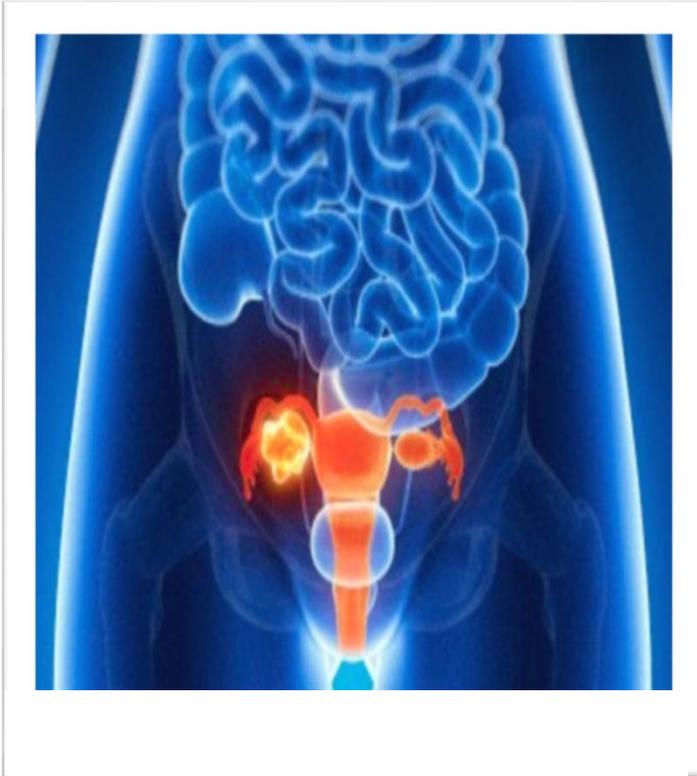
- Radon causes lung (and perhaps other) cancers, yet few North Dakotans are aware of radon.
- We are beginning a (grant-funded) program of radon education in middle schools.
- Our goals is to increase radon awareness and to encourage homeowners to remediate their homes.



Radon Outreach and Research



Epithelial Ovarian Cancer

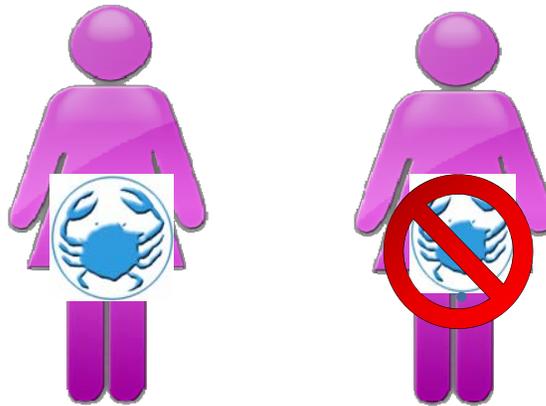


- 21,290 new cases per yr.
- 14,189 deaths
- A woman in the U.S. has a 1/72 chance of developing ovarian cancer.
- 5%–10% of U.S. women undergo surgery for a suspected ovarian cancer.

Molecular Epidemiology and Ovarian Cancer

- We found that “healthy” women whose blood calcium levels were high were more likely to die from ovarian cancer years later. This likely occurs because ovarian cancers secrete hormones that cause calcium levels to rise.
- Since calcium levels were higher in women with cancer but no symptoms, calcium should be very high in women with cancer and symptoms.
- This is important in the clinic when faced with women who have an abdominal mass that may be cancer.

Calcium Predicts Cancer in Women With Abdominal Masses



- Most ovarian masses are not cancer; some are.
- We must predict cancer *before surgery* since women with cancer survive longer if treated by a gynecologic oncologist. However, there are no gynecologic oncologists in ND.
- *How do we decide which women are referred to a specialist out of state?*
- We found that, among 500 women with abdominal masses, women with high serum calcium were 14 X more likely to have a mass that was malignant.
- This finding has direct implications for improving survival among ND women with cancer.

Population Health: “Take Home” Message

- **Discoveries from UND Population Health directly benefit North Dakotans.**
- The value of this research extends beyond North Dakota, as CLL is the commonest leukemia in the Western world and ovarian cancer causes a significant loss of life worldwide.
- **Thus, discoveries from UND Population Health benefit the health of populations beyond the Northern Plains.**