

## Seroprevalence for *Brucella* spp. in Baltic ringed seals (*Phoca hispida*) and East Greenland harp (*Pagophilus groenlandicus*) and hooded (*Cystophora cristata*) seals

Zoonotic infections transmitted from marine mammals to humans in the Baltic and European Arctic are of unknown significance, despite given considerable potential for transmission due to local hunt. Here we present results of an initial screening for *Brucella* spp. in Arctic and Baltic seal species. Baltic ringed seals (*Pusa hispida*, n = 12) sampled in October 2015 and Greenland Sea harp seals (*Pagophilus groenlandicus*, n = 6) and hooded seals (*Cystophora cristata*, n = 3) sampled in March 2015 were serologically analysed for antibodies against *Brucella* spp. The serological analyses were performed using the Rose Bengal Test (RBT) followed by a confirmatory testing of RBT-positive samples by a competitive-enzyme linked immunosorbent assay (C-ELISA). Two of the Baltic ringed seals (a juvenile male and a juvenile female) were seropositive thus indicating previous exposure to a *Brucella* spp. The findings indicate that ringed seals in the Baltic ecosystem may be exposed to and possibly infected by *Brucella* spp. No seropositive individuals were detected among the Greenland harp and hooded seals. Although our initial screening shows a zoonotic hazard to Baltic locals, a more in-depth epidemiological investigation is needed in order to determine the human risk associated with this.

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### [Åben publikation](#)

## Prevalence of antibodies against *Brucella* spp. in West Greenland polar bears (*Ursus maritimus*) and East Greenland muskoxen (*Ovibos moschatus*)

Zoonotic infections transmitted from terrestrial and marine mammals to humans in European Arctic are of unknown significance, despite considerable potential for transmission due to local hunt and a rapidly changing environment. As an example, infection with *Brucella* bacteria may have significant impact on human health due to consumption of raw meat or otherwise contact with tissues and fluids of infected game species such as muskoxen and polar bears. Here, we present serological results for Baffin Bay polar bears (*Ursus maritimus*) (n = 96) and North East Greenland muskoxen (*Ovibos moschatus*) (n = 32) for antibodies against *Brucella* spp. The analysis was a two-step trial initially using the Rose Bengal Test (RBT), followed by confirmative competitive enzyme-linked immunosorbent assays of RBT-positive samples. No muskoxen had antibodies against *Brucella* spp., while antibodies were detected in six polar bears (6.25%) rendering a seroprevalence in line with previous findings in other Arctic regions. Seropositivity was not related to sex, age or biometrics i.e. size and body condition. Whether *Brucella* spp. antibodies found in polar bears were due to either prey spill over or true recurrent *Brucella* spp. infections is unknown. Our results therefore highlight the importance of further research into the zoonotic aspects of *Brucella* spp. infections, and the impact on wildlife and human health in the Arctic region.

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## Study of correlation between the NAT2 phenotype and genotype status among Greenlandic Inuit

N-acetyltransferase 2 (NAT2) is the main enzyme metabolizing isoniazid and genotype-based treatment has been studied for years without becoming common practice. To investigate whether genotype-based isoniazid treatment is feasible in Greenland, we sequenced the coding sequence of NAT2 and determined the NAT2 enzyme-activity by caffeine test.

No additional genetic variants were identified in the coding sequence of NAT2, so that genotype status in 260 study participants could be assessed by a well-established 7-SNP panel. Studying the enzyme activity by the ratio of the two caffeine metabolites AFMU and 1X in 260 participants showed a high rate of slow phenotypes with intermediate or rapid genotype. These misclassifications were mainly observed in urine samples with pH3, we observed a moderate level of discrepancies (19 of the 116 individuals with intermediate or rapid genotype status having a slow phenotype). Further investigation showed that drinking coffee and not tea or cola was the most important factor for high levels of both metabolites.

The concordance between phenotype and genotype status with regard to slow metabolism supported the recommendation of lower isoniazid doses in individuals with slow genotype status in order to avoid liver injury, a frequent side effect. The phenotypical variation observed for individuals with intermediate or rapid genotype status warrants further research before increased dosing of isoniazid can be recommended.

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## Summary of available surveillance data on hepatitis C virus infection from eight Arctic countries, 2012 to 2014

We summarised available hepatitis C virus (HCV) surveillance data for 2012–14 from Arctic/sub-Arctic countries/regions. We sent a HCV data collection template by email to public health authorities in all jurisdictions. Population statistics obtained from census sources for each country were used to estimate rates of reported acute and chronic/undifferentiated HCV cases. Seven countries with Arctic regions (Canada, Denmark, Finland, Greenland, Norway, Sweden and the United States, represented by the state of Alaska), including three Canadian territories and one province, as well as 11 Russian subnational Arctic regions, completed the data collection template. Data on acute HCV infection during 2014 was available from three Arctic countries and all Russian Arctic regions (rate range 0/100,000 population in Greenland, as well as Nenets and Chukotka Autonomous Okrugs (Russian subnational Arctic regions) to 3.7/100,000 in the Russian Republic of Komi). The rate of people with chronic/undifferentiated HCV infection in 2014 ranged from 0/100,000 in Greenland to 171.2/100,000 in Alaska. In most countries/regions, the majority of HCV-infected people were male and aged 19–64 years. Differences in surveillance methods preclude direct comparisons of HCV surveillance data between Arctic countries/regions. Our data can inform future efforts to develop standardised approaches to HCV surveillance in the Arctic countries/regions by identifying similarities/differences between the surveillance data collected.

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## Tuberculosis in the Circumpolar Region, 2006–2012

**SETTING:** The northern circumpolar jurisdictions Canada (Northwest Territories, Nunavik, Nunavut, Yukon), Finland, Greenland, Norway, Russian Federation (Arkhangelsk), Sweden and the United States (Alaska).

**OBJECTIVE:** To describe and compare demographic, clinical and laboratory characteristics, including drug resistance and treatment completion, of tuberculosis (TB) cases in the northern circumpolar populations.

**DESIGN:** Descriptive analysis of all active TB cases reported from 2006 to 2012 for incidence rate (IR), age and sex distribution, sputum smear and diagnostic site characteristics, drug resistance and treatment completion rates.

**RESULTS:** The annual IR of TB disease ranged from a low of 4.3 per 100 000 population in Northern Sweden to a high of 199.5/100 000 in Nunavik, QC, Canada. For all jurisdictions, IR was higher for males than for females. Yukon had the highest proportion of new cases compared with retreatment cases (96.6%). Alaska reported the highest percentage of laboratory-confirmed cases (87.4%). Smear-positive pulmonary cases ranged from 25.8% to 65.2%. Multidrug-resistant cases ranged from 0% (Northern Canada) to 46.3% (Arkhangelsk). Treatment outcome data, available up to 2011, demonstrated >80% treatment completion for four of the 10 jurisdictions.

**CONCLUSION:** TB remains a serious public health issue in the circumpolar regions. Surveillance data contribute toward a better understanding and improved control of TB in the north.

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