

Viral Hepatitis Prevention Board

Burden and prevention of viral hepatitis in the Arctic region

COPENHAGEN, DENMARK

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Objectives

In the Arctic regions:

- To provide an overview of surveillance systems for infectious diseases
- To review the epidemiological situation of viral hepatitis and explain the high prevalence of viral hepatitis
- To give an overview of the current prevention and control measures for viral hepatitis
- To discuss the progress achieved in viral hepatitis prevention
- To review the possible implementation of new prevention strategies, control measures and monitoring systems
- To discuss the successes, issues and barriers to overcome, and the way forward

- all in the context of the indigenous populations of the region

Background/Context

The Arctic and sub-Arctic region:

- different definitions, but generally accepted to cover territories and areas in eight countries above latitude 60 degrees North; a physically large and challenging area with remote communities and poor communications and extreme cold in winter
- population about four million (ranging from 56,000 in Greenland to two million in the Russian Federation), with a high proportion of people of young age and very low population densities
- numerous diverse indigenous people (e.g. Alaskan Native, First Nations, Inuit, Sami, small peoples of the North, ...) with many languages and different cultures, intermixed with non-indigenous populations
- poor socioeconomic conditions – substandard housing, poor water supplies and sanitation, subsistence existence, food insecurity; environmental challenges to health (e.g. food contaminants and consequences of climate change)
- diseases associated with lifestyle (e.g. suicide, drug use, alcohol-related conditions, accidents) prevalent
- decreased access to established health care and considerable health disparities compared with southerly parts of countries, including higher birth and mortality rates, lower life expectancy
- varied hepatitis vaccination policies across the region

Background/context (continued)

International cooperation

- International Union for Circumpolar Health, an NGO that brings together several bodies that focus on health in the Arctic, with 18 working groups, including infectious diseases, environmental health, health policy and food security
- Other organizations include the Arctic Council ministerial forum, networks, expert groups and bodies bringing together different countries and groups – health aspects covered range from health inequities and diet to mental health and surveillance
- International Circumpolar Surveillance system links hospitals, public health agencies and laboratories to collect and share standardized data on bacterial diseases but not viral hepatitis
- The EpiNorth project includes collaboration between three Nordic countries and the western part of the Russian Federation is generating useful data (including evidence of dramatic reduction in notification of acute hepatitis B in north-west Russian Federation)

Health systems and surveillance

- Broad variety – from socialized to non-socialized medicine and private sector services; from centralized to decentralized, coordinated to fragmented
- Public sector funding for hepatitis vaccines; universal vaccination policy not in all countries or regions
- Full range of health care services, from tertiary care centres (with costly transport to centralized facilities) to community health centres
- Different levels of health care are related to population densities, involving different kinds of medical professionals and education, supplemented with programmes for village health practitioners, nurse practitioners and other primary health care workers
- Telemedicine, including regular training and education sessions
- Role of traditional medicine and healers in health care programmes

Health systems and surveillance

- Hepatitis A, B and C reportable diseases (D and E not), with reporting mostly based on clinical and laboratory data; enhanced with follow up and supported with feedback in some countries (e.g. Canada)
- Clinicians seen as the weak link in the reporting chain, despite incentives
- Variety of collections of data; in some countries, registries and databases exist, such as DANHEP with unique coded identifiers – valuable tools that can be applied broadly, including the follow up of treatment of patients with chronic viral hepatitis
- Electronic reporting and notification systems, with elements of automation, well developed in Nordic countries and applicable elsewhere

Epidemiology

- Country profiles presented with data on three main viral hepatitis
- Molecular epidemiology confirmed as powerful epidemiological tool
- Problems remain with quality of data, e.g. difficulties in some systems in distinguishing data on acute and chronic disease cases; under-reporting certainly exists
- Indigenous Arctic populations generally appear to show different patterns of disease from those in other populations; for the Sami in Sweden the prevalence of infectious disease generally appears to be low
- Immigrants from highly endemic countries increase prevalence rates and may account for the high rates of viral hepatitis seen in some Arctic regions; in countries with small indigenous populations immigrants may also account for most chronic infections
- Hepatitis A – has become rare or quasi-non-existent in most Arctic countries and areas (most cases seen in travellers)
- Hepatitis B – vaccination has dramatically reduced rates in Alaska, Canada, and Russian Federation
- Data presented showing horizontal transmission of hepatitis B; no mother-to child transmission in Greenland
- Predominant route of transmission also genotype-dependent

Epidemiology - continued

- Alaska Native people have five genotypes of hepatitis B virus with geographically defined distributions; new genotype of hepatitis B virus (B6) identified with higher mutation rate and inapparent early infection consequences
- Genotyping data indicate the patterns of disease in different countries and suggest possible routes of introduction of hepatitis B viruses into Arctic countries
- Occult hepatitis B was documented in Canada (in 4% of HBsAg-negative subjects)
- Continued high prevalence of HCV in Russian Federation, the Yukon, Iceland, and northern Sweden – increases in drug use and drug injection among the young a major concern
- HCV in Yukon - may reflect more widespread testing and successful follow up (including contact tracing) and testing and applicable to other diseases (e.g. STIs)
- Continuing outbreaks of hepatitis C in IDUs (e.g. in Norway, despite extensive prevention programmes)
- Prevalence of hepatitis C may be higher in Alaska than in rest of the USA, with many infected subjects not identified; the burden of illness in other countries, e.g. Finland, is substantial

Epidemiology - continued

- Alcohol is a strong cofactor for adverse outcomes of hepatitis C
- No liver cancer seen in Alaskan children since 1999
- Hepatitis D - a problem in Greenland and reported in Russian Federation as major contributing factor to liver cirrhosis, but uncommon or non-existent in most other countries
- Hepatitis E – a few sporadic cases reported, mostly imported but Barents caribou/reindeer may be a reservoir

Lessons learnt

- Vaccination is widely accepted and dramatically reduces incidence rates and can result in policies that no longer focus on “chasing the problem”, the policy of targeting vaccination to risk groups is costly, and speakers concluded that this policy is not effective
- Decentralization can enable local decisions about introduction of universal vaccination
- Success story of reduction in hepatitis B incidence and massive vaccination programme in the Russian Federation shows the effect of political will
- Similarly, work of dedicated public health workers in e.g. Alaska, Canada, Greenland, Iceland and Nordic countries show what can be done
- Registers, reminders and test useful in the management of chronic viral hepatitis (e.g. AFP for management of HBV in remote populations)
- New and successful approaches to contact tracing
- Graduated healthcare systems - a function of population density, ease of access, existence of tertiary centres and telemedicine

Lessons learnt - continued

- Vaccination coupled with improved water and sanitation and preventive measures (food handling) have eliminated hepatitis A, but travellers to endemic areas need vaccination
- Vaccination - hepatitis A vaccination of children reduces incidence of disease also in adults; protective immunity at 17 years, even with 2 doses (1 dose stopped an outbreak)
- No need for HBV booster dose (see outcome of VHPB meeting in Milan, November 2011)
- Molecular epidemiology defining epidemiological patterns of infection and disease more closely – it has also led to the identification of a new subgenotype (B6) of HBV
- Indigenous populations generally have similar prevalences, genotypes and risk factors for HCV infection as populations in the non-Arctic regions of countries
- Education, education and education - in relevant languages (in particular for HCV prevention)

Matters for consideration

- Further enhancement of circumpolar health cooperation needed
- Surveillance data not always used for public health
- Some prevalence data (e.g. Canada) are old and need updating with use of contemporary assays; studies could be done in vaccinated cohorts to document hepatitis B vaccination programme performance; protective immunity at 30 years
- Need to improve reporting systems and provide incentives and rewards for better reporting; maybe start with education of medical students about value of reporting
- Different policies within countries - provinces, states, municipalities and administrations
- Laws exist for reporting, but limited funds for analysis and application of data for public health

Matters for consideration - contd

- Prohibition of breakdown of data on risk behaviours (Canada) by ethnicity circumvented by PC/software applications and generated valuable data for harm reduction in indigenous populations
- Equity issues in relation to services for separate groups including immigrants
- Confidentiality and ethical issues about data use
- Remind public and professionals about persistence of hepatitis B virus in environment in order to persuade parents about value of vaccination of children before debut of sexual activity
- Importance of lifestyle choices and behaviours in HCV and HBV transmission
- Issue of costs, from new antiretrovirals for HCV to transport of patients and deliver of supplies
- General lack of health economic studies on impact of vaccination

Future activities

- Improvement of data (especially prevalence), including separation of statistics on acute and chronic cases, and analysis
- Feedback to physicians and clinicians
- Areas of research identified include
 - Follow-up to demonstrate immunological memory and duration of protection
 - Further investigation of non-response to hepatitis B vaccination (host or administrative factors?) e.g. in Greenland, as well as the evaluation of the recent universal HBV immunization programme in Greenland
 - Examine possibly changing epidemiology of hepatitis B in Greenland and role of hepatitis D, and interaction between hepatitis B and D, as well as HCV and drug use
 - Natural history of infection with hepatitis B virus genotype B6 and its apparent benign course
 - Further investigation of occult hepatitis B
 - Spontaneous clearance of hepatitis C virus (reported in 18% of patients) needs better understanding; may offer a clue towards an HCV vaccine
 - Why IDUs infected with HCV and not HIV in some countries?

Future activities - contd

- Continued surveillance and follow up of hepatitis A and B vaccination and focus on cohorts and the long-term public health impact on populations
- Ongoing evaluation of the impact of treatment for hepatitis B and C on the incidence of HCC and cirrhosis
- Need for economic data and analyses to drive policy development and assist decision-making
- Determine feasibility and economic attractiveness of the introduction of universal HBV vaccination
- Continued screening for HCV and enforcement of preventive measures (infection control, culturally sensitive public education programmes)
- Increased education about drug use and disease consequences, prevention testing for HCV