Prevention and control of viral hepatitis in Israel: lessons learnt and the way forward

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Objectives

- To provide an overview of surveillance systems for infectious diseases
- To review the epidemiology of viral hepatitis
- To give an overview of the current prevention and control measures for viral hepatitis
- To discuss progress made in prevention of viral hepatitis
- 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
Health system

- Serves a population of 7.8 million, of whom about 80% Jewish and 20% non-Jewish, mainly Arab; young - 28% under 14 years and growing at 1.8% per annum; with good economic growth
- Based on principles of equity, justice and solidarity; public health a priority
- Structure originally based on British mandate pattern with health districts; service provision and financing drawing on historical UK and German experience
- Financed mainly by tax revenue distributed through HMOs and delivery of care through public not-for-profit organizations
- Expenditure on health 7.6% of GDP in 2011 (same proportion as in 1995)
Health system - continued

- Government funds and regulates health care
- Health care coverage is universal
- Main functions of health ministry include
  - health promotion (individual and population levels and environmental health), including national five-year plan for active and healthy lifestyle
  - disease prevention (vaccination – including HPV, routine screening of children’s development, and tests on pregnant women)
  - limited outreach to illegal immigrants
  - Immunization policy set in MoH by Advisory Committee on Infectious Disease and immunization (covers also vaccination of travellers)
- Increasing role of private sector: service delivery and funding, including co-payment for private consultation
Health system - continued

- Extensive and effective network of mother and child health clinics
- Efficient school health services operating for >40 years
- Hospitals are either State or HMO–run; few private hospitals
- The number of hospital beds per capita has not grown enough with the increasing population; with short stays and highest bed occupancy rate in OECD countries (96%)
- Nationwide blood donor programme - active and up-to-date haemovigilance system, with trace back for blood donors
- National Health Insurance Law (1995) made health insurance compulsory; also defines the national list of health services (the “health care basket”)
- Open application for inclusion of medical products and technologies in the basket and review and evaluation by independent committee: system is feasible, practical, relatively rapid (one-year cycle) and widely accepted and highly regarded
- Four competing sick funds (health maintenance organizations) as well as other organizations deliver services contained in the health care basket
- Health maintenance organizations transfer funds to clinics, health centres and hospitals to cover services
Health system – health care workers

- Medical and nursing students as well as health care professionals must present evidence of complete vaccination against hepatitis B before starting studies or work.
- HCWs who refuse vaccination must sign a declaration of exemption.
- HBV vaccination of health care workers involved in exposure-prone procedures will be mandatory by end of 2013.
- “Shouval committee” recommendations have become practice.
- Health care workers practising exposure prone procedures must provide evidence of protective antibody levels (and viral load less than 2000 IU/l if HBsAg-positive).
Good health status (e.g. life expectancy, infant mortality rate, maternal mortality ratio) but differences between and within Jewish and non-Jewish populations

Challenges:
- declining public financing
- debating private medical practice in public hospitals;
- equity issues with private funding;
- prioritizing new technologies and setting policy for funding;
- workforce shortages, especially nursing staff, hepatologists;
- improving surveillance;
- reforming care for mental disorders and chronic diseases; obesity;
- serving vulnerable populations (including immigrants) and narrowing health disparities
- shortage of organ donors
- quality control of services provided by Ministry of Health
Epidemiology

- Some 70 diseases are notifiable, including (since 1993) serologically confirmed acute hepatitis A, B, C and “other” forms of viral hepatitis, and reporting chain will be electronic soon.
- Electronic national registry of childhood vaccinations being finalized.
- Surveillance data, including vaccine coverage data, reported through district health offices to health ministry for analysis and dissemination of information (weekly and annual reports).
- Under-diagnosis and under-reporting of viral hepatitis common but data that are collected are useful for monitoring trends.
- Central cancer registry exists which includes data on hepatocellular carcinoma but aetiological data (i.e. HBV and HCV) not always available, although 70% of 80 cases in a newly started collaborative project are related to HCV.
Epidemiology - continued

- Hepatitis A virtually eliminated (“unimaginable 15 years ago”) as a result of vaccination programme (1999); most immigrants will have been infected and developed immunity in their countries of origin.
- Outbreaks of HAV after initiation of universal vaccination of toddlers occur in populations of susceptible adolescents and young adults – control possible by catch up vaccination.
- Hepatitis B: largest epidemiological study shows estimated overall prevalence rate of 1.75%, with lower rates in Jewish communities (up to 9% in some Arab villages) and in women and people under 19 years of age.
- Hepatitis B and C carriers: limited data because of lack of large population-based studies, but estimates quoted of 60-100,000 HBsAg carriers and 40-100,000 HCV carriers; most not aware of infection status.
- HCV and HBV common risk factors for hepatocellular carcinoma; few data for Israel but burden of HCV-associated HCC increasing – peak forecast for 2015-2020; a case for prevention (vaccination or treatment).
Epidemiology - continued

- Hepatitis C: few studies but large epidemiological study gives estimated prevalence of 2%, with higher rates in Jews than Arabs and those born in endemic countries including FSU; genotype mainly 1 but varies with country of birth (4 for those infected in Egypt or Ethiopia)
- Patients diagnosed with hepatitis C are eligible for up-to-date treatment (including direct-acting antiviral agents (DDA) for genotype 1) although delays in initiation of treatment because of shortage of physicians and long waiting time at clinics
- Treatment of hepatitis C successful with results comparable to those in Europe and USA
- Co-infections (HBV, HCV, HIV) occasionally identified, including HCV/HIV in haemophiliacs
- Hepatitis D is relatively rare
- Hepatitis E: sporadic cases in travellers to South and South-east Asia and evidence of local transmission (7 of 560 cases); suggestion of a unique unidentified Israeli virus needs investigation
Matters for consideration

- Recognition of notable successes: Israel could be regarded as the Italy of the Middle East in the prevention and control of viral hepatitis
- Value of geographical information systems and molecular epidemiology
- Evidence of remarkable collaboration and teamwork, while acknowledging failures and areas for improvement
- Dramatic control of hepatitis A through universal vaccination a good example of how data can be used for sound policy-making
- Health system assures good access for populations from different backgrounds and cultures
- Redefine the role of doctors - health advisors or practitioners of medical acts?
- Insufficient cadre of hepatologists and difficulty in training sufficient doctors and nurses
Current burden of chronic disease due to HBV and HCV not known

Particular burden due to hepatitis B and C in immigrants, many from countries where the endemicity of viral hepatitis is high

HCV “in the midst of an HCV-related epidemic of disease”; incidence of HCC is rising but incidence of new cases of HBV and HCV infection very low – indicating a favourable trend in the long term

Risk of occult hepatitis B infection in blood donors for infection of recipients under investigation

What is the clinical and public health significance of occult hepatitis B virus infection?
Matters for consideration – cont’d

- Screening has twin goals: prevention and treatment, but no national policy exists on screening of risk groups for hepatitis B, hepatitis C, liver cirrhosis (i.e. history of blood transfusion)
- No national policy for overall screening of pregnant women for HBsAg (only recommended for specific risk groups)
- Ethics – concern regarding expanding screening because of shortage of resources and hepatologists to provide subsequent care (i.e. raising demand by discovering cases that cannot be treated or provided with care services)
- Consideration of “keep up/catch up” measures after universal vaccination programmes
- Third-generation HBV vaccines are more immunogenic; possible role for non-responders, diabetes patients, end-stage renal disease patients and HIV-infected subjects
Programmes for IDUs successful but few in number and struggling for funding
Most haemophiliacs infected with HCV (15% coinfection with HIV)
Non-invasive monitoring of liver disease i.e. fibroscan
Treatment for HCV (including coinfections) complex and costly but gives good results
Few specialist physicians to care for patients with hepatitis C and hepatocellular carcinoma at the moment, let alone a future higher case load
HCV is leading cause of liver transplantation, but serious shortage of donors (organ donors available for only ~50%)
Responsibility of health care employers to ensure safety of process, equipment and technologies
HCWs: requirements for vaccination and PEP protocols meet accepted standards and norms
Standard precautions (infection control) not always fully observed, including some instances of lack of use of personal protective equipment
Needs and possible future action

- Need for a model and plan for improved and sustained prevention and control of viral hepatitis at the national level
- Proposals for screening programmes must be robust, rigorous and defensible and cover all stages from screening to treatment
- Systematic screening of pregnant women for hepatitis B should be implemented; Advisory Committee on Infectious Diseases and Immunization to re-evaluate its position
- Systematic serosurveys at population level for HCV infection in order to support policy development at national level for HCV testing as well as to increase the number treated
- Answer to question “who should be screened for HCV?”
- Better and computerized reporting of acute and especially chronic viral hepatitis and improved data-analysis capabilities
- Development of online registries, for example of chronic viral hepatitis
- Need for connection between databases (e.g. linkage between surveillance and vaccine coverage data) and feedback to data providers
- Completion of substance abuse national case registry, which already contains data on 5000 subjects – a model for other countries
Programmes to monitor the impact of universal vaccination against hepatitis B 20 years after introduction, including quality control of assessment of immunization

Policy development for the generation vaccinated at birth – test and evaluate need for boosters in defined risk groups

Recommendations for management of infected pregnant women (including use of third-generation vaccines in newborns), as well as protocols for antiviral treatment and prevention of vertical transmission

Evaluate option of vaccinating diabetic patients, renal failure patients, HIV-infected subjects with a third-generation hepatitis B vaccine

Quality control of surveillance

Important to sustain the high immunization rates and maintain vaccine coverage

Holistic view of vaccine-preventable diseases: consider all together, including their interactions, rather than each disease specifically
Needs and possible future action

- HCWs - regular education and training (on a routine basis)
- Strict observation of universal precautions - possibly through equivalent of US Needlestick Safety and Prevention Act, and design of health care facilities for optimum use of safety equipment
- Further research on occult hepatitis B virus infection and on epidemiology of hepatocellular carcinoma in Israel
- Improvement of early detection of chronic HCV infection
- More centres for treatment and care of IDUs and syringe exchange programmes
Needs and possible future action

- Preparation for future introduction of simpler, interferon-free effective treatments of HCV
- Economic modelling of options for screening for HCV and outcomes in order to foster evidence-based policy development
- Support (in terms of both human and financial resources) for associations that work with and between patients, their families, family physicians and treating doctors, including raising public awareness
- Build on the experience and expertise of patient associations and collaborating doctors in other countries in order to guarantee adequate support.